

Contraception following childbirth in Bangladesh

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Abstract

Drawing on both qualitative and quantitative data, the thesis describes and explains both the current patterns of natural protection against pregnancy and the use of modern contraception in the period following childbirth in two populations, one rural and one urban, in Bangladesh.

First, quantitative data gathered through demographic surveillance systems of the International Centre for Diarrhoeal Disease Research, Bangladesh are used to explore the patterns and differentials in breastfeeding, postpartum amenorrhoea and risk of pregnancy in the months following birth in the two study populations. Next, the surveillance data are used to describe the patterns of adoption of contraception in relation to time postpartum, breastfeeding and menstrual status for the two study populations. Extensive use is made of life table methods, hazard models and logistic regression techniques in these analyses.

Qualitative data gathered through in-depth interviews with users of contraception are then used to identify key themes of understanding that influence women's behaviour, including contraceptive uptake, in the period following childbirth. The current knowledge, attitudes and practices of family planning providers in the two study populations are next described using qualitative data collected through a series of in-depth interviews and group discussions.

Findings from the quantitative and qualitative analyses are then integrated in order firstly, to explain the current patterns and recent trends in contraceptive use and lactational protection against pregnancy following childbirth, and secondly to explore their potential implications for birth intervals and fertility. Finally, important issues are identified and recommendations made for improvements to postpartum family planning programme approaches in Bangladesh.

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Chapter one: Background and objectives

1.1 Introduction

Despite the fact that the concept of 'postpartum contraception'¹ has a long history, a glance at the recent demographic and public health literature shows that it remains a much debated issue (see for example Laukaran and Labbok 1993). Confusion and controversy persist, and sharply contrasting recommendations regarding the provision of contraceptive services following childbirth are not difficult to find.

In weighing up the advantages and disadvantages of any strategy of postpartum contraceptive service provision, a whole range of factors must be taken into consideration. The most suitable strategy will vary from setting to setting, depending on the prevailing patterns of childbearing, breastfeeding and postpartum infecundability, the current contraceptive behaviour, as well as the existing pattern of health and family planning service provision and utilisation within the population (see Figure 1.1). Though information is available on some of these factors in some settings, they have not been explored in detail or in combination for any particular population. Instead, the majority of recommendations made are not tailored to a particular setting, and, as highlighted by Winikoff and Mensch (1991), are often based on invalid or untested assumptions.

In this introductory chapter, I first review the existing literature on the key factors that have a bearing on the issue of contraception following childbirth, namely: the contraceptive potential of lactation; alternative strategies of contraceptive adoption; existing patterns of contraceptive use after birth; knowledge, attitudes and perceptions of clients regarding the postpartum period and use of contraception; and patterns of postpartum contraceptive service provision. I then go on to describe the objectives of the present study which aims to overcome some of the limitations of previous analyses that have to date been the basis of policy recommendations in this area.

1.2 Review of background literature

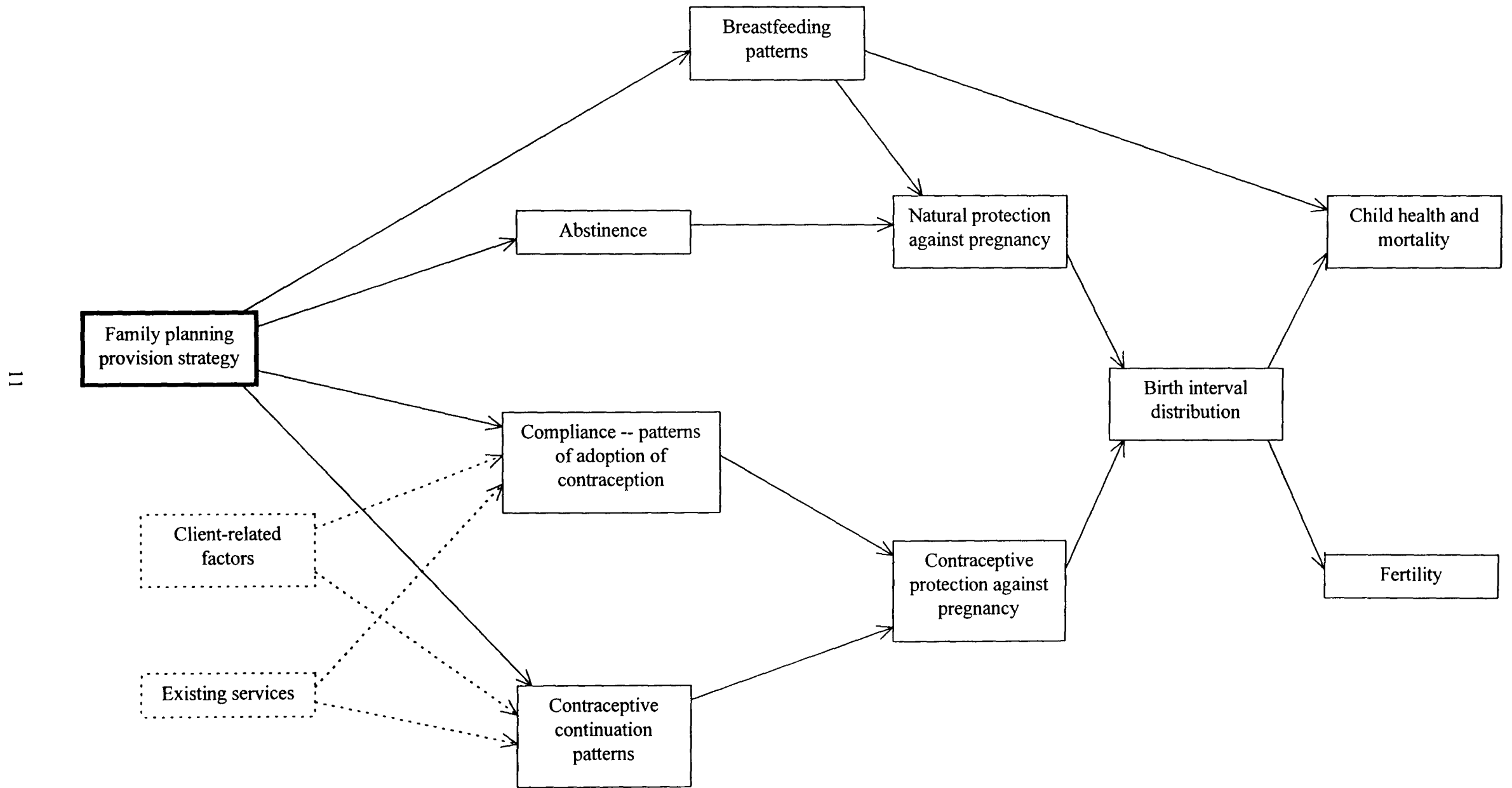
1.2.1 The contraceptive potential of breastfeeding

Were it the case that a woman's body returned to normal fecundity² immediately after childbirth, the issue of postpartum adoption of contraception would be relatively straightforward. In order to avoid unwanted pregnancy, a couple would obviously need to adopt some form of contraception as soon as sexual activity resumed following the delivery. However, in developing countries in particular, the majority of women feed

¹ Throughout this discussion the terms 'postpartum contraception' and 'contraception following childbirth' are used interchangeably, to refer to the adoption of a contraceptive method after the birth of a child and before the subsequent pregnancy. This does not imply any time limit after the birth within which the method is adopted. The phrase 'immediate postpartum' is used to refer to adoption of contraception within 6 weeks, or 40-45 days of delivery.

² The term 'fecundity' is used to mean the physiological capability of a woman to produce a live birth, whereas the term 'fecundability' is used to mean the probability of conception in one menstrual cycle (or one month), and thus depends both on fecundity and exposure to sexual intercourse. The 'non-susceptible period' or 'postpartum infecundable' period is the period following a birth (or an abortion) during which a woman has a zero probability of conception because she has not regained fecundity and/or has not resumed sexual activity. The term 'fertility' is used to mean the actual reproductive performance of an individual. These definitions are in line with usual demographic usage and have been adapted from Pressat (1985).

Figure 1.1: Factors affecting the impact of postpartum family planning strategies



their newborn child at the breast, and lactation can have an important effect in delaying the subsequent pregnancy.

The relationship between breastfeeding and the chance of conception has been noted for over a century, and a topic of investigation for at least the past 40 years (see for example Henripin 1954 and Jain 1969). Data from numerous settings have demonstrated the correlation between breastfeeding duration and birth interval length (Jain and Bongaarts 1981), as well as the duration of postpartum amenorrhoea (Jain and Sun 1972; Bongaarts and Potter 1983). An impressive body of clinical evidence also suggests that breastfeeding has an important contraceptive effect. Although the exact mechanisms involved have yet to be fully elucidated (Lunn 1992; Rosetta 1992), it appears that stimulation of the nipple during suckling is related to the level of hormones released from the pituitary gland, suppression of ovarian activity and absence of menses (McNeilly 1987; Glasier, McNeilly and Howie 1984).

The contraceptive effect of breastfeeding is not absolute, and, since ovulation may occur in the first menstrual cycle following the birth, a woman may conceive even without any visible menses. Recent studies have attempted to evaluate the contraceptive potential of breastfeeding more precisely, and to develop guidelines for use by individual women. Drawing on results from eight countries, the Bellagio Consensus Statement concluded that, for women who breastfeed 'fully or nearly fully'³ and remain amenorrhoeic, the cumulative risk of conception over the first six months postpartum is less than 2%, that is, similar to or lower than the risks attached to use of modern methods of contraception (Kennedy, Rivera and McNeilly 1989).

Breastfeeding pattern

Subsequent studies have further investigated the relationship between breastfeeding patterns and conception, though have produced conflicting results. Some studies have concluded that amenorrhoea alone can be taken as the indicator of low pregnancy risk among breastfeeders, regardless of whether supplements have been introduced to the baby's diet or not (Short, Lewis, Renfree *et al.* 1991; Kennedy and Visness 1992).⁴ Other researchers have suggested that recommending full breastfeeding plus amenorrhoea at one extreme, or amenorrhoea alone at the other, is inappropriate. Instead, attempts have been made to quantify more precisely the pattern of breastfeeding required to maintain low risks of ovulation and pregnancy (Campbell and Gray 1993). Gray, Campbell, Apelo *et al.* (1990) concluded that a certain level of protection may be achieved by different patterns of breastfeeding, for example either long, infrequent feeds or shorter, frequent feeds. Campbell and Gray (1993) have published results from the USA which suggest that a feeding frequency of

³ The Bellagio Consensus Statement recognised that 'exclusive breastfeeding', wherein 'the infant receives only breastmilk given directly from the mother's breast (with the possible exception of medicine or vitamin drops)' would maximise lactational protection against pregnancy. However, since such breastfeeding is rare in developing country settings (with the majority of infants being given, at the least, small amounts of traditional mixtures, water, teas or juices) the recommendations were based on 'full or nearly full breastfeeding'. No precise definition of 'full or nearly full breastfeeding' was offered, and it was pointed out that local variations in breastfeeding habits make such a definition difficult. However, it was understood that 'for breastfeeding to be sufficient to be used for family planning, the breastfeeding pattern must include at least these aspects: breastfeeding should constitute the overwhelming majority of the baby's diet; breastfeeding frequency and duration should be high, and not affected by additional feedings; and additional feedings should not act as replacements for breastfeeding' (Kennedy, Rivera and McNeilly 1989, pp486-487).

⁴ Both studies showed a cumulative pregnancy rate among amenorrhoeic breastfeeders of less than 3% after six months and around 6-7% at the end of 12 months. The study by Kennedy and Visness (1992) used the actual, observed pregnancy rate among women who did not contracept, whereas Short, Lewis, Renfree *et al.* (1991) calculated a theoretical pregnancy rate based on assumptions about the percentage of normal ovulatory cycles that would result in conception.

seven feeds per day, each lasting fifteen minutes, can achieve a 2% pregnancy rate over the first six months postpartum. In multivariate analysis both the total number of breastfeeds and the mean duration of sucking episodes had significant and independent effects on the risk of ovulation. The introduction of bottle-feeds was found to be an important factor increasing the risk of ovulation. Other studies have suggested that the interval between breastfeeds and the presence or absence of night-feeds may be important factors in maintaining the suppression of ovulation (Simpson-Herbert and Huffman 1981; Diaz 1989), though these were not found to be significant predictors by Campbell and Gray (1993).

Return of menses as an indicator of pregnancy risk

The Bellagio consensus concluded that the resumption of menses should be taken as an indicator of return to fecundity and the need for an alternative form of contraception (Kennedy, Rivera and McNeilly 1989). However, subsequent research has shown that in many cases, particularly when menses returns soon after birth, ovulation may follow rather than precede the first bleed. Eslami, Gray, Apelo *et al.* (1990) concluded from data from the Philippines that within the first six months postpartum, the return of menses does not necessarily indicate imminent ovulation. Gray, Campbell, Apelo *et al.* (1990) also found that in the first six months exclusive breastfeeding confers very low risks of ovulation even if menses resumes. The frequency of anovulatory first menstrual cycles has been found to decrease with time since birth (Perez, Vela, Potter *et al.* 1971; Perez, Vela, Masnick *et al.* 1972; Gray, Campbell, Apelo *et al.* 1990; Eslami, Gray, Apelo *et al.* 1990). In addition to anovulatory cycles, the first few cycles may be irregular (Simpson-Herbert and Huffman 1981), and may have inadequate luteal phases (Eslami, Gray, Apelo *et al.* 1990; Shaaban, Kennedy, Sayed *et al.* 1990; Campbell and Gray 1993). This means that in many cases fecundity may not return until several months after first menstruation (Howie, McNeilly, Houston *et al.* 1982a, 1982b; Eslami, Gray, Apelo *et al.* 1990). It thus appears that breastfeeding continues to have a contraceptive effect beyond the resumption of menses, and that the earlier bleeding resumes after a birth, the less likely it is to be an indication of return to the fecund state.

Duration of protection postpartum

Most studies have confirmed the findings of the Bellagio consensus statement, namely that lactation can provide a high degree of protection up to six months postpartum. There is less agreement, however, as to whether this protection can be relied upon beyond six months in populations where there is intensive and prolonged breastfeeding. As mentioned above, findings from some studies suggest that lactational amenorrhoea alone, even in the presence of supplementation, carries low risks of pregnancy up to a year postpartum (Kennedy and Visness 1992), and it has even been suggested that protection may be relied upon up to the resumption of menses, regardless of the time since birth (Short, Lewis, Renfree *et al.* 1991). Weis (1993) has suggested that in Bangladesh breastfeeding affords good protection against pregnancy among amenorrhoeic women for the first 12 months after birth. Other studies conclude that six months is the point at which the risk of pregnancy increases to an unacceptably high level (Gray, Campbell, Apelo *et al.* 1990).

Thus, despite the Bellagio 'consensus', research in this area continues to produce varying results and recommendations. Partial explanation for divergent results lies in study designs and analyses. Many studies have employed small samples, often consisting of individuals that are unrepresentative of the population at

large, have failed to use life table methodology (or are not explicit about the way life tables were constructed), or have failed to control for potentially confounding factors. Different researchers have used different outcome measures, some looking at ovulation (using a range of biochemical assays), others considering hypothetical pregnancy rates, and still others considering observed pregnancies.

Leaving methodological issues aside, however, there appears to be significant real variation in the natural protection against pregnancy afforded by lactation, both between and within populations. Though this may in part be explained by differing breastfeeding patterns, recent research also suggests that the effect of lactation on ovarian activity may be mediated by other physiological factors such as maternal nutrition (Panter-Brick 1991, Rosetta 1992). Although we are not concerned here with the detailed physiology, these findings illustrate the need for population-based analyses, and raise doubts as to the utility of generalisations across settings.

1.2.2 Alternative strategies for adoption of contraception following childbirth

Although it is now generally recognised that breastfeeding affords some contraceptive protection, it is by no means agreed that lactation should be relied upon for avoidance of pregnancy. Confusion and debate continues as to the most appropriate postpartum strategy for adoption of contraception following childbirth. The main alternative strategies are summarised below.

Immediate postpartum adoption

The immediate postpartum strategy involves the promotion of contraceptive adoption within 40-45 days of childbirth for all women.^{5 6} Advocates of this approach argue that it is impossible to predict when an individual woman will regain fecundity, and therefore that delaying the initiation of contraception puts women at risk of unwanted pregnancy. This approach was widely promoted in the 1960s, particularly by the Population Council, when it was believed that early adoption would have a greater impact on fertility (Zatuchni 1968, 1970). Recent analyses have led to renewed interest in this approach, suggesting that other strategies lead to unacceptably high proportions of short birth intervals (Trussel and Santow 1991; Bracher 1992). Additional arguments used in support of this strategy include: that women are highly motivated to adopt contraception soon after a birth; that provision of contraceptive services at the time of delivery is cost-effective (Foreit, Foreit, Lagos *et al.* 1993) and may represent the only point of contact with family planning services before the next conception (Van Ginneken 1977; Potter, Masnick and Gendell 1973); that delays in contraceptive adoption once fecundity returns carry high risks of conception (Potter, Kobrin and Langsten 1979; Bracher 1992); and that most contraceptive methods can be supplied safely within a few weeks of delivery, including tubal ligation (Chi and Thapa 1993), the IUD (Xu, Connell and Chi 1992; O'Hanley and Huber 1992), and progestin-only pills and injectables (Chi, Robbins and Balogh 1992, Kaunitz 1994).

⁵ Throughout the discussion I have referred mainly to the adoption of contraception by women. This is both a matter of convenience, and a reflection of the fact that many of the issues of interest, such as return to fecundity, breastfeeding, perceptions of bodily changes and so on, relate to the woman rather than her partner. However, it is not intended to suggest that the adoption of contraception should be the sole responsibility of the woman, or that a male method of contraception should not be considered.

⁶ The exact timing of initiation may vary, particularly depending on the method and location of service provision. For women delivering in hospital, this strategy usually implies adoption of a method before discharge. In any case, it involves adoption of a method by the end of six weeks, the period of time during which the majority of women are infecund irrespective of breastfeeding status.

Mixed-T or the Lactational Amenorrhoea Method (LAM)

In recent years, immediate postpartum strategies have been criticised on a number of counts. Use of contraception soon after childbirth often results in so-called 'double protection', since women are naturally protected against pregnancy by lactation (Adamchak and Mbizvo 1990). This is not only seen as a waste of resources, but may mean little or no impact on birth intervals if continuation rates are low. It is argued that delays to subsequent pregnancy will be longer if the periods of natural and artificial protection come one after another, rather than simultaneously. Worse still, early use of the oral pill has been found to result in shorter birth intervals than if contraception were not adopted at all (Bhatia and Kim 1984; Bhatia, Becker and Kim 1987; Adnan and Bakr 1983). It appears that the pill stimulates menstrual cycling and a quicker return to fecundity than in the absence of contraception. This may also be true for other methods of contraception, particularly if use leads to changes in lactation that in turn reduce the length of the postpartum infecundable period.

In addition to demographic considerations, the assumption that women are highly motivated to use contraception in the early postpartum period may in many cases be erroneous (Winikoff and Mensch 1991). Moreover, patterns of contact between women and providers vary greatly between populations, such that the time of delivery may not be the best opportunity for the promotion and provision of contraceptive methods in many settings.

These arguments have prompted some to advocate reliance on natural protection against pregnancy for as long as possible and the introduction of alternatives once the risk of pregnancy increases.⁷ Potter, Kobrin and Langsten (1979) called this a 'mixed-T strategy', with contraception being advocated either at the return of menses, or at the time postpartum, T, when amenorrhoea is no longer felt to be a reliable indicator of infecundability. This type of strategy has been widely promoted under the banner of LAM, in which contraception is advocated at the resumption of menses, six months postpartum or the time of introduction of supplements to the child's diet (Kennedy, Rivera and McNeilly 1989), though modifications to these guidelines have been suggested (Campbell and Gray 1993, Weis 1993). Advocates of this strategy cite evidence of its favourable performance in field trials (Perez, Labbok and Queenan 1992).

Post-amenorrhoeic strategy

Most discussions, both in favour and against LAM, suggest that it involves encouraging women to delay the adoption of contraception following a birth. In fact, in many settings, most women do not start contraception until menses resumes. Therefore, for many, the introduction of LAM would entail using contraception earlier than at present. Awareness of this, and findings that suggest low pregnancy risks during postpartum amenorrhoea, have led to recent recommendations that method provision be focused at the time when menses returns (Short, Lewis, Renfree *et al.* 1991).⁸

⁷ Though no explicit discussion of what level of pregnancy risk should warrant the introduction of modern contraception was found, in practice, failure rates for use of modern methods of contraception in the USA have commonly been used.

⁸ In addition, in some settings prolonged postpartum abstinence means that early promotion of contraception is inappropriate, though this is not the case in Bangladesh.

Evaluating different strategies

Until recently, most of the arguments for or against particular postpartum strategies have been based on purely theoretical demographic grounds. Evaluating the impact of alternative strategies raises a number of important methodological questions.

Firstly, what should be the outcome measure of interest? While early simulation work by Potter and colleagues used the mean inter-pregnancy interval to measure the fertility impact of different adoption schedules (Potter, Masnick and Gendell 1973; Potter, Kobrin and Langsten 1979), Bracher (1992) argues that attention should be given to the proportion of short birth intervals, since these are the ones that carry increased risk of child mortality. Also at issue is whether evaluations should only examine the effect on birth intervals among users, or rather assess the fertility impact on the whole population by considering the likely proportion of women complying with the adoption schedule. The extent to which alternative approaches are successful in enabling couples to achieve their desired fertility and avoid unwelcome births is also an important indicator.

When assessing the impact of alternative strategies, it is not immediately obvious what comparisons should be made. For example, should women who adopt LAM be compared to women who adopt methods of contraception early in the postpartum period (assuming competition between LAM and the immediate postpartum strategy), or should LAM users be compared to women who breastfeed as normal and adopt no modern method of contraception (thus assuming that LAM is a new method for those who would not otherwise take advantage of contraception), or should LAM be compared to women who delay adoption until the resumption of menses (assuming competition between LAM and a post-amenorrhoeic strategy)? The choice of comparison depends on how alternative strategies are intended to fit into the broader picture of contraception following childbirth. For example, LAM⁹ could be 'simply offered as one choice among many' (Kennedy, Visness, Bathija *et al.* 1993, p108), or could be actively promoted in favour of early use of modern methods of contraception. For meaningful evaluations to be possible, the alternative adoption strategies must be made explicit.

Should simulation studies or population-based analyses be used? Several influential papers have used simulation methods to compare the outcomes of differing adoption schedules (Potter, Masnick and Gendell 1973; Potter, Kobrin and Langsten 1979; Bracher 1992). In so doing, assumptions have to be made which may raise doubts as to the validity and applicability of their conclusions. To what extent results based on data from one particular population can be applied to other settings is open to question, and models have failed to consider a number of potentially important factors, including the possibility that contraceptive continuation rates may vary by time of adoption postpartum (an issue that has been little explored), and that use of contraception may affect the duration of natural infecundability.¹⁰ Analysing data from real populations brings

⁹ I refer to LAM more than the post-amenorrhoeic option since this strategy has received more attention and is currently being field-tested in several places (for example in Chile: Perez, Labbok and Queenan 1992). However, many of the arguments apply equally to a strategy of delaying adoption until the return of menses.

¹⁰ This could be via an impact on breastfeeding or via a direct physiological mechanism, such as that described above for the oral pill. In addition, adoption of contraception may lead to changes in the practice of postpartum sexual abstinence.

with its other complications, not least the difficulties of disentangling a complex web of interrelated variables, and establishing directions of causality. Comparisons of different strategies may be complicated by the fact that the decision to adopt contraception may depend on a woman's fecundity, with more fecund women behaving differently from less fecund women (Potter, Masnick and Gendell 1973). Opportunities to test LAM or other strategies in a perfect operational research setting using quasi-experimental designs (as advocated by Laukaran and Labbok 1993) are few.

It is clearly important to understand the potential demographic impact of alternative schedules of adoption of contraception. However, this is by no means the only factor that deserves attention in assessing the suitability of alternative approaches for a particular setting. Other important factors, such as the effect of use of modern contraception on breastfeeding, current patterns of contraceptive use, client preferences, and the existing patterns of service provision, have largely been ignored.

1.2.3 The effects of modern contraceptive use on lactation

In order to develop appropriate postpartum family planning programmes it is important to consider the impact of modern contraception on lactation, as well as the fertility-inhibiting effect of breastfeeding. An inverse relationship between use of contraception and breastfeeding has been observed in many populations (Jain and Bongaarts 1981, Millman 1985), though the reasons for this have not been clearly elucidated.

One obvious, possible explanation for this inverse association is a direct physiological effect of contraception on lactation. Although inconsistent study designs and methodological complexities¹¹ have resulted in many conflicting results, there is sufficient evidence to conclude that combined hormonal contraceptives can have a negative impact on lactation (Hull 1981). Studies have shown decreased milk production, shortened duration of lactation and changes in milk composition (Laukaran 1981). It is generally concluded that other forms of contraception (progestin-only hormonal methods, IUDs and barrier methods) do not directly have an adverse effect on lactation (Millman 1993). However, evidence is very limited.¹² It should also be borne in mind that even in the absence of an accepted physiological link, use of a particular contraceptive may still have a negative impact on breastfeeding depending on the beliefs and concerns of the user and the messages she receives from providers (Millman 1993). The initiation of lactation, in particular, is extremely sensitive to the mother's motivation and confidence.

Other possible explanations for the inverse association between lactation and contraception are: that it may reflect the fact that women substitute traditional protection against pregnancy with modern contraception; and that other, confounding factors affect use of contraception and breastfeeding in opposite directions, thus

¹¹ Laukaran (1981, 1987) and Hull (1981) discuss the many methodological complexities involved in studying the relationship between contraceptive use and lactation in their reviews of the literature.

¹² While low-dose progestins and Depo-Provera appear not to negatively affect, and may even increase, milk volume, less is known about the effects of transmission of hormones through milk to the infant, or of changes in milk composition. Some studies have found changes in the levels of prolactin and oxytocin among IUD users, both of which could affect lactation (Laukaran 1981). Though barrier methods are commonly believed to be free of effects on lactation, spermicides may have the potential for absorption and transfer to the infant via breastmilk (Laukaran 1981). These, and other potential effects of contraceptive use on lactation, deserve greater investigation.

producing an spurious negative association between the two.¹³ Of particular concern is that approaches taken by family planning programmes may act to discourage breastfeeding while promoting use of contraception. Proponents of LAM argue that when women are aware of the pregnancy-inhibiting effect of lactation, and actively use it as a contraceptive, breastfeeding durations increase (Perez, Labbok and Queenan 1992). In contrast, others have suggested that promotion of this approach may increase the belief that lactation and contraception are alternatives to be chosen between, leading to less breastfeeding (Millman 1993). Bracher (1992) argues that, rather than promoting breastfeeding as a method of contraception, family planning programmes should be concerned with increasing contraceptive use following birth so that breastfeeding is not interrupted by a subsequent pregnancy.

In the absence of rigorous analysis, we can only speculate about the effect of differing postpartum adoption strategies on breastfeeding initiation and duration. Nevertheless, it is clear that the impact on breastfeeding is an important outcome that must be considered in assessing the advantages and disadvantages of alternative options for postpartum contraception.

1.2.4 Patterns of postpartum adoption of contraception

In contrast to the number of published papers dealing with the merits of alternative postpartum strategies, those that present empirical data on prevailing patterns of contraceptive use following birth are few.

Adoption in relation to return of menses

Evidence from several populations, including Bangladesh, suggests that, far from adopting immediately postpartum, many women wait until the return of menses before initiating contraception (Knodel, Kamnuansilpa and Chamrathirong 1985; Laukaran and Winikoff 1985; Gomez de Leon and Potter 1989; Thapa, Kumar, Cushing *et al.* 1992; Weis 1993). Zurayk (1981) found that in Lebanon most users initiated use of contraception within a month of first menses. However, whether prompt or delayed adoption following the return of menses is more common has not often been described.

Adoption of contraception before the end of postpartum amenorrhoea has also been found to be common in some places. For example, Thapa, Kumar, Cushing *et al.* (1992) found as many as a third of all postpartum women starting to use hormonal contraception before the resumption of menses in Zimbabwe, Brazil, Bolivia and Sri Lanka. An experimental project in Peru that offered women contraceptive services while still in hospital following delivery, found higher rates of acceptance in the immediate postpartum period than later in the first six months (Foreit, Foreit and Lagos *et al.* 1993). Much may depend on the prevailing strategies of service provision, including the types of method on offer, though client preferences are also likely to be important.

¹³ These issues are discussed further in chapters three and seven.

Adoption in relation to breastfeeding

As mentioned above, the negative association between lactation and use of contraception has been well-documented, and appears to be particularly strong for oral contraceptives, at least in some settings (Millman 1985; Laukaran and Winikoff 1985). However, when breastfeeders alone are considered, available evidence suggests that large numbers of women, in many different parts of the world, initiate contraception while still feeding their child at the breast. Clearly, the two are not considered to be completely incompatible by all women. Pebley, Goldberg and Menken (1985), in their analysis of survey data from the late 1970s, found the percentage of breastfeeding women using contraception to differ greatly between countries.

Contraceptive continuation

The duration of contraceptive use is a key factor determining the length of the birth interval, and continuation rates have been found to be low in many developing countries, including Bangladesh (Cleland, Phillips, Amin *et al.* 1994). Although several factors could result in differential continuation rates by timing of uptake postpartum, such as differences in access to supplies, side effects, and motivation to avoid pregnancy, this has been explored very little. In rural Bangladesh, amenorrhoeic women who adopted the pill were found to have lower continuation rates than those who adopted after the return of menses (Bhatia and Kim 1984), whereas in Peru, pill users who initiated use within the first six months were found to have better continuation than those who started later (Becker and Ahmed 1994). Information for other methods and other settings is lacking.

It is clear then that information on use of contraception following childbirth is extremely patchy. The data available are mainly cross-sectional, and analyses to date have been largely descriptive, with little exploration of the determinants of use patterns. Comparisons between countries are complicated by differences in method mix and patterns of service delivery. However, despite its paucity, the available evidence does suggest large differences between populations in the prevailing patterns of use. Observed patterns of use are likely to reflect both client preferences and characteristics of service provision. Few studies have explored either of these important elements, and, as Winikoff and Mensch (1991) point out, caution should be exercised in drawing conclusions about underlying desires from observed behaviour.

1.2.5 Understanding the client's perspective

Despite the call over 15 years ago for a 'user perspective' (Zeidenstein 1980; Bruce 1980), understanding the beliefs, attitudes and preferences of the target population of family planning programmes has not been given high priority by programme managers or researchers. As a result, little is known about the needs and wants of clients regarding family planning in general, or specifically in the period following childbirth. Important gaps persist between the perceptions of those who plan and implement programmes and the intended users of these services. As Good (1980) illustrates for Iran, such differences can seriously hamper the success of programmes. Despite the absence of studies that have directly explored the issue of contraception following birth, the medical anthropology literature is an important source of rich data that has relevance to this topic of enquiry. Although the diversity within and between communities must be recognised, common patterns and

themes can be found, particularly across cultures that share similar roots. In the present study, data from South Asia and Muslim populations outside this region were given most attention.¹⁴

Childbirth and the postpartum period

The behaviour of the woman and her relatives at the time of childbirth and in the postpartum period in these communities has been found to be dictated largely by two concerns. The first is that childbirth is profoundly polluting, and as such represents a danger to others, particularly men (Blanchet 1984; Good 1980). The second is that the woman and her newborn child are in great danger in the days and weeks following birth, especially due to risk of attack by malevolent forces. These two considerations mean that childbirth usually takes place in an isolated location and that the mother's movement is severely restricted following delivery. Another important theme that pervades South Asian cultures is that mother and child are intimately connected. The child is nourished in the womb by the mother's blood, and after birth by her breastmilk. A child's strength and health are determined by its mother's behaviour, and particularly her diet. Both mother and child are weak and vulnerable following delivery and restrictions on movement, diet, contact with others, bathing, and work are common (Karan, Mathur, Qureshi *et al.* 1983; Chalmers 1993; Goodburn, Gazi, Chowdhury *et al.* 1995).

Though it has been suggested that the avoidance of pregnancy is not the chief concern of women who have recently delivered (Bruce 1989), the implications for the uptake of family planning services of understandings that emphasise the vulnerability of mother and child have not been explored in any detail.

Breastfeeding, amenorrhoea and the chance of conception

The view of the male as the dominant partner in the creation of the new child, and of the female as essentially nurturant, providing the receptacle in which the child develops, has been noted by several investigators in South Asia (Jeffery, Jeffery and Lyon 1989; Blanchet 1984; Good 1980). Less is known about how women perceive the chance of conception following a birth, and its relationship to lactation and amenorrhoea.

Laukaran and Winikoff (1985) suggest that most women in developing countries anticipate a long period of amenorrhoea and know they have diminished fertility at this time. Some researchers have further asserted that women are aware of the fertility-inhibiting effect of breastfeeding (Van Ginneken 1977; Zeitlyn and Rowshan 1994). However, other work suggests that a link between breastfeeding, amenorrhoea and renewed pregnancy is not universally recognised in South Asia (Maloney, Aziz and Sarker 1981). Whether women consciously employ breastfeeding as a way of delaying conception has been little explored. The ways in which local beliefs regarding pregnancy risk may influence the demand for contraception in the period following childbirth have not been investigated, but have clear implications for postpartum family planning policy.

Postpartum abstinence

Though the duration of postpartum sexual abstinence does not appear to be long in South Asian societies, most studies have documented a period during which sexual relations are avoided. Among Muslims, a 40 day

¹⁴ There is only space here for a very brief review of this literature. Further discussion of the relevant issues appears in chapter five.

period of abstinence is common (Van de Walle and Van de Walle 1991), though longer durations have also been found (Karan, Mathur, Qureshi *et al.* 1983). Since the period of postpartum abstinence is unlikely to extend beyond the period of postpartum infecundity in these settings, it has no direct impact on fertility. However, whether the avoidance of sexual relations in the early postpartum period has implications for the desire to adopt contraception is unclear.

Preferences for the use of modern contraception after childbirth

Numerous studies have shown that side effects are among the most important reasons for nonuse and for discontinuation of contraception (Nair and Smith 1984, Nag 1986). However, few studies have sought to understand how perceptions of the characteristics of modern contraceptive methods and their side effects relate to broader belief systems regarding health and fertility. An appreciation of how women view their bodies, their inner workings, and their health, is an important prerequisite for understanding how they perceive modern methods of contraception, and the benefits and risks associated with their use. It is likely that the risks and benefits associated with use of modern contraception will differ in the period following birth, both because of the mother's physical state and her relationship with her newborn child, though information on this is extremely limited.

An important theme found in the literature relating to South Asia, as well as other cultures, is the close relationship between the female reproductive and digestive systems (Blanchet 1984; Reissland and Burghart 1988; Katona-Apte 1977). This is also associated with the well-documented system of beliefs whereby diet and health are seen as intimately connected. The explanation of illness in terms of a disequilibrium between 'hot' and 'cold', or the bodily humours, has been noted in diverse cultures (Lambert 1992). The perceived effects of contraception on the body may also be expressed in terms of a disturbance of the balance between these bodily qualities (Maloney, Aziz and Sarker 1981).

Throughout South Asia, female blood assumes an important role in local belief systems, as both strength- and life-giving, as well as potentially harmful and polluting. The disturbance of menstrual flow by modern methods of contraception can be an important barrier to their adoption and continued use (Zetina-Lozano 1983; WHO Task Force on psychosocial research in family planning 1981). Decreased blood flow may signify a build up of polluted blood within the body (Good 1980), while excessive blood flow may produce weakness (Reissland and Burghart 1988). How the use of modern contraception is perceived to interact with postpartum amenorrhoea and the return to menses has been little studied, but may have important implications for adoption patterns following childbirth.

Breastfeeding is a focal behaviour in the postpartum period and concern over the quality and quantity of the mother's milk is common, and may have far-reaching effects on a woman's behaviour (Reissland and Burghart 1988; Zeitlyn and Rowshan 1994). Concern regarding possible adverse effects on lactation may affect a woman's desire (or her relatives' inclination to allow her) to adopt a method of contraception following birth. In some places research has shown that large numbers of women regard breastfeeding and the use of oral contraceptives as incompatible (Laukaran and Winikoff in Thailand 1985; Zurayk in Lebanon 1981). Less is known about the relationship between use of other methods and lactation.

Anthropological enquiries are an important source of information for those aiming to produce family planning policy recommendations that are sensitive to the local context and appropriate to the needs of the population. However, to date they have tended to remain descriptive, and to ignore differentials between subgroups and trends over time. In addition, many investigations are detached from the policy issues of importance.¹⁵ Their utility is therefore limited. No study could be found that specifically addressed in any depth the issue of adoption of contraception following childbirth. A greater understanding of women's desires, needs and concerns in the period following childbirth, as well as the influences over their behaviour at this important time, is clearly needed.

1.2.6 Current patterns of service provision

In addition to ignoring the 'user's perspective', most recommendations regarding the adoption of contraception following childbirth have been made without reference to the prevailing context of service provision. Family planning providers have rarely been the focus of family planning research and we know very little about their knowledge, attitudes or practices (Simmons and Elias 1994). Nevertheless, it is clear that interactions between service providers and clients can have an important influence, whether positive or negative, on patterns of contraceptive use. Simmons and Elias (1994) have distinguished 'manifest dimensions' of client-provider interactions, which include coverage, frequency, and duration of contacts, as well as quality-of-care elements, and also 'latent dimensions', which are less apparent and are shaped by the status and power relations of those who participate in the encounter. Both these dimensions have been shown to be important determinants of contraceptive use patterns in South Asia (Schuler, McIntosh, Goldstein *et al.* 1985; Phillips, Simmons, Koenig *et al.* 1993; Simmons, Baqee, Koenig *et al.* 1988).

In relation to the uptake of contraception following childbirth very little is known of either the pattern of contacts between providers and clients, or the content of these exchanges (Winikoff and Mensch 1991). Several researchers have asserted that, among providers of contraception, breastfeeding remains largely discredited as a family planning method, second best to the 'superior' modern contraceptives (Zacharias, Aguilera, Assenzo *et al.* 1987; Jennings 1990). However, variations in this view between different cadres of staff, in different settings, and the implications for programmes, have not been investigated. Very little is known about providers' attitudes to the provision of contraceptive methods in the postpartum period. Davies (1985) found that some providers in Bangladesh felt that the oral pill should be started after the return of menses, and Knodel and Chayovan (1989) found reluctance to offer the IUD or injectable to amenorrhoeic women in case they were already pregnant.

The timing and frequency of contacts between potential clients and providers has obvious implications for the provision of contraception following childbirth. It has been argued that the contact between women and providers at the time of delivery should be exploited for contraceptive provision, since it is not repeated in the

¹⁵ It is recognised that many anthropological enquiries may purposefully ignore policy debates, and that their point of departure in studying the belief systems surrounding pregnancy, childbirth and the postpartum period may differ markedly from that taken here. Nevertheless, from the point of view of the present study, this limits their utility.

months following birth (Zatuchni 1968, 1970). However, other research suggests that there may be better opportunities for both counselling and provision of contraceptives at other times (Thapa, Kumar, Cushing, *et al.* 1992; Faundes 1990). Understanding the current pattern of contacts between clients and providers in a particular setting, as well as the potential for new points of contact, for example through integration with other services, is important in making recommendations regarding provision of contraception following childbirth. It should also be borne in mind that a high quality postpartum family planning programme will include more than just the provision of contraceptive methods at one point in time. Attention should also be given to opportunities for motivation, counselling and follow-up care. Moreover, the cost-effectiveness of alternative approaches is an important consideration. The current patterns of provision of contraceptive services to women following childbirth in Bangladesh, and potential for improvement, are described in chapters six and seven.

1.3 Rationale for the study and research objectives

The above discussion has highlighted a range of factors that must be considered in making recommendations for family planning service provision following childbirth. It is insufficient to consider only the potential demographic impact of alternative adoption strategies. In order to ensure that programme approaches are appropriate to the setting in question, attention must be given to the context in which they operate, including the needs and preferences of clients and the prevailing patterns of service provision and utilisation. To date there have been no attempts to take such a holistic approach to the investigation of contraception following childbirth. The present study aims to do so in the context of Bangladesh.

Bangladesh is a particularly appropriate setting for such a study, since breastfeeding and postpartum infecundability have traditionally been among the longest in the world. At the same time, recent years have seen a steady rise in use of modern contraception, largely as a result of a very active family planning programme (Cleland, Phillips, Amin *et al.* 1994). It is of great interest to understand how natural and artificial protection against pregnancy operate to constrain fertility, how the two interact, and how their relative contribution has changed over time.

In Bangladesh, as in many other countries, contraception following childbirth has been given little attention. A recent conference held in Dhaka (BIRPHERT 1993) highlighted the neglect of postpartum care, including contraception, among policy makers and programme managers within the country. There is no explicit, coherent policy regarding the provision of contraception to women following childbirth, and, as discussed in detail in later chapters, confusion and inconsistency is evident among family planning providers. These factors make the present study timely, and should ensure that its findings have relevance to those concerned with family planning in Bangladesh.

The present investigation focuses on two study populations, one rural and one urban, and draws on a range of data sources and methodologies. Quantitative data from longitudinal surveillance systems are used:

- to describe the patterns, differentials and recent trends in natural protection against pregnancy; and
- to describe the patterns, differentials and recent trends in contraceptive use following childbirth.

Qualitative data gathered through in-depth interviews and focus group discussions are used:

- to describe the beliefs, knowledge, attitudes, needs and preferences of women in the period following childbirth;
- to describe the beliefs, knowledge, attitudes, and practices of family planning providers regarding the period following childbirth; and
- to describe the patterns of interaction between providers and clients in the period following childbirth.

The findings from the various data sources are then integrated, and where possible, national data is used to examine the generalisability of findings from the two study populations, in order to address the overall research objectives, which are:

- to describe and explain the current patterns of contraceptive use following childbirth in Bangladesh; and
- to identify ways in which family planning policy and programme approaches can better meet the needs of women following childbirth in Bangladesh.

1.4 Outline of the thesis

Following this introductory chapter, the thesis is set out in six chapters. Chapter two describes the study populations, data sources and methods of analysis used. Chapters three and four present findings from the analysis of the quantitative data, with chapter three focusing on natural protection against pregnancy, and chapter four, the use of contraception in the period following childbirth. The main findings from the qualitative investigation are next presented. Chapter five takes the users of contraception as its focus and describes the beliefs, knowledge, attitudes, needs and preferences of women in the period following childbirth. Chapter six focuses on the family planning providers, describing their knowledge, beliefs and practices. In chapter seven, the findings arising from the quantitative and qualitative data are brought together in order to: explain the current patterns and recent trends in contraceptive use following childbirth in the study populations; explore the potential implications of these patterns and trends for birth intervals and fertility; and highlight important issues for future improvements in postpartum family planning programme approaches in Bangladesh.

Chapter two: Study populations, data sources and methods

2.1 Study Sites: population characteristics and family planning services

The data used in the present analysis come from two populations in Bangladesh, one rural and one urban, both research sites of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDRDB).

2.1.1 Matlab Family Planning and Health Services Project

Matlab is a large *thana*¹⁶ within Chandpur district, situated about 55 km to the southeast of Dhaka. It is a rural, deltaic region, subject to widespread flooding during the monsoon. Around 85% of the population are Muslim, with the remainder being mainly Hindu. The majority of the population are engaged in agricultural activities, whether as farmers of their own land, share-croppers, or labourers (BRAC-ICDDRDB 1994). A survey conducted in 1990 showed that around 30% of women were literate (Koenig, Rob, Khan *et al.* 1994), and the figure for men is around 40% (BRAC-ICDDRDB 1994).

Matlab has been the site of public health research since the 1960s, when it was selected by the Cholera Research Laboratory for its field trials. In 1977, the Matlab Family Planning and Health Services Project (FPHSP), now called the Maternal and Child Health Family Planning Project (MCH-FP Project),¹⁷ was launched in order to test whether an intensive family planning program could succeed in the absence of extensive socio-economic development. Half the villages in the study area, that is 70 villages with a population of 89,000, were designated as the treatment area and received intensive services, whilst the rest, a further 79 villages with 85,000 people, comprised the comparison area receiving only government services (Koenig, Phillips, Simmons *et al.* 1987). Young, married women (Community Health Workers, CHWs) were recruited and trained to visit households in the treatment area fortnightly for the promotion and delivery of a range of contraceptive services. The treatment area was divided into four blocks each served by 20 CHWs and a clinic staffed by a full-time paramedic. In addition, a hospital was established for referral, which is located near to the main town of the area, Matlab Bazaar. A management support structure was also set up to enhance fieldworker credibility and reduce organisational barriers to fieldwork. Over the years, an increasingly wide range of family planning and health services have been provided to the treatment population, primarily through the door-to-door CHWs. Oral pills, condoms and injectable contraceptives are provided in the home.¹⁸ Despite limited economic or social change since the inception of the project, there have been significant changes in the fertility and mortality patterns in the Matlab treatment area over the past 20 years (Fauveau and Chakraborty 1994). In 1990, the contraceptive prevalence rate in the Matlab treatment area was 57%, compared to 27% in the comparison area, and the total fertility rate in the treatment area was 3.5 births, compared to 5.2 births in the comparison area. Infant mortality and maternal mortality rates are also lower in the treatment area than in the comparison area.

¹⁶ A '*thana*' is an administrative area. Matlab *thana* has a population of around 400,000.

¹⁷ Throughout the thesis, 'Matlab' is used to refer to the treatment area of the MCH-FP Project, unless otherwise stated.

¹⁸ Further information on the provision of family planning and health services is presented in the chapters that follow where relevant.

2.1.2 Urban Health Extension Project's working area

The Urban Health Extension Project (UHEP), formerly the Urban Volunteer Programme (UVP), of the ICDDR,B, was a health and family planning research project which worked in the slum communities of five of the 14 *thana*¹⁹ of Dhaka city.²⁰ The target population for the UHEP was located through the slum survey of 1991, in which 809 slums and squatter settlements, comprising approximately 68,000 households, were identified (Arifeen and Mahbub 1993). The slum population was found to be roughly evenly split between government and private land. The settlements were characterised by high population density, flimsy construction materials, shared water sources and latrines, poor sewerage and drainage facilities, and irregular rubbish collection (Jamil, Baqui, Nahar *et al.* 1994). An estimated 46% of the slum population were below 15 years of age. Education levels were poor, with only 13% of adult women and 33% of adult men having any formal schooling (Jamil, Baqui and Dearden 1993). Family planning services are provided to slum residents of Dhaka city by both the government and non-government organisations through home visitors, satellite clinics, and static clinics. In addition, condoms and pills can be obtained from pharmacies, which are widespread. Contraceptive use patterns among urban slum dwellers have been found to be more similar to those of the rural population than to the rest of the urban population. The USS baseline survey found very high levels of awareness of family planning methods, but a contraceptive prevalence rate of just 36% (Jamil, Baqui and Paljor 1993).

2.1.3 Rationale for selecting the study populations

The two study populations were selected partly out of convenience, and partly because they offered the possibility of exploring the issue of postpartum contraception in two settings with contrasting socio-economic conditions and patterns of family planning service provision. It was felt that the process of drawing comparisons between the different populations would better enable the study to illuminate the issues of interest. However, there were advantages and disadvantages to choosing the Matlab treatment area and the UHEP areas, as the sites for the study.

The most obvious advantage is that a comprehensive and high quality longitudinal data base was available in both areas, as described in more detail below. These surveillance systems allowed the investigation of relationships that are difficult to explore with cross-sectional survey data and, indeed, the analysis of trends over time performed for Matlab would not have been possible for any other population in Bangladesh. In addition to enabling complex analysis using quantitative data, the surveillance systems allowed the identification of cases of interest for in-depth investigation.

As well as the surveillance system, other advantages to working in Matlab can be identified. In many cases, the patterns and trends observed in Matlab may be considered indicative of future changes in the national

¹⁹ A *thana* is an administrative area of the city covering a population of approximately 300,000.

²⁰ The UHEP has now been succeeded by the MCH-FP Extension Project (Urban) which is working in partnership with the NGO, Concerned Women for Family Planning, and the government bodies, Dhaka City Corporation, the Ministry of LGRD&C and the Ministry of Health and Family Welfare.

population. Moreover, with regard to service provision, the Matlab MCH-FP Project has been a forerunner, and has had an important impact on national programmes. On the other hand, conducting research in the Matlab area has certain limitations which should be acknowledged. Though the project in Matlab was initially set up as a site where programme interventions could be tried and lessons learnt for the rest of Bangladesh, and it is still argued that Matlab remains isolated and essentially unchanged in terms of socio-economic development over the past 15-20 years, the impact of the MCH-FP Project has been great. As the analysis which follows shows, there are important ways in which the population of Matlab now differs from the majority of rural Bangladesh. This does not imply that research findings from Matlab have no relevance to the rest of the country, but it does mean that caution is needed in extrapolating results.

During the past decade, Bangladesh has experienced a rapid increase in urban population. In 1991, 20% of Bangladesh's population were living in urban areas, and the urban population was growing at a rate of 6% per year. Dhaka, the capital and largest city in Bangladesh, has an estimated population of over six million, of whom around one third are living in slums (Bangladesh Bureau of Statistics 1994). This large and growing urban poor population has been relatively neglected in fertility and family planning research, and is generally under-served and disadvantaged. Selecting the UHEP working areas as a site for the present study therefore presented an opportunity to learn more about an important section of Bangladesh's population about which little is known in terms of family planning, as well as one which contrasts sharply with the rural population of Matlab. It should be pointed out, however, that the urban slum population of Dhaka may have particular characteristics which mean that findings cannot be extrapolated to poor urban populations in other parts of Bangladesh. The focus on slum communities in Dhaka also means that the findings presented do not relate to the urban population of Dhaka as a whole. Therefore, although the investigation included a rural and an urban population, caution is warranted in extrapolating findings to other rural and urban areas of Bangladesh.

2.2 Research approach

Though demographers have traditionally concerned themselves with large samples drawn from censuses or structured surveys, recent years have seen increasing use of quasi-anthropological tools, and a mixing of methods in the investigation of demographic phenomena (see for example Knodel, Chamrathirong and Debavalya 1987; Trussel, Van de Walle and Van de Walle 1989; Lewando Hundt and Forman 1993; Bennett 1993). The present study took such an approach, making use of a diverse range of data sources to address the research objectives. The rationale for such a study design was that the analyses of different types of data from different sources would be complementary, each bringing with it certain strengths and weaknesses (Brannen 1992).

Qualitative data were gathered through in-depth interviews and focus group discussions. One strength of this type of research is its ability to take a broad, holistic view, rather than to focus on narrow predetermined hypotheses. Describing individual factors in isolation runs the risk of bias and misinterpretation. Therefore, a qualitative approach to investigation often concerns itself with process, and multiple, interrelated factors are usually explored simultaneously. Moreover, the methods are dynamic, evolving as the research proceeds, thus enabling the pursuit of new ideas as they emerge. However, the nature of qualitative methods means that

information is collected from relatively small samples, and a lack of generalisability is a common criticism levelled at this type of research. In contrast, one of the strengths of quantitative survey methods is that data is collected from large samples, representative of the wider population.

The present study aimed to interweave quantitative and qualitative data in order to illuminate the issues of interest. Qualitative methods were appropriate for gathering the variety and depth of data needed to explore the understandings of family planning users and providers that shape behaviour in the postpartum period. Many of the issues of interest were sensitive and complex, and did not lend themselves easily to investigation via survey methods. Though qualitative research methods can produce interesting insights, they have limited utility if they are not compared or contrasted with other data, and related to the current issues facing researchers and policy makers. It was therefore felt necessary to use quantitative data to provide a context in which to interpret the importance and relevance of the qualitative findings. It was also important to be able to describe the patterns and differentials in key variables in the study populations at large, and to explore the correlates of key outcomes of interest, in a statistically representative sample. However, since the analysis of quantitative data may overlook relevant information and risk misinterpretation, the qualitative data were employed in explaining and understanding the patterns and differentials observed.

2.3 Quantitative data sources

2.3.1 Quantitative surveillance systems²¹

The Record Keeping System (RKS) of the MCH-FP Project, Matlab

Throughout the treatment area of the MCH-FP Project, the CHWs use field registers (called Service Record Books, SRBs) to record information regarding married women of reproductive age (15-44 years) and their children aged under five years, as they make their routine service visits. When a woman enters the treatment population for the first time, baseline information is recorded. Thereafter, a longitudinal record of each woman's monthly reproductive, contraceptive, and lactational status is available, together with other health-related information and background data. Once computerised, the Matlab RKS data provide a unique opportunity to investigate diverse health and family planning issues. As well as the longitudinal, monthly records, a number of in-depth surveys and censuses have been carried out over the past 20 years, which have collected detailed information on areas of particular interest, and serve as a check on the routine data collection.

The Urban Surveillance System (USS) of the Urban Health Extension Project, Dhaka

In 1989, a survey of the fourteen *thana* of the Dhaka Metropolitan Area was carried out in order to identify slum settlements. In this survey, slums were defined as groups of ten or more households having predominantly poor housing, very high population density, poor facilities (water, gas, rubbish removal), and poor sewerage and drainage. Within a defined slum settlement, a slum household was defined as one which used a shared latrine and shared water source.

²¹ While on secondment to ICDDR, the author worked as a member of the teams responsible for the development and maintenance of these surveillance systems.

Slum households resident within five *thana* were the target population of the UHEP. The USS was based on multistage area sampling within these five *thana*, where the sampling units were small areas called 'clusters', of average size 33 households, with well-defined cluster boundaries. A sampling frame was created by mapping all the slums in the selected *thana*. The slums were then stratified into nine strata based on aggregate sanitation and water conditions (using information collected from a random sample of households). 168 sample clusters were selected from these strata using the PPS sequential method,²² to form the original sample of the USS (Sunter 1986).

The initial sampling resulted in less households than anticipated, and it was also evident that the original survey in 1989 had seriously under-counted the number of slums. Therefore, in 1991, the Dhaka Metropolitan Slum Survey (DMSS-1991) was carried out as an update to the 1989 survey.²³ Since the methodology used in the initial USS sampling offered ways to avoid resampling, it was possible to use the updated information from the DMSS-1991 to select an additional 92 clusters for the USS sample.²⁴ During the course of data collection, households were retained within the USS sample as long as they continued to reside within the selected clusters and a two month residency criteria was applied to new in-migrants.²⁵

Following household registration and a baseline survey (phase one of which took place January-April 1990, and phase two, August-December 1990), three-monthly demographic surveillance was started in April 1991 in the original clusters. From January 1992 to June 1994, three-monthly demographic surveillance was maintained in all the 243 clusters, containing around 8,000 households (Baqui, Jamil, Jahangir *et al.* 1994). Demographic, family planning and health-related information was collected routinely on a three-monthly cycle. In addition, special surveys, addressing particular issues of importance, were fielded from time to time.

2.3.2 Quantitative datasets

Matlab RKS

The RKS data analysed in the present study was gathered through the existing data collection system described above. The main body of data consisted of seven, two-year cohorts of women who had a live birth in the Matlab treatment area in 1978-9, 1980-1, 1982-3, 1984-5, 1986-7, 1988-9 and 1990-1.²⁶ For each live birth, the woman's monthly reproductive and contraceptive records for the 36 months following the birth were

²² This method has the advantage of simplicity, unbiased variance estimation (Sunter 1989a) and capability of being updated (Sunter 1989b). Exact details of the sampling method employed are available in UHEP documentation notes (Jamil, Baqui and Nahar *et al.* 1994).

²³ The DMSS-1991 survey identified 894 slums (and 66,914 households) in the five *thana*, compared to the 132 slums (and 30,000 households) that had been identified in the 1989 survey. However, quality checking again suggested that some under-counting had occurred.

²⁴ At this stage, the stratification by water and sanitation characteristics that had been used earlier was deemed to be unnecessary (since it did not appear to significantly improve the representativeness of the sample) and was therefore abandoned.

²⁵ Various rules and procedures were developed to ensure consistency in the solutions to field level complications such as boundary changes, movements of households within the clusters, demolition of clusters, and so on. Details of these can be found in Jamil, Baqui, Nahar *et al.* (1994).

²⁶ In the few cases where a woman had two live births within a two year period, both these records were included in the cohort. The number of women for whom this was the case was as follows:

1978-9: 151; 1980-1: 170; 1982-3: 71; 1984-5: 164; 1986-7: 147; 1988-9: 132; 1990-1: 99.

In the case of twin births, only one record was created.

extracted from the RKS database. For the cohorts 1978-9 to 1986-7, the monthly lactation records for the 36 months following the birth were also extracted, though this information was unfortunately not available for the 1988-9 and 1990-1 cohorts.

In creating the final data files for analysis, a number of cases had to be dropped due to missing data or inconsistencies. In some cases, the first few months information was found to be missing, possibly because the birth occurred outside the treatment area. In cases where more than two months of information were missing consecutively, the record was dropped. The data files were created by merging information on the date of birth of the child with information on the mother's reproductive and contraceptive status. Information relating to children and mothers are stored in separate database tables of the RKS, and up to July 1990, were collected using separate forms in the field. This means that inconsistencies arise. In cases where more than two months of data were found to be inconsistent, the record was dropped.²⁷ As well as the monthly records of reproductive, contraceptive and lactational status, background variables describing the woman's education, religion, and socio-economic status were included on the files.²⁸ The sample sizes of the cohorts were: 1978-9: 5,558; 1980-1: 6,152; 1982-3: 6,240; 1983-4: 5,593; 1986-7: 5,875; 1988-9: 6,136; 1990-1: 5,483.

For the majority of the analyses, the 1990-1 cohort provided the most recent data, and was therefore used to describe the current picture in the Matlab treatment area. However, in the case of breastfeeding, the most recent data available were for the 1986-7 cohort. In addition, data from the cohorts 1978-9 to 1990-1 were examined to describe changes over time. Analyses of pregnancy risks following birth, described in chapter three, used data from the 1978-9 cohort, since a cohort with low levels of contraceptive adoption was needed. Appendix 1 presents basic frequencies for the seven cohorts.

Dhaka slums USS

One cohort of women was analysed from the USS. The target population for this part of the study can be considered to be all women who had a live birth between April 1992 and June 1993 in slum areas of the target *thana* of the UHEP.²⁹ The sample population should therefore include all women who had a live birth between April 1992 and June 1993 in the sample clusters of the USS. However, the final sample excludes two groups of women. Firstly, an unknown number of live births that occurred in the sample clusters during this time were unidentified by USS interviewers. Secondly, a known number of live births that occurred in the sample clusters during this time and were identified, were excluded from the sample because it was not

²⁷ The number of cases dropped because of inconsistent or missing data were:

1978-9: 229; 1980-1: 292; 1982-3: 353; 1984-5: 326; 1986-7: 180; 1988-9: 386; 1990-1: 138.

²⁸ For the cohorts 1978-9 to 1986-7, the information on socio-economic status was obtained from the 1982 census records. For the later cohorts it was obtained from the RKS records, since this information was incorporated directly into the SRB from 1990 onwards. Information on education and religion was obtained from the RKS baseline records. Information on desire for additional children was available for the 1990-1 cohort since this was collected once every one and a half years from March 1989 onwards.

²⁹ This time period was selected for two reasons. Firstly, it was calculated that around 1,200 births would be born within this period of 15 months. Based on assumptions about the likely rate of loss to follow-up, it was calculated that the proportion of women still amenorrhoeic at 12 months postpartum could be estimated with a standard error of around 0.015, which was considered to be sufficiently precise. Secondly, the USS was due to end in June 1994, which would mean that all women in the sample would have a minimum of twelve months follow-up (assuming they remained within the USS sample clusters).

possible to collect any information for these cases, because of out-migration, absence at the time of interview, or late reporting of the pregnancy outcome.³⁰

Since the USS did not routinely collect information that would allow the calculation of duration of postpartum amenorrhoea and time to the adoption of contraception, a special add-on questionnaire was designed by the author to collect these data (see Appendix 2). The questionnaire was administered to each woman, at each three-monthly visit following the birth until any one of three possible endpoints: resumption of menstruation *and* initiation of contraception; conception; or loss to follow-up (due to out-migration from the cluster, or absence from the household for two consecutive visits). A total of 1,201 women were reported to have had a live birth in the period April 1992 to June 1993, of which 1,151 were successfully followed up and received the special questionnaire at least once. The remaining 50 women were lost to follow-up before the questionnaire could be administered. The information gathered from this add-on questionnaire was linked to the routine USS data. In this way, information on the woman's pregnancy status, her contraceptive status, and visits by family planning personnel was available for each round following the birth. In addition, baseline demographic, educational and socio-economic data relating to the woman and her household were available. The longest period of follow-up possible in the absence of out-migration was 27 months (beginning of April 1992 to end of June 1994), and the minimum 12 months (end of June 1993 to end of June 1994).

Table 2.1: Summary of information available from the Matlab RKS and USS

Matlab RKS	USS
For all cohorts:	
date of live birth outcome	date of live birth outcome
monthly reproductive status (for 36 months postpartum)	time to first menses postpartum
monthly contraceptive status (for 36 months postpartum)	time to first use of contraception postpartum
woman's age, education, religion	first method of contraception used postpartum
woman's number of living children and sons	current contraceptive status (every three months)
socio-economic status indicators	current reproductive status (every three months)
	visits by family planning and health personnel
For 1978-9 to 1986-7 cohorts only:	
monthly lactational status (for 36 months postpartum)	woman's age, education, religion
	woman's number of living children and sons
For 1990-1 cohort only:	
desire for additional children	socio-economic status indicators

³⁰ The exact number of live births that were unidentified cannot be estimated. However, coverage statistics for the USS show that data were collected from 75%, 73%, 77% and 76% of all households including an eligible women during the four rounds of data collection for which birth outcomes for the study cohort were recorded. There are a number of reasons why it is unlikely that large numbers of live births occurring within the clusters would go completely undetected. Firstly, interviewers record information on pregnancy status and therefore know which women are expecting to deliver a child. Secondly, information on vital events is collected from any adult member of the household who is present, not only eligible women. Thirdly, if a household is missing in one or more rounds, any demographic events that have occurred in the interim period are recorded in the subsequent data collection visit. Finally, if a woman delivers her child in the cluster it seems unlikely that she and her household would out-migrate from the cluster in the immediate period following the birth.

Table 2.1 summarises the information that was available from the Matlab RKS and the USS, while Table 2.2 presents basic descriptive frequencies for the Matlab 1990-1 and USS 1992-3 study cohorts.

Table 2.2: Descriptive frequencies for the Matlab 1990-1 and USS 1992-3 study cohorts

	Matlab 1990-1		USS 1992-3	
	N	%	N	%
Living children				
1-2	3078	56.1	625	54.3
3-4	1708	31.2	354	30.8
5+	694	12.7	172	14.9
missing	3	0.0	0	0.0
Age (years)				
<20	566	10.3	250	21.7
20-24	1834	33.4	389	33.8
25-29	1693	30.9	263	22.8
30+	1390	25.4	249	21.6
missing	0	0.0	0	0.0
Religion				
Muslim	4587	83.7	1096	95.2
Hindu	864	15.8	55	4.8
other	1	0.0	0	0.0
missing	31	0.6	0	0.0
Education				
none	2929	53.4	921	80.0
some	2225	40.6	230	20.0
missing	329	6.0	0	0.0
Household area (sq feet)³¹				
<300	4393	80.1	-	-
300+	1017	18.5	-	-
missing	73	1.3	-	-
Asset score³²				
0	-	-	290	25.2
1	-	-	424	36.8
2	-	-	252	21.9
3	-	-	184	16.0
missing	-	-	1	0.1
Total	5483		1151	

³¹ A measure of socio-economic status.

³² A composite indicator of asset ownership was used as a measure of socio-economic status:

$$\text{asset score} = (\text{table or chair}) + \text{bed} + \text{cupboard}$$

where household ownership of any one of the items gives a score of 1, versus 0 if the item is not owned. A recent analysis of a varied range of variables collected by the USS has shown this score to be a useful indicator of socio-economic status and one that is strongly associated with current contraceptive use (Kiggins 1994).

2.3.3 Data quality

In the chapters that follow, additional issues relating to data quality are discussed where relevant. However, a number of general points should be mentioned here.

Data collectors

In the RKS, data is collected by CHWs, the service providers in the area. On the one hand this may mean that familiarity with respondents and good rapport increases the quality of the data collected, in that respondents may be less inclined (and less able) to conceal information. Moreover, the fact that the data assist the CHWs in their work, as well as being used for research, may mean that CHWs take more care than routine interviewers to ensure that the information recorded is accurate. Conversely, using service providers to collect data for research purposes has potential problems. CHWs may misreport information that could reflect badly on their performance, such as a method failure, or discontinuation. In addition, CHWs may not always appreciate how the data will be used for analytical purposes and may introduce errors or biases without being aware of them.

In the USS, data were collected by a team of 14 specially trained interviewers. Their familiarity with the women they interviewed was by no means as great as that of the CHWs in Matlab and this may have affected data quality. However, their lack of service provision duties may have meant that the interviewers themselves were less likely to introduce errors into the data collected.

Consistency over time

The RKS has been maintained in Matlab since 1977. Though this offers the potential for unique longitudinal analyses, it also brings problems. Over the years, there have been numerous changes to the system, and at different points in time different types of information have been the focus of attention. Coding schemes, definitions, and field procedures have not always been consistent (Roy, Haque and Rahman 1994). These factors mean that caution is required in analysing the data from different cohorts, in order to ensure that the trends described are not spurious, and real patterns are not obscured. In the present study, a great deal of time was spent with the RKS field staff and programmers in order to minimise the effect of these potential problems on the analysis. In addition to changes in the way the RKS has been operationalised, repeated questioning of the same respondents may have an effect on the information gathered. Over time, respondents may increasingly give 'politeness responses', in order to conform to the expectations of the CHW. However, in the case of the present study, it is unlikely that this would seriously affect the key variables of interest.

The USS was maintained for just two and a half years, suggesting that problems of data consistency are likely to be far less than in the RKS. In addition, the author was present during the period of data collection, which meant that it was possible to participate in training and field supervision to ensure consistency between interviewers, and over time.

Recall

Since the data collected in the RKS are prospective in nature, with CHWs visiting households every month,³³ and recording information on the woman's reproductive, contraceptive and lactational status at the time of the visit, they are largely free from recall errors and biases. In contrast, USS visits were made to each household on a 90 day cycle. Respondents were questioned about the events in the previous three months, including the timing of menses resumption and adoption of contraception, if these events had occurred. Recall errors are therefore likely to be greater in the USS data, though a three month recall period is not long, and experience in the field suggested that women could remember the timing of the events of interest without too much difficulty. In cases where a woman was absent for two consecutive rounds, the record was terminated at the time of last data collection, since it was felt that the period would be too long for accurate recall of the information.

Follow-up

In both the RKS and USS, women were followed after childbirth and information recorded on their reproductive and contraceptive status as the time since birth passed. During the period following birth, some women were inevitably lost from the samples, through death and out-migration. In addition, in cases where information was missing for more than a certain period of time, the record for that woman was terminated. In the case of the RKS datasets, records were terminated where there were three or more consecutive months of missing information. In the case of the USS, data collection was terminated if the woman was absent from the household on two consecutive visits.

Extensive use of life table methods was made during analysis which enabled the inclusion of censored observations. In performing an analysis where some cases are censored, the assumption is that the women who are lost to follow-up early are not systematically different from those for whom complete information is available. That is, one assumes that the variable being explored is not associated with the likelihood of being lost to follow-up. Where large numbers of cases are censored, this assumption may be questionable, and it may be unreasonable to conclude that the estimates obtained are representative of the target population.

In the USS areas, the population is highly mobile, and rates of loss to follow-up were high compared to the RKS. For example, 24.8% of the women in the USS 1992-3 cohort had been lost to follow-up by the end of the first year after childbirth, compared to just 6.8% of the women in the RKS 1990-1 cohort. The USS was designed in such a way that households which migrated out of clusters were replaced in the sample by the households that migrated in. This procedure was employed, firstly to maintain an adequate sample size, and secondly, to maintain a representative sample. It was assumed that the households moving in and out of clusters would share common characteristics, in that they are all members of a subgroup of 'frequent movers'. Though this may mean that, at any one point in time, the sample is reasonably representative, it does not overcome the problem of loss to follow-up when examining longitudinal data, as in the present study. An examination of characteristics of the women who were lost to follow-up early, compared to those who were

³³ CHWs in fact visit households every fortnight. At the first visit each month, information relating to the eligible women in the household is recorded, and at the second visit the information relating to the children under five years is recorded.

not, suggested that there was no significant difference between the two groups in age, number of living children, number of living sons, or educational status. However, there was evidence to suggest that the women lost to follow-up early were from households of lower socio-economic status than those who remained in the sample.³⁴ Since socio-economic status is strongly associated with patterns of contraceptive use in Bangladesh, caution is needed in extrapolating the results to the whole of the urban slum population.

Measurement of key variables

As with many investigations, several of the variables of interest, including the duration of postpartum amenorrhoea, timing of conception, and breastfeeding status, are not easy to measure. In the case of the secondary data used, no control could be exercised over the way the data were collected. Indeed, much of the data used from the RKS had been collected many years prior to the author's arrival in Bangladesh. In the case of the special add-on questionnaire administered through the USS, the author was able to exert some influence over the process of data collection. Inevitably, there were issues of data quality outstanding, which had to be handled as best possible at the analysis stage. These issues are discussed in detail where appropriate in the chapters that follow.

2.3.4 Analysis techniques

Throughout the analysis of the quantitative data, extensive use of life table methods was made. In addition, the multivariate techniques of logistic regression, and Cox's proportional hazards regression were employed. These analysis techniques are described in detail in the chapters that follow. The statistical software packages used were SAS (SAS Institute Inc.) and Stata (Stata Corporation 1993).

³⁴ Households where the woman was lost to follow-up within the first 12 months postpartum were found to have significantly lower asset scores than those where the woman was not lost to follow-up. The chi-squared statistic comparing the distribution between four categories of asset score (0, 1, 2 and 3) was 24.9 ($p < 0.001$). Among the households where the woman was lost to follow-up, 33% had an asset score of '0', indicating that they owned none of the assets (table, chair, wardrobe or bed). Among the households where the woman was not lost to follow-up this figure was 23%.

Table 2.3: Numbers of in-depth interviews and focus group discussions carried out in Matlab and Dhaka

	Matlab	Dhaka
In-depth interviews with users	39	34
In-depth interviews with providers	17	50
Focus group discussions with providers	4	0

2.4 Qualitative data sources

2.4.1 Research methods and informants

In-depth interviews and focus group discussions were the main tools used in the present study to gather qualitative data. These were employed by the author with the help of one main research assistant, and three other interviewers. A series of in-depth interviews was carried out with women resident in Matlab and the urban slums of the UHEP working area. RKS and USS records were used to identify women who had adopted contraception following their last birth, and these women were then located and interviewed. Family planning providers working for the MCH-FP Project in Matlab, and for government and NGOs serving the UHEP areas, formed the second group of informants. In-depth interviews were conducted with providers in Dhaka, and in Matlab, both in-depth interviews and group discussions were employed (see Table 2.3).³⁵ Question routes were developed to guide the interviews and group discussions, however, these were flexible, and were adapted as the research process proceeded (see Appendix 3 and Appendix 4).

2.4.2 Schedule of qualitative data collection

As shown below, the process of qualitative data collection was gradual and iterative. Time was devoted to quantitative data analysis in between periods of fieldwork, which allowed the findings from the two approaches to be fed into each other.

1993

January - March	Initial exploratory fieldwork in the urban slums. ³⁶
July - August	First phase of fieldwork with urban family planning providers.
November - December	First phase of fieldwork with urban users.

1994

January - February	First phase of fieldwork with Matlab providers and users.
March - April	Second phase of fieldwork with Matlab providers and users.
February - May	Second phase of fieldwork with urban users.
April - May	Second phase of fieldwork with urban family planning providers.
June - December	Occasional follow-up field visits.

³⁵ Further information on the selection of respondents is presented in chapters five and six.

³⁶ Findings from an initial set of exploratory interviews are not presented directly in the present thesis, though they provided important background knowledge for the subsequent fieldwork. These preliminary findings have been reported elsewhere (Salway, Jamil, Nahar *et al.* 1993).

2.4.3 Analysis techniques

As fieldwork proceeded, the author sorted and organised the data in order to identify local terminology, and distinguish common themes and meaningful categories. Discussion sessions followed with the other research staff in which the data were evaluated in light of previous experience and observations during fieldwork, in order to reach a common interpretation of the available information. In addition, Epi Info (CDC 1994) was used to maintain two simple databases, one for providers and one for users, where the informants' background characteristics and responses to key questions were summarised. These were later used to produce basic frequencies and cross-tabulations. Once recordings of interviews and discussions had been transcribed and translated, textual analysis was performed by the author using the cutting and pasting facilities in a word processing package. Further discussion sessions took place with the main research assistant during the final analysis and writing-up stages.

2.4.4 Data quality

In considering sources of error and bias in qualitative investigation, the discussion of validity by Hammersley (1990) is useful. Hammersley suggests that, since replication of qualitative studies is difficult, if not impossible, and there is no foundation of knowledge against which qualitative findings can be validated, the only basis left upon which to make an assessment is our own judgement of the likelihood of error. He sets out three steps in assessing the validity of qualitative claims. The first is to consider the plausibility of the claim; that is whether it is likely given our existing knowledge. The second is to consider whether the researcher's judgement is likely to be accurate given the nature of the phenomena and the conditions of the investigation; something that Hammersley calls 'credibility'. Finally, since it is often the case that the claim is neither sufficiently plausible, nor sufficiently credible, to be immediately accepted, evidence is needed to support the validity of the claim. Any such evidence must itself be assessed in terms of its plausibility and credibility. Though these steps were originally suggested as an aid to those reading and assessing ethnographic accounts, during the course of the qualitative fieldwork, analysis and interpretation for the present study, they were used as a guide for improving the validity of the claims made.

Plausibility

In assessing the plausibility of the findings from the qualitative fieldwork, three main sources of existing knowledge were employed. Firstly, much reference was made to previous research that had been conducted on related topics in Bangladesh, and consultation with other qualitative researchers working on similar issues was found to be very useful. Secondly, the experience and existing knowledge of the field team, all of whom had several years working experience in the field of family planning research in Bangladesh, was an important backdrop against which to assess the plausibility of new findings. Thirdly, findings from the quantitative data analysis were compared and contrasted to those from the qualitative work. In some cases discrepancies were highlighted, at other times gaps in our understanding were identified.

Credibility

In order to increase the credibility of the claims being made from the qualitative work, the process by which these claims were produced needed careful consideration. Hammersley (1990) suggests that there are three general sources of error. The first is the problem of reactivity, where the research process or the characteristics

of the researcher may have an effect on the behaviour observed or the reports received. The second arises because of the nature of the phenomena under investigation; in some cases inferences about a phenomenon are less likely to be subject to error than others. Finally, the characteristics of the researcher herself, and the conditions under which the research was carried out, may introduce bias and misinterpretation. Field notes can never be exhaustive, comments are interpreted differently by different people, and a process of selection occurs in the presentation of data gathered during fieldwork.

While conducting fieldwork with users of family planning in both Matlab and Dhaka, the author was clearly perceived as foreigner. On the whole this meant that respondents were extremely hospitable and willing to spend time in conversation. During the course of fieldwork, a number of interviews were conducted in the absence of the author, and no obvious difference in the openness of the respondents or type of information gained was observed. This does not of course rule out the possibility that the researchers had an influence on the responses received. The Bengali research assistants were also perceived as rich outsiders, and their presence could just as easily have affected the information that was provided. In Matlab, the researchers were perceived by the community women to be working for the ICDDR, the organisation providing health and family planning services in the area. In Dhaka, the researchers stated that they were working for 'Cholera Hospital', the local name used for ICDDR, which is in general a well-respected organisation. In both cases, the researchers were identified as being associated with the provision of family planning services. This may have made respondents reluctant to be critical of the services they receive, and encouraged them to provide the answers they think the providers of family planning services would want to hear. The research team were conscious of this potential problem and employed a variety of questioning techniques, as well as caution in the interpretation of respondents' comments.

In the case of the providers, some respondents may have seen the interviews as a kind of test, and may therefore have provided answers that reflected their organisation's policy or what they had been taught, rather than their actual behaviour in the field. Interviews and discussions were always preceded by an introduction that aimed to reassure respondents that their comments were confidential, that we were not looking for right answers, but rather their opinions and experience, and that the interview was in no way a test of their own personal competence. In Matlab, the researchers were viewed as insiders, the respondents were used to participating in research studies, and the programme manager was very supportive of the study and encouraged the respondents to speak openly. In Dhaka, mixed attitudes toward the value of research were evident, and it was clear that, in some cases, respondents were nervous and reluctant to discuss certain topics. In both settings there was some evidence to suggest that the responses received may not always have reflected actual practice. In Matlab, the combination of group discussions and individual interviews proved useful for gaining insights into areas of confusion and inconsistency in behaviour. Group discussions could not be arranged in the urban setting due to logistical problems, but would have been a useful additional source of information.

Some of the phenomena under investigation in the present study are believed to be more open to error in interpretation than others, and in some cases satisfactory conclusions could not be drawn from the fieldwork conducted. For example, in the case of providers, it was found difficult to draw conclusions regarding differences or similarities in the treatment of different socio-economic subgroups by the family planning

workers. Though a research methodology that employed observation techniques as well as interviews might have yielded more information on this issue, it seems likely that this is an area where the risk of misinterpretation is relatively high. Similarly, during fieldwork with contraceptive users, it became apparent that making claims about how decisions regarding contraceptive use are made is an area where the likelihood of misinterpretation may be high. The process of decision-making is complex and dynamic, and may involve numerous actors. Although these problems mean that some of the conclusions drawn are tentative, investigation of the main issues of interest was relatively straightforward, and the majority of claims are presented with confidence.

With regard to the possibility of error and bias being introduced by the researcher and the conditions under which the research was carried out, a number of comments should be made. Though the author was conducting fieldwork outside her home country and this undoubtedly increases the possibility of misinterpretation, she had been working in Bangladesh for two and a half years prior to initiating the main fieldwork, was able to speak Bengali well, and had previously conducted similar fieldwork on related issues. The author participated as an observer and note-taker in the majority of interviews in both the urban and rural settings, and in the case of the providers, the author conducted a number of the interviews personally. However, since the possibility of bias and misinterpretation was acknowledged, the author worked closely with a Bangladeshi research assistant in a continual process of sharing of ideas and discussion throughout the period of fieldwork, analysis and writing-up. In addition, a number of other research assistants participated in interviews and group discussions. This gave the opportunity for discussion and debate. Therefore, although the author took the major role in conceptualising the research issues, designing the data collection tools, and synthesising and interpreting the data gathered, there was a great deal of feedback and discussion with other individuals who were closely involved with the research process, and every effort was made to seek clarification of confusion or inconsistencies. In order to minimise the effect of recall error, interviews and discussions were tape-recorded and later transcribed in full. Following transcription by research assistants, translation of all interviews was carried out by the author with assistance from the other field staff who had participated in the interviews and a specially hired translator. Notes were also taken during the interviews and discussions, and face-sheets³⁷ and interview evaluation forms completed to provide additional information of relevance in interpreting the data (see Appendix 3 and Appendix 4). The fieldwork itself was an iterative process. Interview and discussion guidelines were developed and adjusted as the fieldwork proceeded and understanding increased. Periods of fieldwork were conducted alternately in Dhaka and Matlab, which gave the opportunity to compare and contrast findings. Where necessary, respondents were revisited to clarify certain points, or to gain further detail on issues of interest. Despite these efforts, as discussed further in the chapters that follow, there were inevitably some areas where the knowledge gained is felt to be incomplete and findings presented are somewhat tentative.

³⁷ The term 'face-sheet' refers to a simple form used to record background information about respondents.

Evidence

In presenting evidence in support of the claims made, a variety of techniques have been used. Firstly, the tape-recording of interviews and discussions offered the possibility of presenting the words of informants directly, and liberal use of quotations has been made in chapters five and six. As well as quotations, counts have been presented where it was felt useful to give an indication of the frequency of certain types of responses. It was also possible to use triangulation, in that data collected separately through fieldwork with providers and users were compared and contrasted. Findings from the urban and rural settings were also compared, and, in Matlab, the use of in-depth interviews as well as group discussions with family planning staff, provided an opportunity for triangulation. Results from the quantitative analysis were also compared and contrasted with the qualitative findings. Generalisations from the cases studied to the broader population have been made with caution, and factors that may make such generalisations dangerous are discussed further below.

The above discussion of validity is not exhaustive, and these issues are revisited in the chapters that follow where relevant. However, it is intended to illustrate the types of concerns that were borne in mind during the qualitative component of the study.

Chapter three: Natural protection against pregnancy following childbirth

3.1 Introduction

Despite relatively limited information, it is clear that durations of postpartum infecundability in Bangladesh have traditionally been among the longest in the world. Early studies showed very long intervals between births in the absence of use of contraception (Hobcraft and McDonald 1984). Though surveys have not always collected data on the duration of sexual abstinence practised following birth, available evidence suggests that relations resume fairly soon after the delivery, usually within two months (Maloney, Aziz and Sarker 1981).³⁸ Thus, traditionally long birth intervals are largely explained by the extended durations of postpartum infecundity. Chen, Ahmed, Gesche *et al.* (1974) estimated the mean duration of postpartum amenorrhoea to be around 17 months for a cohort of women giving birth in Matlab between 1969-71, and Huffman, Ford, Allen *et al.* (1987) reported a median duration of 15.5 months for 1975-80. The national Bangladesh Fertility Survey (BFS) of 1975 gave a figure of 14.6 months (Singh and Ferry 1984).

Although inconsistencies in methodology make comparisons difficult, recent evidence suggests that the period of natural protection against pregnancy following birth may be on the decline. Recent national surveys have estimated the mean duration of postpartum amenorrhoea to be around 12 months and have found important differentials between socio-economic groups (see for example results of the 1989 BFS reported in Huq and Cleland 1990; and the 1991 Contraceptive Prevalence Survey, CPS, reported in Mitra, Lerman and Islam 1993). Despite evidence of change, postpartum amenorrhoea remains an important check on fertility in Bangladesh. Analyses of data from the 1989 BFS suggest that postpartum amenorrhoea affords good protection against pregnancy for Bangladeshi women up to one year following a birth (Weis 1993), and that overall it reduced fertility in Bangladesh by 35% (Cleland, Phillips, Amin *et al.* 1994).

A detailed understanding of the contraceptive potential of breastfeeding is a necessary prerequisite to the development of appropriate postpartum family planning policy for any particular population. Data from the two surveillance systems provided an opportunity to describe in detail the current patterns of natural protection against pregnancy after childbirth in the Matlab and USS populations. The first stage of the analysis focused on the patterns of postpartum amenorrhoea. This was followed by an analysis of the risks of pregnancy in the period following childbirth. In addition, differentials between subgroups and changes over time were explored for Matlab. The results from the study populations were compared to national data, as well as findings from other settings.

³⁸ Information on postpartum abstinence collected during in-depth interviews with users is presented in chapter five.

3.2 Findings

3.2.1 Patterns of Postpartum Amenorrhoea

Methodological comments

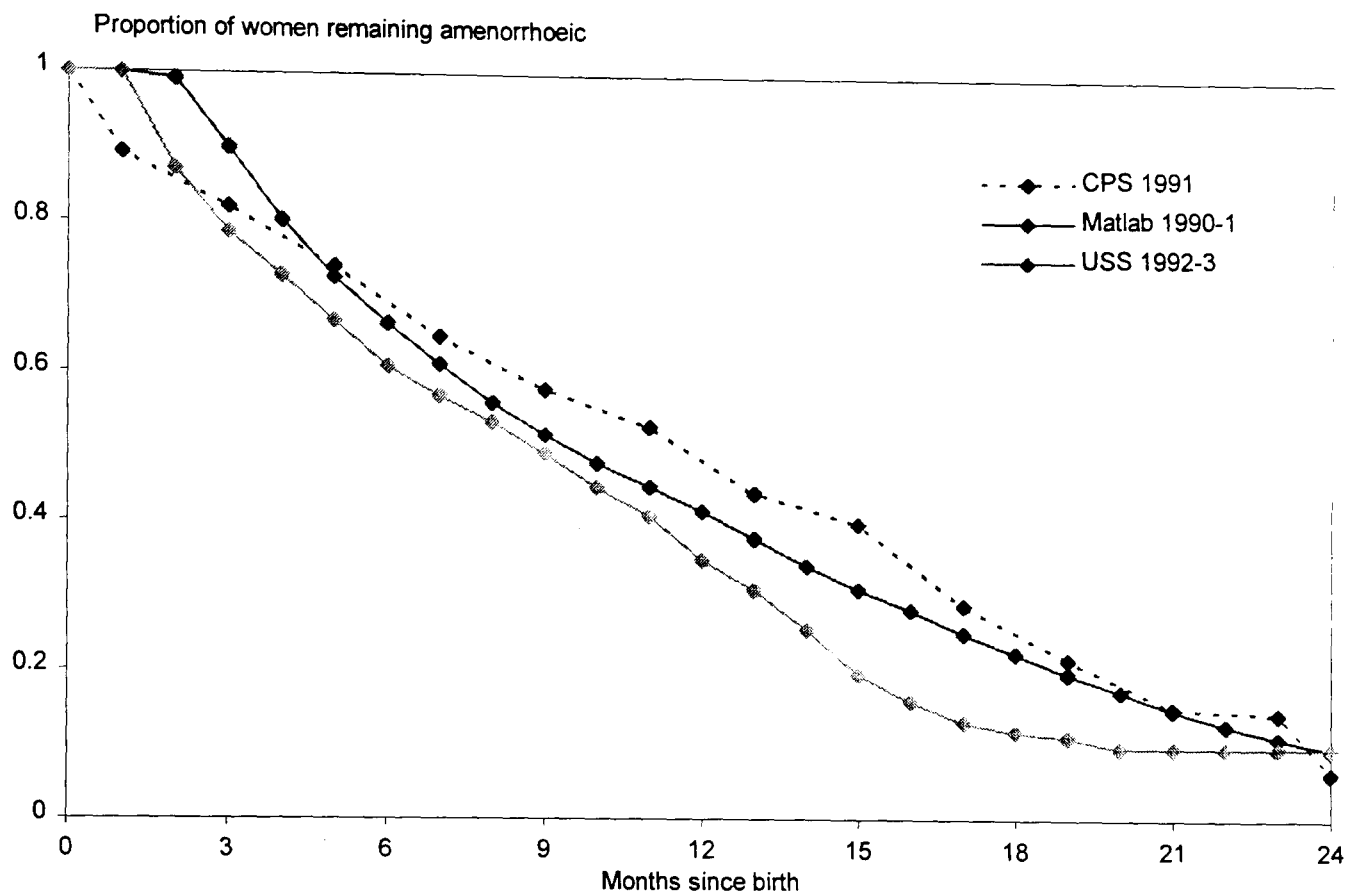
Details of how the information on postpartum amenorrhoea was collected for the two populations are given in chapter 2. In addition, a number of methodological issues regarding the collection and analysis of this data should be pointed out here.

One possible source of error in reports of the duration of postpartum amenorrhoea is that postpartum lochial bleeding may, in some cases, be confused with menses. In order to minimise this problem, interviewers in the USS were instructed not to accept reports of menses prior to 42 days postpartum. In addition, they were trained to probe to find out whether the bleeding episode reported lasted as long as usual for the woman, and whether the amount of blood lost was similar to normal menses, before recording the woman as having resumed menstruation. Interviews conducted with CHWs (reported in chapter six) suggested that they are also aware of this potential misreporting, and that they employ similar probes to establish whether a woman has experienced her first postpartum menstrual cycle, or whether she is still experiencing blood loss following childbirth. Findings from the present study suggest that women recognise the return of menses as an important event (see chapter five), and other research has shown that women's descriptions of bleeding in the postpartum period correspond well with hormonal profiles and may be a good indicator of return to fecundity (Campbell and Gray 1993). It is therefore suggested that, although some of the early reports of menstruation may in fact have been postpartum lochial bleeding, the information collected on the timing of the resumption of menses should be of good quality.

Since women were visited at three month intervals in the USS, their reports of the timing of resumption of menses necessarily involved some recall. However, the distribution of durations of postpartum amenorrhoea reported by the women in the study cohort is smooth, with no evidence of heaping on certain digits, and it follows a similar pattern to that of the RKS, which includes very little recall bias, since the data are collected every month (Figure 3.1).

As discussed in chapter one, the period of postpartum infecundity and the period of postpartum amenorrhoea are not exactly equivalent. Although in most cases the duration of postpartum amenorrhoea acts as a good proxy for the infecund period, some women return to full fecundity and ovulate during their first menstrual cycle, prior to their first menstruation. This means that it is possible for a woman to conceive without any sign of resumption of menses. In such cases, the duration of postpartum amenorrhoea reported by women may be artificially inflated, since the period of postpartum amenorrhoea will be immediately succeeded by the amenorrhoeic period of gestation. Women are therefore unlikely to report pregnancy until several months later, once other signs become apparent. During analysis, adjustments for such delayed reporting of the end of postpartum amenorrhoea were made so that the duration of amenorrhoea in these cases was calculated as the period from the index birth to conception (which was estimated from the timing of the pregnancy outcome). However, since the percentage of women conceiving during amenorrhoea was small, this was found to make little difference to the estimates. The durations of postpartum amenorrhoea presented below are for the

Figure 3.1: Life table survival distribution of postpartum amenorrhoea, Matlab 1990-1, Dhaka slums 1992-3 and National population 1991



Notes: 1. Matlab and USS life table of cohort of women having live birth.
2. CPS 1991 based on percentage of births whose mothers still amenorrhoeic at time of survey.

unadjusted data (where, for women who conceived during amenorrhoea, the duration of amenorrhoea was simply calculated as the period from the index birth to first report of pregnancy) since it was felt that results would be more comparable to other studies, where such adjustments may not have been possible.

A further complication relating to the RKS data alone should also be mentioned here, namely, the possibility that the increasing adoption of contraception could artificially alter reported durations of amenorrhoea. Use of the oral pill during postpartum amenorrhoea could lead to shorter reported durations of postpartum amenorrhoea, since it often induces withdrawal bleeding. Use of the injectable contraceptive could either artificially reduce or inflate reports of the duration of postpartum amenorrhoea, depending on whether bleeding or extended amenorrhoea is induced. This complication has been pointed out elsewhere (Knodel, Kamnuansilpa and Chamrathirong 1985) and is discussed further below.

Results

Table 3.1 shows the quartiles in months of the life table survival distribution of postpartum amenorrhoea in the Matlab 1990-1 cohort and the USS population 1992-3.³⁹ These recent data from both study populations show that the pattern remains one of long durations of postpartum amenorrhoea. In the Dhaka slum population, among women with a surviving birth, the median duration of postpartum amenorrhoea was 8.8 months

³⁹ Unless otherwise stated, all life tables were computed using the SAS procedure 'proc lifetest, method=life'. This computes the life table in the traditional, actuarial manner.

(se=0.3), and in the Matlab 1990-1 cohort the figure was 9.5 months (se=0.2). In both populations, there was a wide variation in the duration of postpartum amenorrhoea, with some women reporting the return of menses within two months, and others remaining amenorrhoeic for more than two years. Figure 3.1 shows the life table survival distribution for women remaining amenorrhoeic by months following delivery for the Matlab 1990-1, USS 1992-3 cohorts and the 1991 CPS. The shape of the distribution is very similar for the USS and Matlab data, showing that, up to around two years after the birth, at each time postpartum a greater proportion of women in the Matlab population remained amenorrhoeic. The CPS distribution is based on current status data, that is, the percentage of births whose mothers were still amenorrhoeic at the time of the survey, and is therefore a synthetic life table. Nevertheless, despite some deviation at the start of the distribution, it shows a similar pattern to the study populations.

Table 3.1: Quartiles in months of life table survival distribution of postpartum amenorrhoea in Matlab 1990-1 and Dhaka slums 1992-3

	Matlab 1990-1		Dhaka slums 1992-3	
	All women	All women whose child survived	All women	All women whose child survived
.75	4.3	4.7	2.9	3.6
.50	8.8 (0.2)	9.5 (0.2)	7.5 (0.5)	8.8 (0.3)
.25	16.5	17.1	13.7	14.4
N	5483	4990	1151	1017

Notes: 1. Standard error of the median shown in parentheses.
 2. Unadjusted data. Adjustments for delayed reporting of pregnancy (described in detail below) among women who conceived during amenorrhoea made little difference to the results. With adjustments, among all women in Matlab, the median duration of amenorrhoea was 8.7 months (se=0.2), and among all women in the USS, the median duration was 7.4 months (se=0.4).
 3. The second column in each panel refers to women whose child survived to the end of the period of follow-up.

Important differentials in the duration of postpartum amenorrhoea were found among subgroups of women in both the Matlab and the USS population (Table 3.2). In the Matlab 1990-1 cohort, among women who had only one or two living children the median duration of postpartum amenorrhoea was just 7.2 months (se=0.2 months), whereas for women who had three or four living children this figure was 13.0 months (se=0.3). Among the Dhaka slum population, these figures were 6.4 months (se=0.5) and 10.9 months (se=0.5) respectively. Similarly, younger women had much shorter durations of postpartum amenorrhoea than older women in both populations. In addition to differences by age and living children, educated women were found to have significantly shorter durations of postpartum amenorrhoea than women who had received no schooling, in both populations (Table 3.2).

Table 3.2: Differentials in duration of postpartum amenorrhoea by woman's characteristics in Matlab 1990-1 and Dhaka slums 1992-3 (quartiles in months of life table survival distribution)

	Matlab 1990-1				Dhaka slums 1992-3			
	.75	.50	.25	N	.75	.50	.25	N
Age (years)								
<20	3.4	5.5 (0.3)	10.0	605	2.5	6.4 (0.8)	9.9	217
20-24	3.9	7.1 (0.2)	13.7	1711	3.2	7.4 (0.6)	12.6	353
25-29	5.8	11.7 (0.4)	18.8	1503	4.7	9.4 (0.6)	15.4	227
30+	7.2	14.0 (0.4)	20.5	1155	5.3	12.1 (0.8)	16.5	220
missing	-	-	-	25 ^{*,+}	-	-	-	0 ^{*,+}
Education								
none	5.5	11.2 (0.3)	18.7	2650	3.9	9.0 (0.4)	14.4	806
some	4.0	7.7 (0.2)	14.5	2049	2.6	7.2 (0.8)	12.7	211
missing	-	-	-	300 ^{*,+}	-	-	-	0
								log rank p=.0021, Wilcoxon p=.0027
Living children								
1-2	3.9	7.2 (0.2)	13.5	2789	2.8	6.4 (0.5)	11.9	552
3-4	6.4	13.0 (0.3)	20.0	1578	5.2	10.9 (0.5)	15.7	318
5+	7.2	14.0 (0.5)	19.8	629	5.4	11.1 (0.9)	15.2	147 ^{*,+}
missing	-	-	-	3 ^{*,+}	-	-	-	0
Living sons								
0	4.0	7.3 (0.3)	14.5	1349	2.6	6.4 (1.1)	11.8	237
1-2	4.7	9.7 (0.2)	17.3	3018	3.7	8.9 (0.5)	14.3	627
3+	7.1	13.3 (0.4)	19.3	626	5.6	10.8 (0.6)	15.3	153
missing	-	-	-	6 ^{*,+}	-	-	-	0 ^{*,+}
N				4999				1017

Notes: 1. This analysis excluded women whose children died within the period of follow-up, so that differentials between subgroups are not explained by differing levels of infant mortality.
 2. * = log rank $p < 0.0001$, + = Wilcoxon $p < 0.0001$.
 3. Standard errors of medians shown in parentheses.

In the Matlab population, area of household, an indicator of socio-economic status, was also negatively associated with duration of postpartum amenorrhoea. In the USS population, an index of asset ownership was used as an indicator of socio-economic status.⁴⁰ This too was negatively associated with the duration of postpartum amenorrhoea, with women in the lowest socio-economic group having a median duration of 9.3 months (se=0.9) compared to 6.7 months (se=0.7) among women in the highest socio-economic group. Overall the differentials observed were similar in both the study populations and mirrored those that have been noted elsewhere (Huffman, Ford, Allen *et al.* 1987; Singh and Ferry 1984). Whilst the differential between educational and socio-economic subgroups is probably largely explained by divergent breastfeeding behaviours, differences between age and parity groups may also reflect underlying fecundity levels, as has been noted elsewhere (Jain, Hsu, Freedman *et al.* 1970; Mannan and Islam 1996).

The data presented in Table 3.2 show that in almost all subgroups the duration of postpartum amenorrhoea was shorter in the urban slum population than in the rural Matlab population. However, the differences were not as large as might be expected, and among several subgroups failed to reach significance. Comparing the results to recent national estimates from the CPS 1991, it is found that, whereas the estimate for the mean duration of postpartum amenorrhoea among the urban slum population is similar to that for the national urban estimate (9.7 compared to 9.8 months), the estimates for Matlab are somewhat shorter than for the national, rural population (11.3 compared to 12.1 months).⁴¹

Table 3.3: Median months of postpartum amenorrhoea in Matlab 1978-9 to 1990-1

Cohort of birth	All women			All women whose child survived		
	Median	s.e.	N	Median	s.e.	N
1978-9	13.70	(0.17)	5558	14.90	(0.18)	4725
1980-1	12.81	(0.18)	6152	13.88	(0.16)	5315
1982-3	13.60	(0.16)	6240	14.73	(0.16)	5371
1984-5	12.52	(0.16)	5593	13.42	(0.17)	4979
1986-7	11.20	(0.18)	5975	12.03	(0.17)	5427
1988-9	10.10	(0.18)	6136	10.51	(0.18)	5644
1990-1	8.75	(0.17)	5483	9.51	(0.19)	4999

3.2.2 Trends in postpartum amenorrhoea

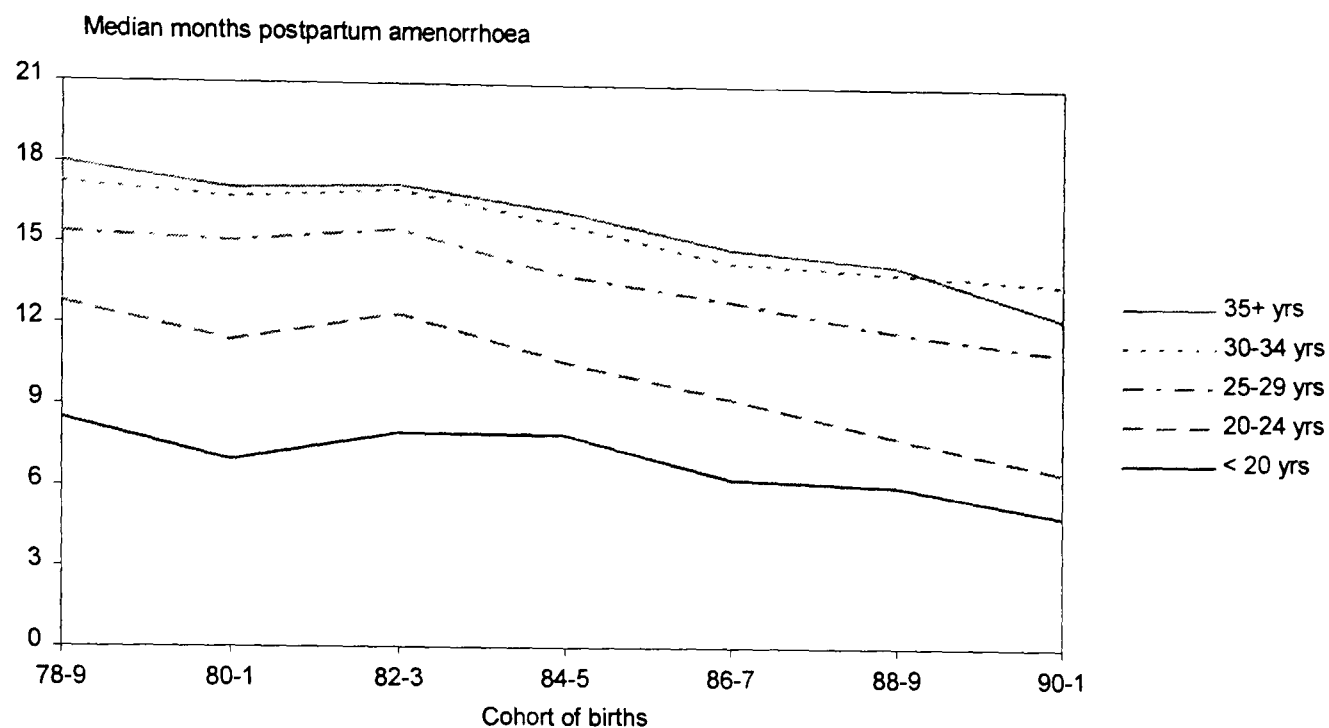
As mentioned above, earlier studies in Matlab and national surveys have reported longer durations of postpartum amenorrhoea than those observed here in the recent study cohorts. This finding, plus the observed differentials between subgroups, suggests that patterns of postpartum amenorrhoea may have changed in recent years. The Matlab RKS data allow us to examine the trend in the duration of postpartum amenorrhoea in this population over the period 1978 to 1991.⁴²

⁴⁰ The construction of this variable is described in chapter two.

⁴¹ Mean durations for the study populations were calculated using the SAS procedure 'proc lifetest, method=PL' which uses the product limit or Kaplan-Meier method of survival analysis, which assumes that the exact times of events and censoring are recorded.

⁴² Since these data were collected in a uniform manner, and without recall, the comparisons made over time between cohorts are likely to reflect real changes, rather than to be artefacts of the methodology employed.

Figure 3.2: Life table median postpartum amenorrhoea by age group, Matlab 1978-9 to 1990-1



Notes: 1. Women whose child survived.
 2. Log rank 47.02 $p < 0.0001$.
 3. Wilcoxon 38.66 $p < 0.0001$.

Table 3.3 shows the median duration of postpartum amenorrhoea for the cohorts of women having a live birth from 1978-9 to 1990-1. Between 1978 and 1983, the median duration fluctuated around 13 months for all women and around 14 months for women with a surviving child. Thereafter, the median duration of postpartum amenorrhoea declined sharply from a figure of 14.7 months for the 1982-3 cohort, to 9.5 months for the 1990-1 cohort among women whose child survived the full period of follow-up of 36 months.⁴³

To determine whether this decline was widespread, or instead confined to certain population strata, trends in postpartum amenorrhoea by selected socio-demographic characteristics were also explored. Substantial reductions in the duration of postpartum amenorrhoea were found among almost all subgroups. All age groups of women experienced a decline in the median duration of postpartum amenorrhoea over the study period (Figure 3.2). A downward trend in amenorrhoea duration was seen among all parity groups of women, and also regardless of educational level.

As mentioned above, there is evidence to suggest that the duration of postpartum amenorrhoea has also declined in the national population. In 1975, the BFS estimated the mean duration of postpartum amenorrhoea to be 14.6 months and in the 1989 survey this figure was estimated to be 12.4 months. This represents a decline of 15% over the period, compared to a 21% decline in the mean duration of postpartum amenorrhoea

⁴³ Again, the figures presented here result from the analysis of the data without adjustments for delayed pregnancy reporting. It was found that such adjustments made little difference to the observed trend, with the median duration of postpartum amenorrhoea among all women being 13.6 months ($se=0.17$) in 1978-9 and 8.7 months ($se=0.18$) in 1990-1. Graphical examination indicated that the shape of the survival curve remained roughly constant over the period, with increasing proportions of women resuming menses at all times postpartum in the later cohorts.

in Matlab between 1978-9 and 1990-1 (from 14.5 months to 11.4 months).⁴⁴ Thus it appears that, although the direction of movement is the same, the pace of the decline has been somewhat faster in Matlab than in the national population.

The above results, showing long but declining durations of postpartum amenorrhoea, raise several questions: What accounts for the long duration of postpartum amenorrhoea in Bangladesh and how does it compare to other populations? Why have postpartum amenorrhoea durations declined over time? Why has the decline been steeper, and why are durations of postpartum amenorrhoea now shorter, in Matlab than in the national population? In order to seek answers to these questions, the determinants of postpartum amenorrhoea were examined, including their differentials and trends over time.

3.2.3 Patterns of breastfeeding

Methodological comments

As described in chapter two, breastfeeding information is collected on a monthly basis in the RKS of Matlab for all children born in the treatment area. However, unfortunately not all the breastfeeding data collected have been entered onto computer, and the most up-to-date data available for the current analysis were for the 1986-7 cohort of births. No information was available from the USS on the breastfeeding patterns of the study cohort. However, some data were collected in the baseline survey of the USS between August and November 1990. Though these data do not represent the same cohort of women as the other data analysed here, they do provide some information as to the prevailing patterns of breastfeeding in this population and are therefore presented.

Defining breastfeeding status and collecting information on breastfeeding patterns is complex, and comparisons between different populations are often difficult. Breastfeeding patterns are diverse and transitions between states gradual. In Matlab, women's monthly lactational status is recorded as 'full', 'partial', or none.⁴⁵ 'Full' describes those women who give no regular supplementation to the baby's diet in addition to breastmilk, whereas the 'partial' category includes women who give foods other than breastmilk (either liquid or solid) on a regular basis. 'None' describes women who are not feeding their child at the breast at all. The 'partial' category is clearly broad and includes a variety of breastfeeding patterns. In addition, the definition of 'full' breastfeeding is somewhat ambiguous, and conversations with CHWs suggested that there is some inconsistency in how these definitions are applied. In the USS baseline survey, 'exclusive breastfeeding' was defined as giving only breastmilk (ignoring anything else which was fed with a frequency of less than once a week).

Results

The strong correlation between durations of breastfeeding and postpartum amenorrhoea is now well established (Bongaarts and Potter 1983) and it comes as no surprise to find that many studies report the almost

⁴⁴ Estimates of mean durations were produced using the SAS procedure 'proc lifetest, method=PL'.

⁴⁵ During the period 1987 to 1989 an expanded coding system, which included five categories of partial breastfeeding was used. For the purposes of the present analysis, the additional codes were collapsed to form just one partial breastfeeding category in order to have consistent codes across the whole study period.

universal and prolonged nature of breastfeeding in Bangladesh (Huffman, Ford, Allen *et al.* 1987; Islam and Islam 1993). National data from the 1991 CPS show that almost all children were breastfed and data from our study populations show a similar picture. In the cohort of women who had a live birth in Matlab in 1986-7, only 2.6% were reported as not breastfeeding at one month after birth, and in 90% of these cases this is explained by the fact that the child died within the first month of life. Data from the USS reported by Baqui, Paljor, Nahar *et al.* (1993) show that, among mothers of living children aged under five, only 2% had never breastfed their child.

Breastfeeding continues for many months in Bangladesh. In the Matlab 1986-7 cohort, the median duration of breastfeeding was 33.1 months (se=0.12), and from the data reported by Baqui, Paljor, Nahar *et al.* (1993) breastfeeding is estimated to continue for more than 30 months on average among slum mothers.⁴⁶ Of slum children aged between 18 and 23 months, 82% were found to be still breastfed (Baqui, Paljor, Nahar *et al.* 1993) and for the Matlab cohort of 1986-7, this figure was 87%. Comparisons with national estimates are complicated by the fact that different surveys have employed different definitions and methods, and the data presented in the reports usually do not allow recalculation of the estimates. Islam and Islam (1993) compared estimates of the average duration of any breastfeeding in Bangladesh reported by different authors from different surveys over the last three decades. The figure had been calculated in five different ways and ranged from 23 months to 31 months, with no clear trend over time. In the 1991 CPS the mean duration of breastfeeding was found to be 29.8 months.⁴⁷

Turning to exclusive breastfeeding, larger differentials were evident between the Matlab and the urban slum population. Baqui, Paljor, Nahar *et al.* (1993) reported that, among children aged three to five months in the USS areas, only 10% were exclusively breastfed. In the Matlab 1986-7 cohort, at three months old 73% of children were still fully breastfed, and by five months of age, this figure was 51%. Though the difference may in part be explained by differing operational definitions of 'exclusive' and 'full' breastfeeding, field level observations support the suggestion that supplementation of the infant's diet occurs earlier in the slum setting, even though the overall duration of breastfeeding remains long.

3.2.4 Comparisons with patterns of breastfeeding and postpartum amenorrhoea in other populations

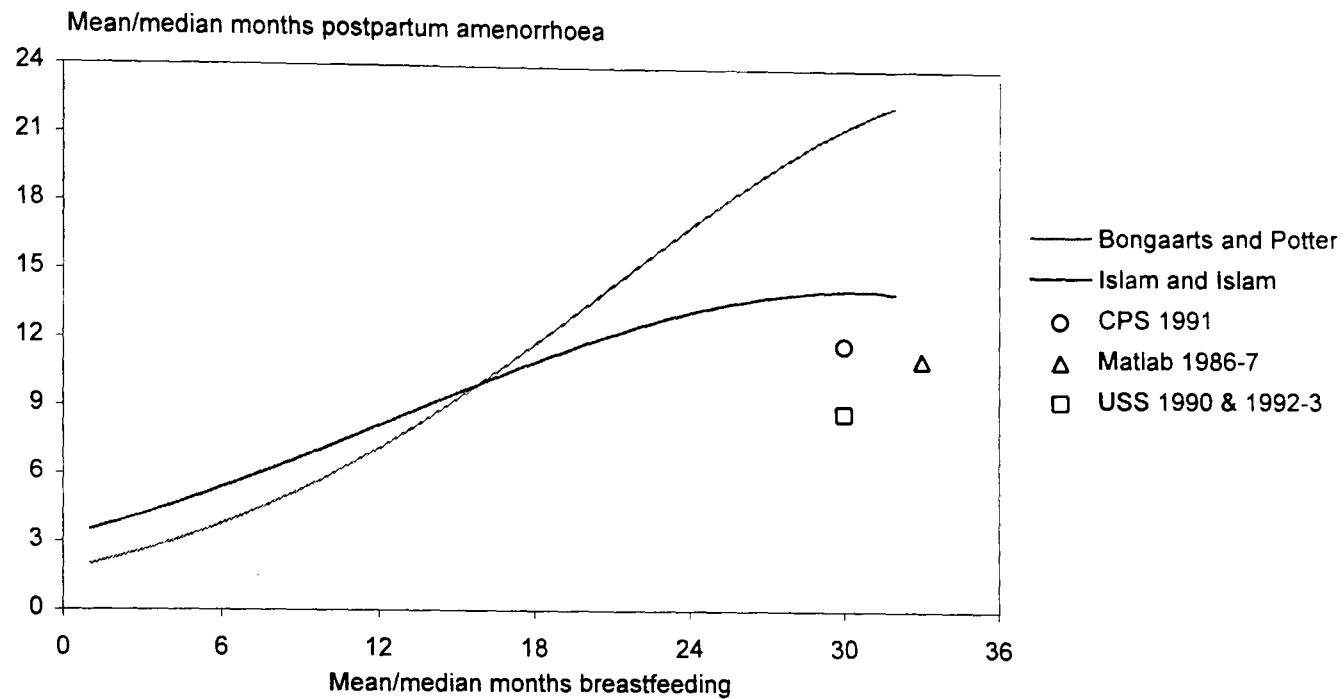
Having noted that durations of breastfeeding and postpartum amenorrhoea are long in Bangladesh, it is of interest to examine how they compare to other populations. Bongaarts and Potter (1983) examined the relationship between average duration of breastfeeding and average length of postpartum amenorrhoea in different populations. They produced a quadratic regression equation to describe the relationship. This is plotted in Figure 3.3 along with data from Matlab, the USS⁴⁸ and the national population. It is immediately clear that the points for Bangladesh lie well below the regression line, indicating shorter durations of postpartum amenorrhoea than would be expected given the durations of breastfeeding.

⁴⁶ The average duration of breastfeeding is not reported by Baqui, Paljor, Nahar *et al.* (1993) and so this was estimated by interpolation of the figures they presented.

⁴⁷ Calculated by the prevalence/incidence method.

⁴⁸ The data on breastfeeding and postpartum amenorrhoea for the urban USS population do not refer to the same cohort. The breastfeeding data was collected in 1990, and the postpartum amenorrhoea data refer to the present study cohort, 1992-3.

Figure 3.3: Correlation between duration of breastfeeding and duration of postpartum amenorrhoea



This discrepancy has been noted by other researchers, and Islam and Islam (1993) have recently used survey data from the 1970s to examine how well the Bongaarts and Potter regression equation predicts the duration of amenorrhoea for a range of countries. Their analysis illustrates that the Bongaarts and Potter equation tends to overestimate the duration of postpartum amenorrhoea where the average duration of breastfeeding is very high, and tends to underestimate the length of postpartum amenorrhoea at short durations of breastfeeding. Islam and Islam reestimated the parameters in the regression equation using their set of data. This alternative regression line is found to intersect the Bongaarts and Potter line, predicting longer durations of postpartum amenorrhoea at short durations of breastfeeding, and shorter durations of amenorrhoea at higher durations of breastfeeding (Figure 3.3).⁴⁹

The difference between the two regression lines may be explained by differences in data quality. The original data used by Bongaarts and Potter came from studies carried out in 21 countries, but several of these had been conducted in the 1960s, and the dataset included very few points at long durations of breastfeeding. Bongaarts and Potter included data from Matlab in their model estimations, but the estimate of breastfeeding duration (24 months) was shorter, and amenorrhoea (17 months) longer, than other estimates produced for the same time period in Matlab, and are inconsistent with the results from the present study. It is possible that differences in methodology account for these large discrepancies and it raises questions as to the quality of the data available to Bongaarts and Potter.

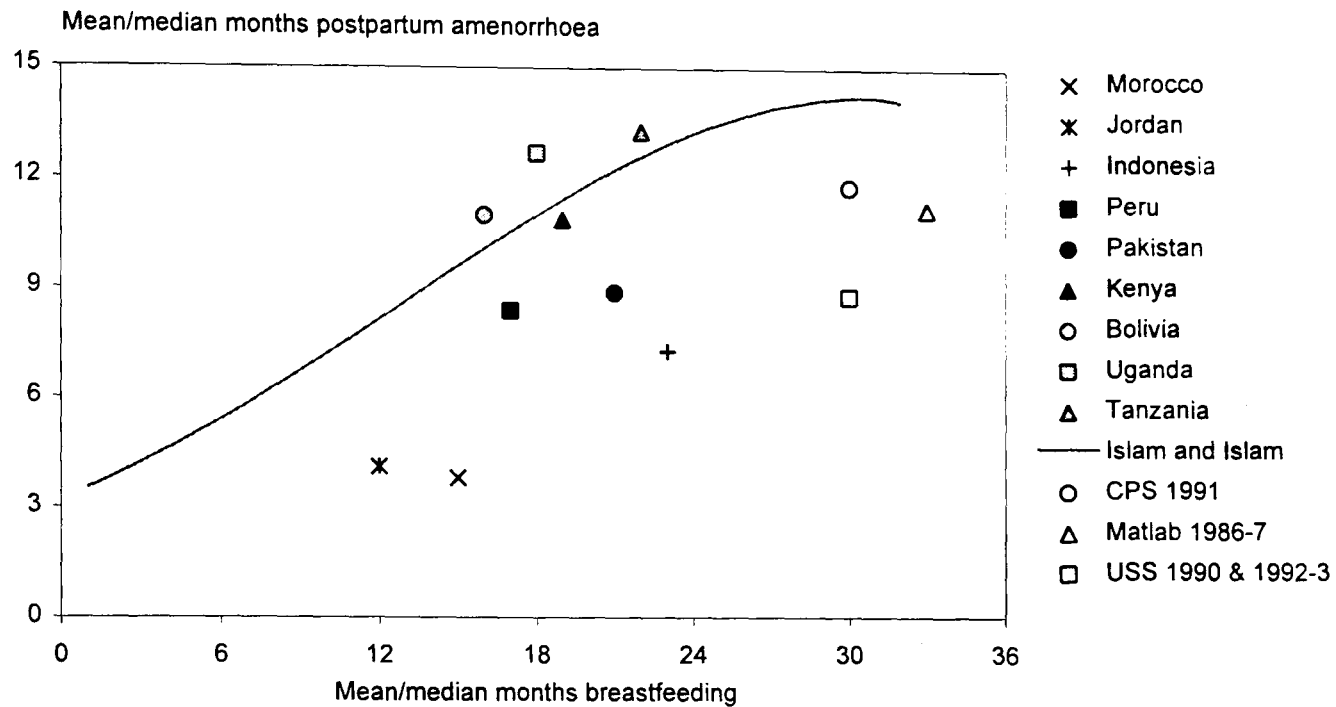
⁴⁹ The two regression equations are as follows:

$$\text{Bongaarts and Potter (1983): } A = 1.753e^{0.1396 \times B - 0.001872 \times B^2}$$

$$\text{Islam and Islam (1993): } A = 3.186e^{0.0973 \times B - 0.00158 \times B^2}$$

where A = mean or median duration of postpartum amenorrhoea in months, and B = mean or median duration of breastfeeding in months.

Figure 3.4: Correlation between duration of breastfeeding and duration of postpartum amenorrhoea



Equations relating the average durations of any breastfeeding and postpartum amenorrhoea are a simplification of the situation. Not only do averages hide intra-population variation, but the models ignore important differences in breastfeeding patterns. As Bongaarts and Potter (1983) point out, the correlation is explained by the fact that the populations with the longest durations of breastfeeding also tend to have the highest intensity of breastfeeding in the early months after birth. Therefore, a second factor that may account for the different specification of the regression equation arrived at by Islam and Islam, is a change in the relationship between the duration of breastfeeding and amenorrhoea over time due to changes in other dimensions of breastfeeding practices.

Figure 3.3 shows that national data, as well as that from Matlab and the USS, lie closer to the Islam and Islam regression line than the Bongaarts and Potter line, but that they nevertheless diverge from the predicted values. When data were also plotted for a range of countries from recent DHSs, in most cases, the points were found to lie well below both the Bongaarts and Potter, and the Islam and Islam curves, indicating shorter durations of postpartum amenorrhoea than predicted (Figure 3.4). Thus, Bangladesh does not appear to be an outlier and it seems likely that over time, due to changes in breastfeeding patterns, there has been a trend towards a shorter duration of postpartum amenorrhoea resulting from the same average duration of breastfeeding, not just in Bangladesh, but elsewhere. Evidence suggests that in many populations, there has been a shift towards earlier introduction of breastmilk supplements and mixed feeding, without necessarily a pronounced decline in the duration of overall breastfeeding (Jeliffe and Jeliffe 1978; Cream, Ling, Pearson *et al.* 1987; Baqui, Paljor, Nahar *et al.* 1993). Clearly, one needs to consider more than just the overall duration of breastfeeding in order to understand the relationship between breastfeeding and the duration of postpartum amenorrhoea.

3.2.5 Trends in breastfeeding

As mentioned above, information on breastfeeding was available for the Matlab cohorts from 1978-9 to 1986-7. Table 3.4 shows the quartiles in months for the life table survival distribution for full breastfeeding and all

breastfeeding (full plus partial). The median duration of all breastfeeding appears not to have declined during the study period, and may even have increased slightly. However, the data suggest that, having fluctuated around six months from 1978-9 to 1982-3, the duration of full breastfeeding decreased to around five months in 1986-7. Analysis of breastfeeding durations by maternal characteristics suggested that durations of full breastfeeding fell in almost all subgroups from 1982-3 onwards. Differentials in the median duration of full breastfeeding mirrored those described earlier in postpartum amenorrhoea, with shorter durations among younger women, women with fewer children, and more educated women. Thus, the observed differentials and trends in the duration of full breastfeeding were in line with the changes in postpartum amenorrhoea in Matlab. Patterns for all breastfeeding were less clear. Differentials between subgroups were not large, and there was no consistent trend towards shorter or longer durations among different subgroups.

Table 3.4: Quartiles in months of life table survival distributions of full and all breastfeeding in Matlab 1978-9 to 1986-7

Cohort	Full breastfeeding			All breastfeeding (full plus partial)			N
	.25	.50	.75	.25	.50		
1978-9	3.65	5.99 (0.06)	8.66	26.73	33.86 (0.21)		5558
1980-1	3.31	5.77 (0.07)	8.60	26.90	34.72 (0.22)		6152
1982-3	3.42	6.09 (0.06)	9.89	27.10	34.42 (0.24)		6240
1984-5	3.50	5.83 (0.06)	8.34	26.52	34.30 (0.27)		5593
1986-7	2.82	5.09 (0.06)	7.39	26.69	33.19 (0.12)		5975

Notes: 1. Standard errors of the median are shown in parentheses.
2. Cases where the child died before the end of breastfeeding were censored at the time of death.

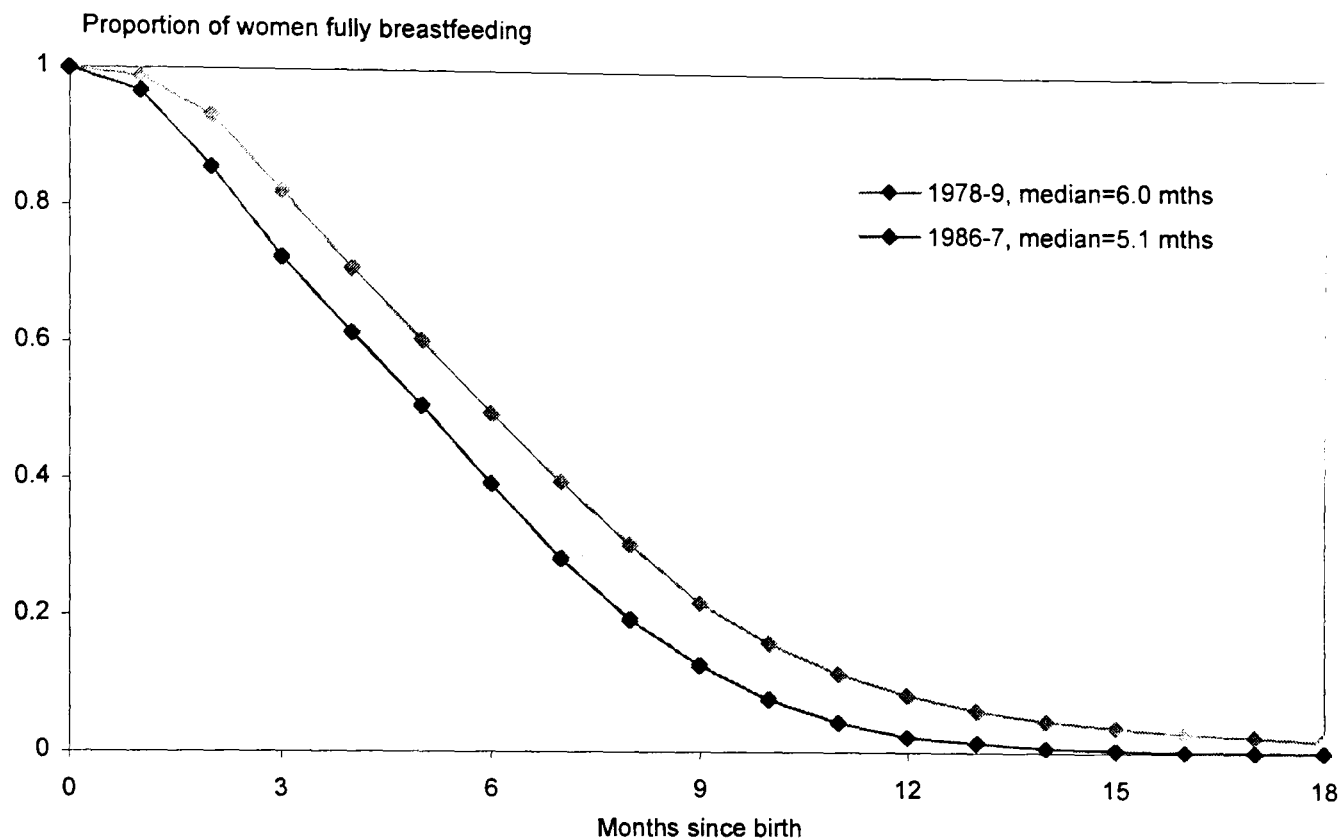
Comparisons between breastfeeding patterns and trends in Matlab and the national population are fraught with difficulties. Though a number of national surveys have collected information on breastfeeding, as noted above, there has been little consistency in the selection of samples, or the use of definitions and estimation techniques. Overall, the impression is that durations of all breastfeeding (full plus partial) have not changed greatly over the past ten to 15 years. The 1975 BFS reported a mean duration of breastfeeding of 28.9 months, and the 1989 BFS a duration of 28.7 months (Cleland, Phillips, Amin *et al.* 1994).⁵⁰ Differences between subgroups in the duration of all breastfeeding have also been found to be small (Mitra, Larson, Foo *et al.* 1990; Huq and Cleland 1990; Mannan and Islam 1996).⁵¹ Durations of all breastfeeding appear to be somewhat longer in Matlab than the national population, and thus this factor clearly cannot be offered as an explanation for the shorter durations of postpartum amenorrhoea in this subpopulation.⁵²

⁵⁰ Calculated by the current status method.

⁵¹ Analysis of data from the 1989 BFS by Mannan and Islam (1996) showed significant differences in the duration of any breastfeeding among various subgroups of women, though the differences in most cases were not large. For example, women aged 15-24 years had a mean duration of all breastfeeding of 28.1 months, compared to 29.3 months for the oldest group of women, aged 35-49 years. Uneducated women had a mean duration of 28.8 months, compared to 26.2 months among women with higher education.

⁵² This may be explained by the higher prevalence of contraceptive use. Since a subsequent pregnancy or a subsequent delivery is an important reason for the termination of breastfeeding, the greater use of contraception may mean that women in Matlab are able to continue to breastfeed each child for longer.

Figure 3.5: Life table survival distribution of full breastfeeding, Matlab 1978-9 and 1986-7



Note: 1. Cases where the child died were censored at time of death.

The information available on full or exclusive breastfeeding is no more illuminating. The 1991 CPS collected information on the timing of introduction of supplements to the child's diet. The mean age at which living children less than three years of age were first given supplemental food on a daily basis was calculated to be 3.7 months (Mitra, Lerman, Islam *et al.* 1993). The DHS conducted in 1993-4 found that almost 50% of children were given foods other than breastmilk before three months of age (Mitra, Nawab Ali, Islam *et al.* 1994). These figures suggest that supplementation occurs earlier on average in the national population than in Matlab, where we found a median duration of full breastfeeding of five months in 1986-7. Though this difference is possible, it seems more likely that the data are not comparable and that the definition of full breastfeeding used in the RKS is less strict than that employed in the national surveys. This uncertainty illustrates the difficulties in making useful comparisons between populations unless standard methods and definitions are employed in the collection and analysis of breastfeeding data.

Comparisons of median durations of breastfeeding over time may conceal changes in the distribution of durations of breastfeeding within the population. For example, although the median duration of full breastfeeding in Matlab has fallen by only one month, the sharp decline in postpartum amenorrhoea could be explained by the fact that the distribution of durations of full breastfeeding has changed, perhaps resulting in some women having very short durations of full breastfeeding. This suggestion is not supported by the data, however. Figure 3.5 compares the life table survival function for full breastfeeding for the 1978-9 and 1986-7 cohorts and shows that the shape of the distribution has remained constant. It is worth noting that the range of durations of full breastfeeding remains large in 1986-7, and that the overall decline in the median duration has not been accompanied by any important change in the percentage of women breastfeeding fully for the recommended four to six months, which was only about 20% of all women in both cohorts.

The available breastfeeding information does not therefore adequately explain why durations of postpartum amenorrhoea are shorter in Matlab, and have declined more sharply over time than in the national population. It seems likely that there have been important changes in infant feeding and weaning behaviour in Matlab that remain undetected when simply examining the durations of the two categories of breastfeeding, 'full' and 'partial'.

Recent work on the risk of pregnancy in the postpartum period suggests that suppression of ovulation depends on 'total nipple stimulation', which in turn depends on several aspects of breastfeeding behaviour (Gray, Campbell, Apelo *et al.* 1990). The duration of postpartum amenorrhoea is also likely to depend on such factors as the time between breastfeeds, the duration of breastfeeds and the type and frequency of other feeds. Several sources of anecdotal evidence suggest that there has been a shift towards greater supplementation of infants' diets in the Matlab population. Data for children aged six to 59 months indicate a downward trend in the prevalence of low MUAC (less than 110 mm) over the period 1987 to 1990, which may reflect changes in supplementation practices; a focus of educational messages in the programme since 1987 (J. Chakraborty: personal communication, 1995). In addition, studies have reported the increased use of feeding bottles (Norris Stark 1993), and qualitative data collected for the present study also suggest that infant feeding patterns may have changed in important ways. However, detailed information on these aspects of breastfeeding is not available, and it is therefore impossible to state with certainty how infant feeding patterns have changed. It is of interest to understand more about such changes, both in terms of their determinants, and their potential impact on child nutrition and health. In particular, it would be important to ascertain the extent to which such changes are the result of the family planning and health programme activities in the area.⁵³

3.2.6 Maternal nutritional status

There is some evidence to suggest that maternal nutritional status is related to the duration of postpartum amenorrhoea (Frisch and McArthur 1974; Jelliffe and Jelliffe 1972). Huffman, Ford, Allen *et al.* (1987) found that greater maternal weight was associated with shorter durations of postpartum amenorrhoea in Matlab, but that the differences between the highest and lowest weight groups were only about two months. Other work also suggests that any effect of maternal nutrition is small (Bongaarts 1982; Lewis, Brown, Renfree *et al.* 1991). In addition, it is doubtful that maternal nutrition has improved sufficiently over the course of the study period to explain the declines in postpartum amenorrhoea.⁵⁴ It is therefore unlikely that improving maternal nutrition is an important factor in explaining the decline in the duration of postpartum amenorrhoea over time in Matlab or the national population, though it could have been a minor contributing factor.

⁵³ At the time of the recent Bangladesh DHS in 1993-4, the survey questionnaire, including detailed questions of breastfeeding, was administered to a sample of women in the Matlab treatment area with the intention of validating the national survey data. This newly collected information should allow a direct comparison of at least some aspects of the breastfeeding behaviour in Matlab and the national population.

⁵⁴ Information is lacking on changes in maternal nutritional status over time in the Matlab population, though studies are underway that aim to address this question (Hosegood 1994).

3.2.7 Use of contraception

A further factor that deserves investigation in relation to the declining duration of postpartum amenorrhoea, particularly in Matlab, is use of contraception. Over the study period, there was a pronounced increase in the use of modern contraception. Between 1977 and 1984, contraceptive prevalence rose from 24% to 39% (Koenig, Phillips, Simmons *et al.* 1987), and by 1990 the overall prevalence rate was 57% (Koenig, Rob, Khan *et al.* 1992). The most common method in use during this period was the injectable contraceptive (Depo-Provera), followed by the oral pill. Contraceptive use has also increased markedly in the national population over the past 15 years. The 1975 BFS estimated contraceptive prevalence to be just 7.7%, compared to figures of 19.1%, 30.8% and 39.9% for the 1983, 1989 and 1991 CPSs respectively.

Table 3.5 shows that throughout the study period in Matlab, the median duration of postpartum amenorrhoea was significantly shorter among users of contraception than among women who did not adopt a method of contraception in the birth interval of interest. Data from the USS population show the same pattern, with the median duration of postpartum amenorrhoea being 11.7 months (se=0.4) among nonusers, and 4.9 months (se=0.3) among users of contraception.

Table 3.5: Median duration of postpartum amenorrhoea among users and nonusers of contraception, Matlab 1978-9 to 1990-1

Cohort	Users of contraception			Nonusers of contraception		
	Median	s.e.	N	Median	s.e.	N
1978-9	11.9	(0.4)	2315	15.0	(0.2)	3243
1980-1	11.3	(0.4)	2622	13.8	(0.2)	3530
1982-3	12.6	(0.3)	3175	14.9	(0.3)	3065
1984-5	11.6	(0.2)	3120	13.8	(0.2)	2473
1986-7	10.2	(0.2)	3841	13.9	(0.3)	2134
1988-9	8.4	(0.2)	4044	14.1	(0.3)	2092
1990-1	8.0	(0.2)	4206	13.4	(0.3)	1277

Several possible explanations can be suggested for the inverse association between the duration of amenorrhoea and the use of contraception at the individual level.

1) **The adoption of contraception could cause an earlier resumption of menses.** This could come about in two different ways: a direct physiological effect; or via an impact on breastfeeding patterns.

a) Initiation of contraceptive use during amenorrhoea could result directly in a shorter reported duration of amenorrhoea, either because menstrual cycling is triggered, or simply because bleeding is induced, which is reported as menses by the woman. Bhatia and Kim (1982, 1984) found that women who initiated the oral pill while amenorrhoeic experienced withdrawal bleeding, and in four out of five cases did not return to the amenorrhoeic state when contraception was discontinued. Data presented in chapters five and six show that the oral pill is widely recognised by women and family planning providers in Bangladesh as a way to restart

menses during extended periods of amenorrhoea. As far as other methods are concerned the picture is less clear. Use of the IUD may lead to spotting, bleeding or haemorrhage in some women (Hatcher, Stewart, Trussel *et al.* 1990), but no evidence could be found as to whether this is likely to occur in postpartum amenorrhoeic women who adopt the method. It should be remembered that bleeding, if induced, could not be considered as actual menstruation. Nevertheless, such bleeding is likely to be reported by the woman as the return of menses, and thus the reported duration of postpartum amenorrhoea would be shorter. Use of the injectable contraceptive (Depo-Provera) may be associated with excessive endometrial bleeding at one extreme, and amenorrhoea at the other (Hatcher, Stewart, Trussel *et al.* 1990; Kaunitz 1994). There is evidence to suggest that bleeding may be more common among women who initiate injectable use in the immediate postpartum period than those who start use later (Sapire 1991; Kaunitz 1994). However, whether the adoption of the injectable during postpartum amenorrhoea beyond 45 days is likely to cause bleeding is not well documented. Data presented in chapter four suggest that this type of effect may occur in some cases, and it was also mentioned by several family planning providers in Matlab.

b) As well as potential direct physiological effects on menstrual cycling (or withdrawal bleeding), the use of contraception could lead to changes in breastfeeding patterns, which in turn result in a shorter duration of postpartum amenorrhoea. Research has shown, for example, that the combined oral pill may act to reduce the quantity of breastmilk produced and the duration of breastfeeding (Laukaran 1987; Millman 1985). It should be borne in mind that any effect on breastfeeding is likely to depend not only on the physiological processes acting within the woman's body, but also on her own perceptions of the method and its likely effect on herself and her child. The production of breastmilk and the establishment and maintenance of successful breastfeeding has been shown to be extremely sensitive to the situational and psychological factors to which the woman is exposed (Van Esterick 1989; Laukaran 1987). It is therefore possible that breastfeeding practices could be affected by the adoption of contraceptive methods that have been shown in medical trials not to alter breastmilk production or duration. If a woman taking a method believes that the contraceptive method she is using will have an effect on her breastmilk then it is likely that her breastfeeding practices will change, whether consciously or not. In chapters five and six, evidence is presented which shows that significant numbers of both clients and family planning providers believe that the injectable reduces breastmilk production. It is also important to note that perceptions about potential negative consequences for breastfeeding could lead some women to change their breastfeeding practices *before* the adoption of the contraceptive method in anticipation of the effects. Again, evidence for such behaviour was found during in-depth interviews with family planning providers.

In either case, whether through a direct physiological mechanism, or via changes in breastfeeding, the use of contraception can be considered to lead to shorter durations of reported postpartum amenorrhoea.

2) There may be substitution of artificial for natural protection against pregnancy.

a) This substitution may be conscious, in that women recognise the pregnancy-inhibiting effect of both breastfeeding and modern contraceptives, and choose between the two. Women who adopt contraception, seeing no longer any need for natural protection, purposefully reduce their breastfeeding duration and/or

intensity, and thus their period of postpartum amenorrhoea. Such a mechanism clearly requires that women are aware of the relationship between breastfeeding and pregnancy. Again, in this mechanism, the adoption of contraception can be considered to lead to a shorter duration of postpartum amenorrhoea (as well as changes in breastfeeding patterns).

b) The substitution mechanism may, however, operate without the woman's conscious use of breastfeeding as a contraceptive, or even her awareness of this effect. Women who breastfeed less intensively or for shorter durations, for other reasons unconnected with fertility control, experience a more rapid return of menses. Recognising an increased risk of pregnancy, these women then choose to adopt a method of contraception. In this case, the adoption of contraception is a response to, not a cause of, the shorter duration of postpartum amenorrhoea.

3) Finally, it is possible that certain other factors make women who are likely to use contraception also more likely to have short durations of postpartum amenorrhoea, thus producing a spurious association between the two.

These alternative mechanisms (1a & b and 2a & b) are presented diagrammatically in Figure 3.6.⁵⁵ The mechanisms are expressed in terms of the negative association between the length of postpartum amenorrhoea and use of contraception by women in a population at one point in time. They can equally be used to explain the concurrent increase in contraceptive use and decrease in the duration of postpartum amenorrhoea over time in a population, as has occurred in Matlab, and to a lesser extent the national population.

In the case of mechanisms 1a, 1b and 2a, the increasing use of contraception by women is seen as a *cause* of the decline in the duration of postpartum amenorrhoea, either directly or via an impact on breastfeeding. In the case of mechanism 2b, the increasing use of contraception is seen as a *response* to shorter durations of postpartum amenorrhoea, which in turn result from changes over time in breastfeeding behaviour. These alternative mechanisms clearly have different implications in terms of both fertility control and child health. Mechanisms 1a, 1b and 2a imply that contraceptive use undermines natural protection against pregnancy, and in some circumstances could mean little or no overall positive impact on birth intervals and fertility. In the extreme case, adoption of contraception can mean a shorter birth interval than if the method was not used at all, as has been described by Bhatia and Kim (1982, 1984) for pill users in Matlab. In addition, mechanisms 1b and 2a imply that promotion and uptake of family planning methods directly affects breastfeeding behaviour, with a potential negative impact on child health. Particularly in the case of mechanism 1b, contraceptive methods interfere with breastfeeding, altering the breastfeeding patterns that women would choose to follow in the absence of family planning use. In contrast, in mechanism 2b, the changes in breastfeeding behaviour are unrelated to fertility control desires and contraceptive use by a particular woman. However, even though changes in breastfeeding may not result directly from contraceptive use by the individual woman, rising use of contraception and the prominence of the family planning programme, as an

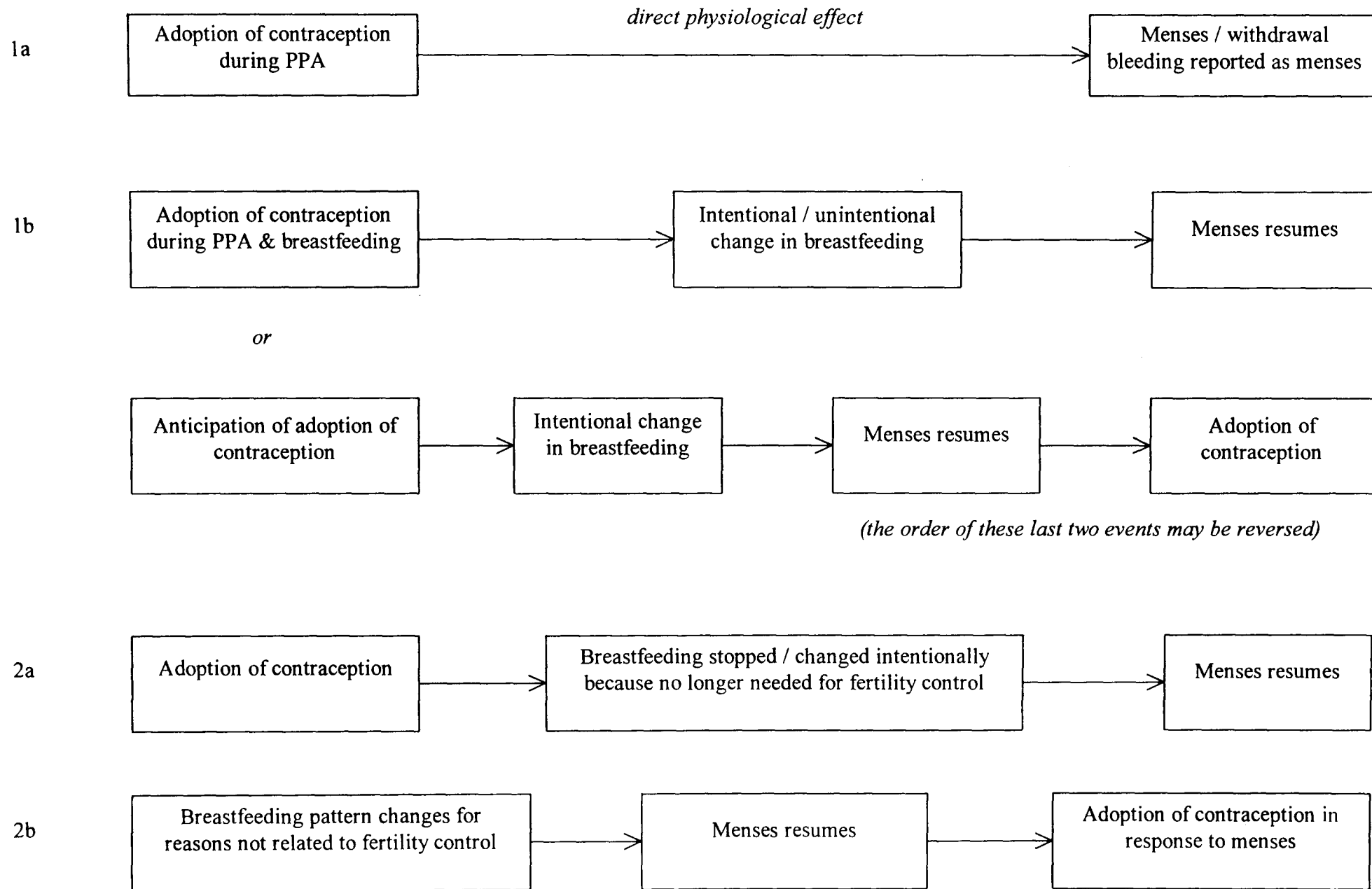
⁵⁵ Sara Millman (1985) has explored the explanatory power of these alternative mechanisms for the negative relationship between contraceptive use and breastfeeding, using data from Taiwan.

important element in a westernising health care setting, may play a part in bringing about changes in breastfeeding and thus shorter durations of postpartum amenorrhoea.

It is of interest to explore which of the mechanisms outlined above have contributed to the short and declining durations of postpartum amenorrhoea in Matlab. Both the quantitative and qualitative data available in the present study are able to throw some light on this question. In chapter four, the patterns of adoption of contraception in relation to postpartum amenorrhoea and breastfeeding are explored and suggest that mechanism 1a could account in part for the observed patterns. In chapters five and six qualitative data describing the perceptions and practices of clients and providers in the postpartum period suggest that mechanism 2a is unlikely to have played a role in the decline in postpartum amenorrhoea over time, but that mechanism 1b may explain part of this decline. Finally, in chapter seven, the qualitative and quantitative data are integrated in order to explore the interrelationships between natural and artificial protection against pregnancy following childbirth in more detail.

The above analysis has shown that the duration of postpartum amenorrhoea in both study populations remains long, despite evidence of decline. Lactation thus appears to provide a long period of natural protection against pregnancy for the majority of women in Bangladesh. However, as discussed in chapter one, postpartum amenorrhoea does not necessarily indicate the absence of any risk of pregnancy. Nor can the resumption of menses necessarily be equated with return of full fecundity (Eslami, Gray, Apelo *et al.* 1990). Therefore, in addition to examining durations of amenorrhoea in the two study populations, it is of interest to explore the risks of pregnancy in the postpartum period, in order to describe the patterns of natural protection against pregnancy following birth more fully. The following sections present findings from the analysis of pregnancy risks in the postpartum period in both the Matlab and Dhaka slum populations.

Figure 3.6: Alternative explanatory mechanisms for the negative association between use of contraception and duration of postpartum amenorrhoea



3.2.8 Risk of pregnancy following birth

Methodological comments

Despite some methodological complexities, the longitudinal data from the two surveillance systems provided an excellent opportunity to explore the risks of pregnancy following birth in two relatively large samples drawn from natural populations of Bangladeshi women.

In order to explore the risks of pregnancy in the postpartum period, a totally non-contracepting population ideally should be taken, since the adoption of contraception obviously affects the risk of pregnancy, and is also likely to be positively associated with fecundity. In the absence of such a population, data from the Matlab 1978-9 cohort and the USS 1992-3 cohort were analysed, since contraceptive use in the early postpartum period was relatively low in both these cohorts and unlikely to seriously affect the estimates produced.⁵⁶

In the absence of hormonal data indicating the resumption of ovarian activity, the pattern of reported conception by time postpartum was used to assess the risks of pregnancy following birth. Relying on women's self-reports of pregnancy will necessarily mean that rates of conception are somewhat underestimated. A certain number of pregnancies that result in early miscarriage will remain undetected. In addition, experience suggests that women do not always report pregnancy soon after it occurs, either because they do not realise they are pregnant or, more likely, choose not to divulge the information to others at an early stage of the pregnancy. This is particularly likely in cases where the woman chooses to terminate the pregnancy. Reports of pregnancies that occur during postpartum amenorrhoea are likely to be subject to particularly long delays even where a woman wants to be pregnant, since she may not suspect pregnancy until familiar symptoms arise. This has been recognised for some time in Matlab and CHWs are trained to probe for pregnancy, since their duties include the provision of antenatal care. In the USS, as well as recording women as pregnant, an additional code was used for any woman who reported that she might be pregnant but was unsure of her pregnancy status. In most cases, it was found that these women went on to report pregnancy later. For the purposes of the present analysis, any woman whose last reported pregnancy status was 'unsure' was treated as a pregnancy case.

Recognising the potential for delayed reporting of pregnancy, the RKS and USS data were carefully examined before embarking on an analysis of pregnancy risks. The nature of the analysis called for caution -- it would clearly be unwise to underestimate the risks of pregnancy in the postpartum period, and draw exaggerated conclusions about the contraceptive potential of lactation. In the RKS dataset, there was no information on the date of the woman's last menstrual period, and therefore, reported gestational length was calculated from the first month in which a woman reported herself pregnant.⁵⁷ Assuming nine months of gestation, analysis of the reported durations of gestation suggested that around 88% of women reported pregnancy within three months of conception and 96% did so within six months.

⁵⁶ In the Matlab 1978-9 cohort, 9% of amenorrhoeic women had adopted contraception by six months postpartum, and 19% by 12 months postpartum. In the USS 1992-3 cohort, these figures were 7% and 10% respectively.

⁵⁷ The RKS does in fact collect information on the date of the last menstrual period. However, serious inaccuracies were found by the author in the way this information was collected in the field which meant that it could not be relied upon. These errors have now been corrected and this information should be available for future researchers to use as an indicator of time of conception.

In the USS, a date for the last menstrual period (LMPDT) was recorded for each woman at each three-monthly visit, and for women who subsequently went on to report pregnancy, this date could be used to estimate the time of conception. Analysis suggested that these dates were, on the whole, reasonably accurate. Out of the pregnancies where an LMPDT was reported, 96.1% had a gestational length of between seven and nine months. However, an LMPDT was available for only 72% of all pregnancies reported in the cohort, and could obviously not be reported in the case of pregnancies occurring during postpartum amenorrhoea.

On the basis of the above findings, adjustments to pregnancy reporting were made to the datasets as described below.

RKS For all live birth outcomes, the timing of conception was adjusted to give a gestational period of nine months. For all nonlive birth outcomes, the timing of conception was adjusted back in time by three months (or less if this resulted in a period of gestation of nine months).⁵⁸

USS All pregnancies were adjusted, whether LMPDT was recorded or not. For pregnancies where the outcome was a live birth, the gestational period was set to nine months. For pregnancies where the outcome was not a live birth, the timing of conception was adjusted back in time by four and a half months (or less if this resulted in a gestational period of nine months).⁵⁹

In both cases, the adjustment was based on the assumption that women reported their pregnancy after three months gestation. However, the adjustment was greater for the USS than for the RKS, to account for the fact that visitation was less frequent (every three months compared to every month)⁶⁰ and therefore reporting was likely to have been delayed further. In the case of the RKS, it was assumed that, once women recognised they were pregnant and decided to report this fact, this information was then recorded immediately,⁶¹ whereas in the USS it was assumed that, on average, it would be another one and a half months before the interviewer visited again to record this information.

As well as the pregnancies that were reported and recorded, some women may have been pregnant at the time of loss to follow-up but not have reported this (Trussel 1991). In order to overcome this potential bias, the period of follow-up was shortened for any woman whose observation was censored. In the same way as the

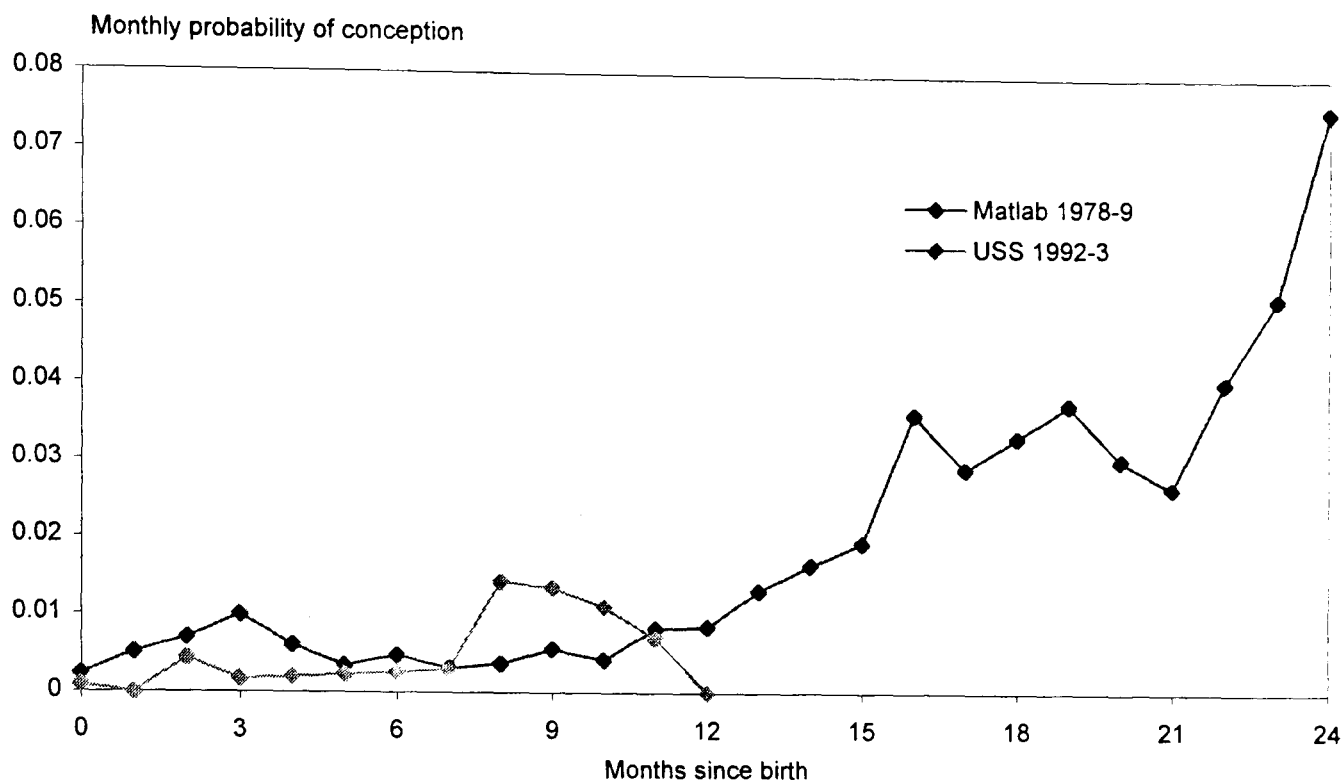
⁵⁸ In the RKS 1978-9 cohort, 90% of pregnancies during postpartum amenorrhoea ended in a live birth, and 10% ended in a nonlive birth or were lost to follow-up before the pregnancy outcome.

⁵⁹ In the USS 1992-3 cohort, 33% of pregnancies during postpartum amenorrhoea ended in a live birth, and 67% ended in a nonlive birth or were lost to follow-up. The percentage that ended in a live birth is much lower than in the case of the RKS because the duration of follow-up was shorter and so many pregnancies were censored prior to the pregnancy outcome.

⁶⁰ Although CHWs are only required to record information on reproductive status once a month for each woman, their visitation cycle actually takes them to each woman's home every two weeks, and field observations suggest that they often visit even more frequently than this.

⁶¹ In fact, in Matlab the information would be reported and recorded on average two weeks after the woman recognised pregnancy. However, since the information available from the RKS is recorded to the nearest month, I have chosen to ignore this minor adjustment. Since results produced by more extreme adjustments were very similar, this is unlikely to affect the findings in an important way.

Figure 3.7: Monthly probability of conception among non-contracepting amenorrhoeic women by time since birth, Matlab 1978-9 and Dhaka slums 1992-3



reported pregnancies were backdated, the period of follow-up was shortened by three, and four and a half months.⁶²

Probabilities of conception during postpartum amenorrhoea

In the first stage of the analysis, the monthly probabilities of conception during amenorrhoea by time after birth for non-contracepting women were calculated using life table analysis.⁶³ Figure 3.7 plots the risks for all such women for the RKS and USS data. The figure shows that in both the RKS and USS populations, the monthly probability of conception among amenorrhoeic women fluctuated at around 0.006 over the first 12 months postpartum. The estimates for the USS are based on smaller numbers and are therefore less stable. When the analysis was repeated excluding women whose child died within the first two months of life (and thus ceased breastfeeding soon after birth), the pregnancy risks were lower, as expected, fluctuating around 0.004 for the first 12 months. The small numbers and truncated follow-up in the USS population make it difficult to draw any firm conclusions about changing risk of pregnancy over the first 12 months postpartum. However, the figures for Matlab suggest that the probability of conception begins to rise beyond ten months postpartum. Thus, the available evidence from the two study populations does not support the hypothesis of an increase in the pregnancy risk during amenorrhoea beyond six months postpartum, as has been suggested by research elsewhere (Kennedy, Rivera and McNeilly 1989).

⁶² In order to test the sensitivity of results to the type of adjustments made, analyses were also conducted using a more extreme adjustment. In this, the same adjustment was made for live birth outcomes, but in the case of nonlive birth outcomes, the timing of conception was adjusted back in time by six months in the RKS file, and by seven and a half months in the USS file. The results were found to be very similar for both adjustments. Therefore, only the results arising from analysis of the datasets where the smaller adjustments were made are presented here (since these are felt to be the most reasonable considering the patterns of pregnancy reporting in the two populations).

⁶³ Cases were censored at loss to follow-up, resumption of menses, or adoption of contraception.

Figure 3.8: Monthly probability of conception among amenorrhoeic and menstruating women by time since birth, Matlab 1978-9

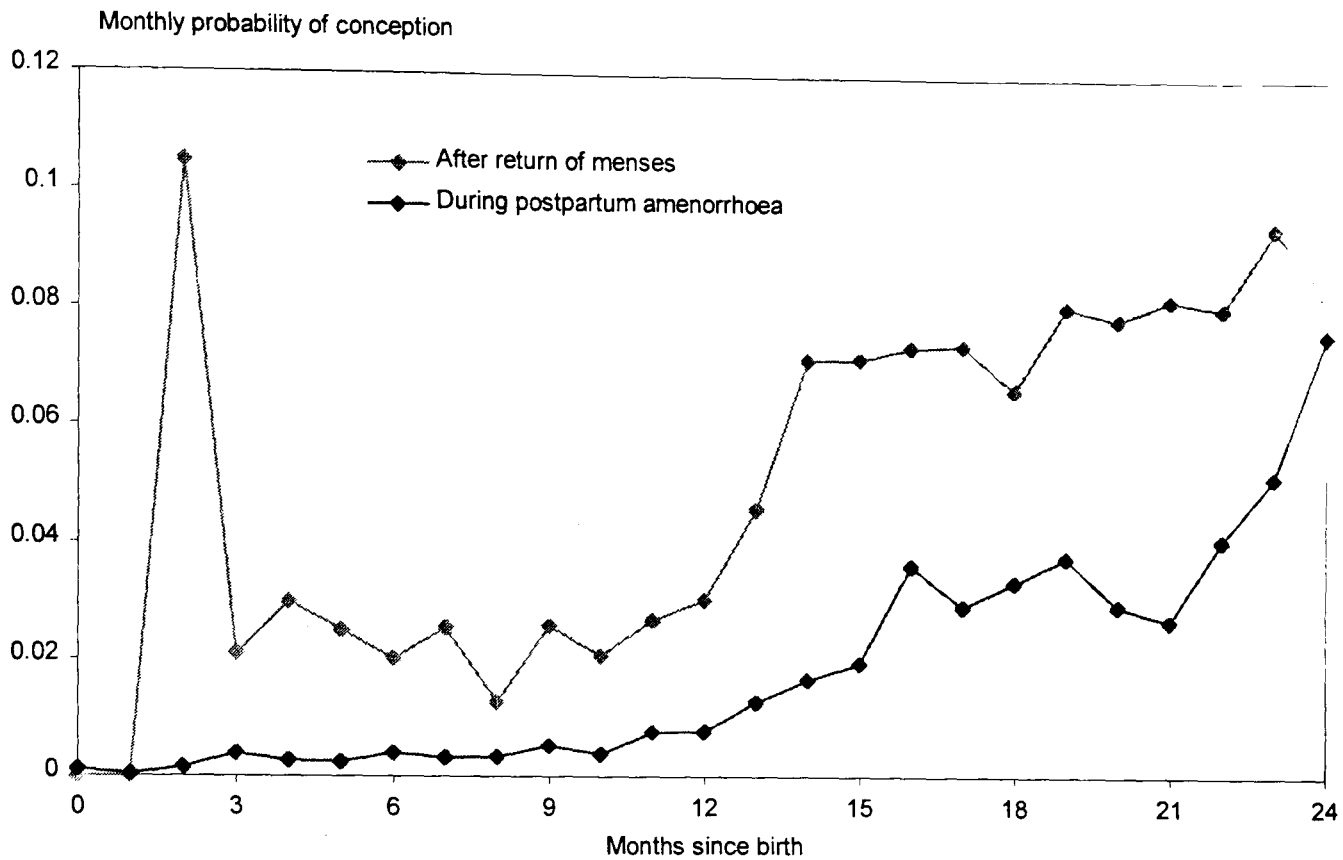


Figure 3.8 compares the probability, in the Matlab cohort, of conception during amenorrhoea with that for women whose menses has resumed.⁶⁴ The pattern for women whose menses has resumed is less clear, largely because of the small number of cases in the early months after birth. Nevertheless, the graph illustrates that the risk of pregnancy is always greater after menses has returned than during amenorrhoea, and that the risk of pregnancy among menstruating women increases beyond one year postpartum.

Table 3.6 shows the cumulative probability of conception during amenorrhoea estimated from the Matlab and USS data. In Matlab, among all women who remain amenorrhoeic, 3.4% (se=0.3) conceived within six months of their birth, and 6.2% (se=0.4) by 12 months. In the USS population these figures were around 1.1% (se=0.4) and 6.2% (se=1.5).⁶⁵ When only women whose child survived beyond two months of age were considered, less than 2% of non-contracepting amenorrhoeic women in both Matlab and Dhaka slums conceived by six months postpartum.

⁶⁴ This analysis considers women to have resumed menstruation as soon as they have reported menses once. No allowance has been made for the possibility that a small number of women may return to the amenorrhoeic state after experiencing one or more menstrual cycles.

⁶⁵ The slightly lower risks in the USS population may be explained by unreported menstrual regulation / abortions.

Table 3.6: Life table cumulative probability of conception during amenorrhoea by time since birth in Matlab 1978-9 and Dhaka slums 1992-3

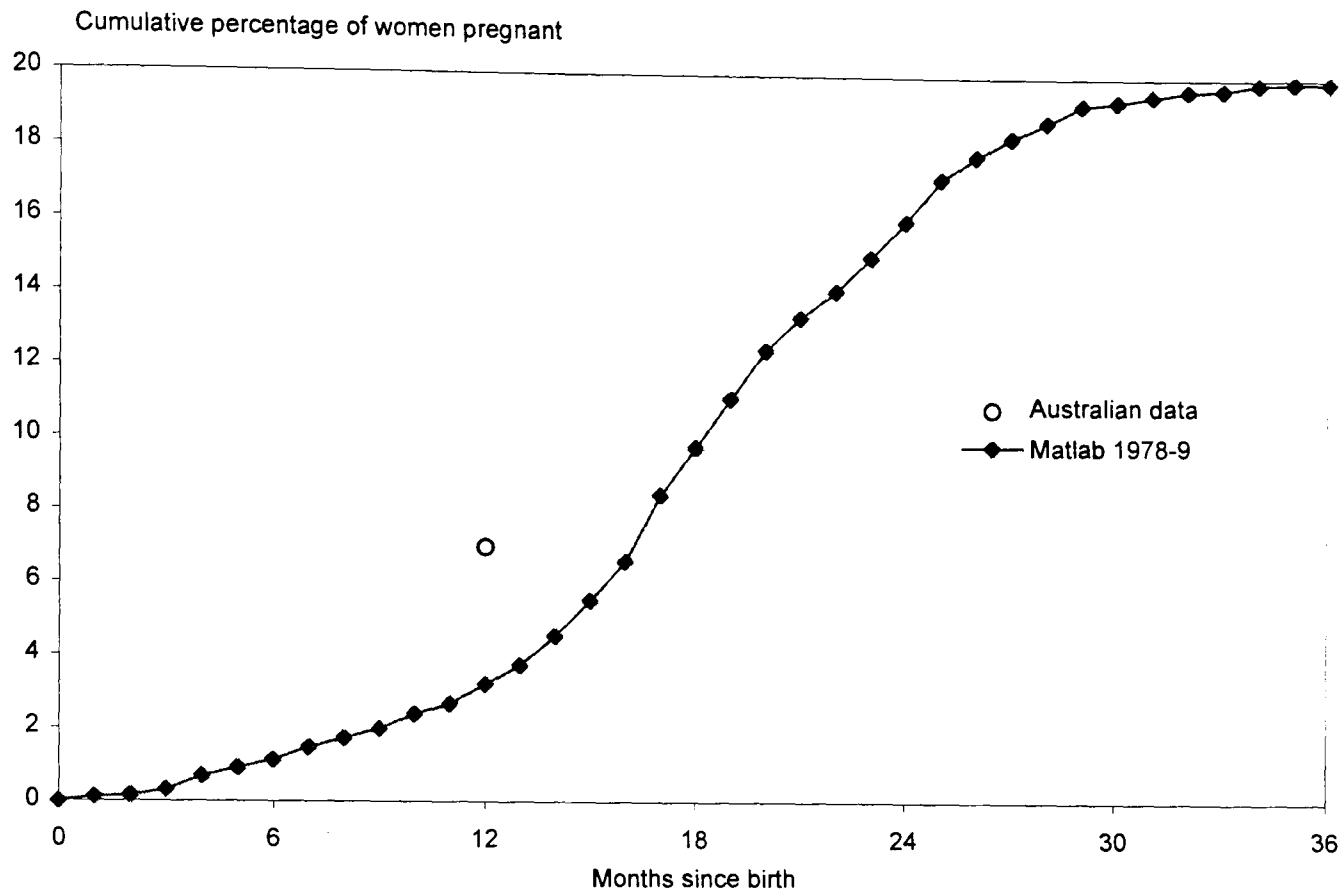
Months after birth	All women		Excluding women whose child died <2 months	
Matlab 1978-9				
3	0.0144	(0.0016)	0.0032	(0.0008)
6	0.0336	(0.0026)	0.0123	(0.0016)
9	0.0449	(0.0031)	0.0227	(0.0024)
12	0.0621	(0.0039)	0.0391	(0.0033)
15	0.0977	(0.0053)	0.0746	(0.0050)
18	0.1724	(0.0078)	0.1516	(0.0078)
21	0.2537	(0.0102)	0.2345	(0.0103)
24	0.3390	(0.0130)	0.3225	(0.0133)
N	5558		5144	
Dhaka slums 1992-3				
3	0.0053	(0.0027)	0.0030	(0.0021)
6	0.0113	(0.0044)	0.0091	(0.0041)
9	0.0311	(0.0091)	0.0290	(0.0090)
12	0.0616	(0.0153)	0.0596	(0.0152)
N	1141		1063	

Notes: 1. Cases were censored at return of menses, adoption of contraception, and loss to follow-up.
 2. Standard errors are given in parentheses.
 3. The number of women in the USS sample differs from that in Table 3.1 because information on contraceptive use was missing for 10 cases.

Figure 3.9 shows how the monthly probabilities of conception and the pattern of resumption of menses in the Matlab cohort translate into percentages of *all women* who would conceive while amenorrhoeic by time after birth, under the hypothetical scenario of no women adopting contraception during amenorrhoea. Among the Matlab women whose child survived to two months of age or more, 0.3% (se=0.1) of all women experienced a conception while amenorrhoeic by three months after birth. By six months this figure was 1.1% (se=0.2), by one year 3.2% (se=0.3), and by two years 16.1% (se=0.6). For the USS data, these figures were estimated to be 0.2% (se=0.2) at three months postpartum, 0.6% (se=0.3) at six months, and 2.3% (se=0.5) at one year.

Up to this point, the risks of conception during amenorrhoea have been presented irrespective of breastfeeding status. It is, however, also of interest to explore whether breastfeeding status has an important influence on the risk of pregnancy during amenorrhoea. The Bellagio Consensus Statement concluded that, for high protection against pregnancy during amenorrhoea, a woman must be 'fully or nearly fully' breastfeeding (Kennedy, Rivera and McNeilly 1989), whereas subsequent research has suggested that, as long as the intensity of breastfeeding is high, good protection against pregnancy can be maintained even in the presence of supplementation (Kennedy and Visness 1992; Short, Lewis, Renfree *et al.* 1991). Data from the Matlab cohort were used to explore pregnancy risk among women who were both amenorrhoeic and fully breastfeeding. As expected, the monthly probabilities of conception were lower than among all amenorrhoeic women. By six months, 3.4% (se=0.3) of all amenorrhoeic women conceived, compared to just 1.2% (se=0.2) of women who were both fully breastfeeding and amenorrhoeic. However, this difference may largely be explained by the fact that women who are not breastfeeding at all are included within the 'all amenorrhoeic' group. The

Figure 3.9: Cumulative percentage of all women conceiving during postpartum amenorrhoea by time since birth, Matlab 1978-9



influence of breastfeeding pattern on pregnancy risk is explored further below in section 3.2.10 using multivariate analysis techniques.

3.2.9 Comparisons with risk of pregnancy in other populations

Having estimated the risks of pregnancy following a birth for women in the two study populations, it is of interest to compare the findings with those from previous studies.

Earlier estimates of monthly probabilities of conception during amenorrhoea have not been very consistent. The present results for women whose child survived beyond two months, accord very well with the figure of 0.0032 for the monthly probability of conception during the first six months after birth, estimated by Campbell and Gray (1993) for a sample of American women. However, the figure for a study of Australian women, presented in a paper by Short, Lewis, Renfree *et al.* (1991) is higher, at 0.01 for the first six months postpartum. Beyond six months, the probability of conception for the Australian women increased to 0.025, and was even higher beyond one year. These figures are again higher than for the current data. In both the Matlab and the USS populations, the monthly probability of conception during amenorrhoea appeared to remain roughly stable for the first ten months or one year postpartum. However, the RKS data did suggest increasing risks beyond ten months, reaching a level of around 0.020 by 15 months postpartum.

The findings from the present analysis are in line with the results on which the Bellagio Consensus Statement was based. That is, less than two percent of women⁶⁶ conceived during postpartum amenorrhoea during the first six months postpartum. They also show that the percentage of amenorrhoeic women who conceived in the second six months postpartum is small. The present findings therefore appear to support Weis's (1993) suggestion that the contraceptive protection of amenorrhoea in the second six months postpartum may be greater among Bangladeshi women than in some other populations. A clear illustration of this is given when we compare the percentage of *all women* who would conceive during postpartum amenorrhoea under the hypothetical situation of no contraceptive use during this period. This figure depends not only on the risk of conception during postpartum amenorrhoea, but also on the pattern of return to menses. Bracher (1992)⁶⁷ estimated that 7% of all the Australian women would experience a conception during postpartum amenorrhoea by one year after the birth, compared to just 3.2% (se=0.3) among Matlab women, and 2.3% (se=0.5) for the USS women in the current analysis (Figure 3.9).

Table 3.7: Percentages pregnant by time since last birth among breastfeeding and non-breastfeeding women: findings from various studies

Months postpartum				
Breastfeeders	Punjab	Eskimo	RKS 1978-9	Australia
3	0.4	0	0.9	3.0
6	2.0	1.0	3.0	14.0
12	13.0	19.0	8.1	51.0
18	44.0	42.0	25.5	79.0
Non-breastfeeders	Punjab	Eskimo	RKS 1978-9	UK
3	7.0	9.0	17.9	6.0
6	40.0	44.0	50.2	46.0
12	55.0	(82)	79.2	84.0
18	62.0	-	86.1	94.0

Notes: 1. Australian data from Short, Lewis, Renfree et al. (1991), and UK data from Cronin (1968) both cited in Bracher (1992).
 2. Punjab and Eskimo data cited in Van Ginneken (1974).
 3. Figure in () is based on fewer than 25 cases.

The discrepancy between the present findings and those presented by Bracher (1992) deserves scrutiny. It is of interest to determine to what extent they reflect differences in the breastfeeding patterns of the two populations, and to what extent an alternative explanation is required, such as differing levels of underlying fecundability. Table 3.7 presents data from the Matlab 1978-9 cohort and Bracher's study, along with that from a number of other studies. Here, the percentage of women conceiving by time since last birth is contrasted for women who breastfeed and those who do not. Among breastfeeders, the results reported for the Punjab and the Eskimo populations (cited in Van Ginneken 1974), and the results from the present analysis of the RKS data, show similar percentages of women conceiving in the first year following birth. It is striking to

⁶⁶ The figures discussed here relate to the situation where women whose child died within two months of birth are excluded.

⁶⁷ Bracher's paper (1992) used the same dataset as that analysed by Short, Lewis, Renfree et al. (1991).

note that in the absence of any form of modern contraception, more than 50% of women in the Matlab 1978-9 cohort had a birth-to-pregnancy interval of longer than two years in this group.⁶⁸ In contrast, the data from the Australian study show quite a different picture. Among the Australian breastfeeders, 3% conceived within three months, 14% by six months, and 51% by one year, compared to figures for the Matlab women of 0.9%, 3.0% and 8.1%.

Comparing results for non-breastfeeders should throw light on whether there are underlying differences in the fecundability between the populations. Unfortunately, the data Bracher presents for non-breastfeeders come from an older study in the UK. Table 3.7 shows the results for this population, together with those for the Punjab and Eskimo populations, and for the present analysis of RKS data. Though the estimate at three months for the Matlab cohort is higher than for the other datasets,⁶⁹ at six months and one year, the estimates for all the study populations are remarkably similar. At six months, the cumulative percentage of non-breastfeeding women who had conceived were 40, 44, 50 and 46% for the Punjab, Eskimo, RKS and UK data. No evidence was therefore found for important differences in underlying fecundability between the populations which could account for the differing risks of pregnancy during postpartum amenorrhoea.

It seems likely then, that there are important differences in the patterns of breastfeeding practised in these populations. The current data available on breastfeeding patterns are inadequate for elucidating important differences in frequency and intensity of feeding between the study cohorts and other populations. Nevertheless, the available evidence suggests that breastfeeding in Bangladesh is relatively intense, with frequent suckling. For example, among urban slum mothers the mean number of breastfeeds per day (among exclusive and not exclusive breastfeeders) was around 13 for children aged up to 11 months, and around 20% of children received 18 or more breastfeeds per day (Baqui, Paljor, Nahar *et al.* 1993). This frequency did not decrease greatly until beyond the second year of life. For the rural population it seems likely that the frequency may be even higher. Bracher asserts that his models 'present the best-case scenario in terms of durations of lactation and lactational amenorrhoea since few women in developing countries have the leisure to breastfeed with the dedication exhibited by the participants in the Australian study' (1992, p24). Nevertheless, the long durations of postpartum amenorrhoea and low risks of pregnancy during postpartum amenorrhoea, suggest that the intensity of breastfeeding among Bangladeshi mothers is greater than in the Australian group.⁷⁰

⁶⁸ It should be remembered that many of the non-breastfeeders are women whose child has died. Therefore, there may be other factors, aside from lactational protection against pregnancy, which explain the difference between the two groups in time to conception. For example, there may be differences in coital frequency. Nevertheless, breastfeeding is assumed to be the most important factor.

⁶⁹ This large difference may in part be explained by the fact that the Matlab dataset was adjusted for late reporting of pregnancy, which was probably not the case for the Punjab or Eskimo datasets. In addition, almost all the women in the Matlab cohort who did not breastfeed had in fact lost their child soon after birth. These women may have wanted to conceive again quickly, and perhaps had more frequent sexual intercourse in order to achieve this objective.

⁷⁰ Other studies have shown that the frequency and intensity of breastfeeding may vary greatly between groups of women that are breastfeeding exclusively. In the study reported by Campbell and Gray (1993), the Filipino women were found to breastfeed more frequently than the American women, who had an average duration of postpartum amenorrhoea of just six months (Oona Campbell: personal communication, 1996).

One possible reason why the risks of pregnancy during the postpartum amenorrhoeic period are lower in Bangladesh than for other intensively breastfeeding populations, may be that exclusive breastfeeding extends for 'too long'. That is, increased contraceptive protection may be gained at the expense of infant health, since supplements are delayed beyond the time at which they are indicated. Current WHO guidelines recommend that supplements be introduced at four to six months of age. In order to determine whether the low pregnancy risks are explained by such breastfeeding behaviour, the above analyses were repeated for the Matlab 1978-9 cohort having excluded all women who breastfed fully for longer than six months. The results showed that by six months postpartum 1.7% (se=0.3) of amenorrhoeic women conceived, and by one year 4.9% (se=0.5).⁷¹ That is, although somewhat higher than the above estimates for all women, the pregnancy risks remained low despite the exclusion of this group of women.^{72 73}

3.2.10 Differentials in pregnancy risk during postpartum amenorrhoea

The above analysis suggests that lactational amenorrhoea provides good protection against pregnancy in the first year following birth for Bangladeshi women, but also that the average duration of postpartum amenorrhoea varies greatly between subgroups. We turn now to consider differentials in pregnancy risk during postpartum amenorrhoea. To what extent postpartum amenorrhoea affords the same protection against pregnancy among different subgroups of women is an important issue, and one that has not been addressed in most earlier studies. Data for the 1978-9 Matlab cohort provided an opportunity to explore in more detail the change in risk of pregnancy during lactational amenorrhoea by time postpartum, as well as the risks associated with different breastfeeding patterns and other maternal characteristics.⁷⁴

Methodological comments

In order to explore these relationships, the logistic formulation of the hazard model was used. Hazard models are now commonly employed in demographic analysis in order to allow the incorporation of time-varying covariates and censored observations (Meredith John, Menken and Chowdhury 1987; Becker and Ahmed 1994). In the logistic formulation of the hazard model, each individual's period of observation is represented in the model by several observations, one for each time unit of observation. In the present case, each individual woman contributes several months of observation to the analysis, one for each postpartum month during which she was followed up. A woman's period of follow-up continues from the month of her child's birth until she becomes pregnant again or is censored. In this case, censoring can occur for any of three reasons: loss to follow-up; adoption of contraception; or resumption of menses. In each observation, the dependent variable takes the value of '1' if pregnancy occurred, and '0' if pregnancy did not occur. Fixed

⁷¹ 3,143 women were included in the life table analysis. As above, these estimates relate to the case where women whose child died within two months of the birth were excluded.

⁷² It could be argued that even the women who initiated supplementation at six months were still depending on breastfeeding to a greater degree than recommended for adequate child growth. Lack of data on the adequacy of supplementation meant that this could not be explored further.

⁷³ Another factor that could not be explored in the present analysis, but which may account in part for low risks of pregnancy during postpartum amenorrhoea is spousal separation. Some studies have shown that husbands may spend significant amounts of time away from their home each month (Chen, Ahmed, Gesche *et al.* 1974). However, data from the 1989 BFS suggest that in only very few cases do husbands spend longer than a month away from home (Islam and Islam 1993). In addition, it is less likely that urban husbands would spend long periods away from home, especially following the birth of a child.

⁷⁴ Unfortunately, the sample size was too small to perform similar analyses using the USS data.

covariates take the same value in every observation relating to a particular individual, for example age, education or number of living children. However, the value of time-varying covariates is allowed to change between monthly observations. In addition, the models can be used to test whether the effects of variables vary over time. The models estimated therefore test the general hypothesis that the probability of a woman conceiving during amenorrhoea depends on both the time since her last birth and a number of other factors.

The logistic model for the odds of conceiving in a given month after birth can be expressed as:

$$\log\left(\frac{\pi}{1-\pi}\right) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \dots + \beta_n x_n + \varepsilon$$

where:

π = probability of conceiving during amenorrhoea in a given month.

β_0 = constant term representing the value of $\log(\pi/(1-\pi))$ for months with the baseline value of all variables x_1 to x_n in the model.

x_1 to x_n = independent variables associated with the month of observation, (which may be fixed characteristics of the woman, or time-varying characteristics, including time postpartum).

β_1 to β_n = unknown regression coefficients associated with the independent variables x_1 to x_n . A unit change in the corresponding independent variable produces a change in $\log(\pi/(1-\pi))$ of this amount.

ε = error or disturbance term representing unobserved variables that influence the risk of conception.

In the present example, one time-varying covariate was of interest, namely breastfeeding status. Though the RKS data available included only three categories of breastfeeding status (full, partial and none), the analysis performed by Meredith John, Menken and Chowdhury (1987) was followed in order to divide the partial category into two groups, depending on how many months earlier supplementation had been initiated. In this way, breastfeeding status for each woman was described by up to four categories over the period of follow-up: full; partial, supplementation occurred 0-6 months earlier; partial, supplementation occurred seven or more months earlier; and no breastfeeding.⁷⁵ The rationale for this categorisation is that the process of weaning is gradual, with supplements to breastmilk being introduced occasionally at first and then more often. Therefore, the frequency of supplementary feeds and the proportion of all feeds that are supplementary, are likely to be greater among women who initiated supplementation of the child's diet longer ago, than among those who started supplementation only recently.

Time postpartum and breastfeeding status

Initial analysis explored the pattern of risk of pregnancy by time postpartum. Life table analysis presented above (Table 3.7) suggested that the risk of pregnancy does not increase significantly until around ten months postpartum. In the present logistic regression analysis, having examined the monthly risks of pregnancy graphically, four categories of time postpartum were initially selected: 2-6 months, 7-10 months, 11-15 months

⁷⁵ In cases where the value of the breastfeeding variable changed in the same month as pregnancy status, it was assumed that the change in the independent variable occurred first. Though it is unreasonable to assume that this was in fact the sequence of events in all cases, findings from previous research suggest that this is the most appropriate assumption to make.

and 16-24 months.⁷⁶ Results of the basic model, which included only time postpartum, suggested that risk of pregnancy does not differ significantly between the 2-6 month time period and the 7-10 month period (odds ratio 1.37, $p=0.097$), but that the risk does increase significantly beyond ten months.

Next, the relationship between breastfeeding status and risk of pregnancy was explored. Results of the model which included only breastfeeding status suggested that partial breastfeeding, even when it has been only recently introduced, does significantly increase the risk of pregnancy compared to full breastfeeding (odds ratio 1.85, $p=0.003$), and that the risk is increased further for partial breastfeeders who initiated supplementation longer ago, and further again for women who are not breastfeeding at all.

However, further analysis revealed that the relationships between time postpartum, breastfeeding status and risk of pregnancy, are not simple. Evidence of effect modification (or interaction) was found, so that the effect of a change in breastfeeding status was seen to differ at different times postpartum. Table 3.8 presents the results of four basic models including only the breastfeeding variable, one for each of the four time periods, 2-6 months, 7-10 months, 11-15 months, and 16-24 months.

Table 3.8: Logistic regression odds ratios of conception associated with breastfeeding status modelled for different time periods after childbirth, Matlab 1978-9

Breastfeeding status	Time period after birth							
	Model 1 2-6 mths		Model 2 7-10 mths		Model 3 11-15 mths		Model 4 16-24 mths	
	odds ratio	p	odds ratio	p	odds ratio	p	odds ratio	p
full breastfeeding	1	-	1	-	1	-	1	-
partial, 0-6 mths	1.83	0.05	1.23	0.60	1.10	0.27	1.56	0.54
partial, 7+ mths	-	-	2.85	0.03	1.22	0.59	1.71	0.24
no breastfeeding	66.10	<0.001	33.09	<0.001	8.99	<0.001	3.38	0.04
N	20938		12055		10767		8211	

It can be seen that the odds ratios for partial breastfeeding and no breastfeeding compared to full breastfeeding decline with increasing time since the birth. In the first six months postpartum, women who introduce supplements to their child's diet are at higher risk of pregnancy than those who breastfeed fully (though the odds ratio only just reaches significance at the 5% level). However, beyond this time, there is no significant difference in the risks of pregnancy associated with full breastfeeding and partial breastfeeding where supplementation has been introduced within the past six months. In the time period 7-10 months, women who are breastfeeding partially and who introduced supplements seven or more months ago are at higher risk of pregnancy than full breastfeeders (and partial breastfeeders who introduced supplements within the past six months).⁷⁷ Beyond ten months postpartum, there is no significant difference in the risks of pregnancy

⁷⁶ Since the probability of pregnancy was very low in the first month postpartum and this could potentially affect the estimates for the whole of the first six month period, the first month was omitted from this stage of the analysis.

⁷⁷ The odds ratio for partial 7+ months compared to partial 0-6 months was 2.31 ($p=0.04$).

associated with partial breastfeeding compared to full breastfeeding, even if it has been initiated seven or more months ago. This suggests that women who introduce supplements to their child's diet within the first six months postpartum are at higher risk of pregnancy during the first six months, and remain at higher risk up until ten months postpartum. Thereafter, as long as these women continue to breastfeed, it appears that their risk is not significantly higher than women who introduced supplements later in the child's life, or continue to breastfeed fully.⁷⁸ The risk of conception among non-breastfeeders remains significantly higher than among full breastfeeders at all times postpartum, though the odds ratio declines with increasing time since the last birth. Several factors may contribute to the declining odds ratios with time. First, the risk of pregnancy for full breastfeeders appears to increase sharply beyond ten months postpartum (see below). Second, a selection mechanism is in operation where the more fecund among the partial and non-breastfeeding women conceive rapidly, leaving a pool of less fecund women behind in these groups. Finally, women who are not breastfeeding at all in the early months postpartum are a selected group, largely consisting of women whose child has died. These women may have particularly high risks of pregnancy due to higher coital frequency.

As well as comparing the risks of pregnancy to a baseline of full breastfeeding, it is of interest to examine the differentials in risk between partial breastfeeding and no breastfeeding at all. The results suggest that up to 15 months postpartum, partial breastfeeding continues to provide some additional protection against pregnancy compared to no breastfeeding at all. In the 11-15 month period, the odds ratio of no breastfeeding compared to partial breastfeeding with supplementation seven or more months ago was 7.4 ($p < 0.001$). Beyond 15 months, women who were still fully breastfeeding or had initiated supplementation within the past six months had significantly lower risks of pregnancy than those who were not breastfeeding at all. However, for women who had started supplementation seven or more months earlier, the risk of pregnancy was not significantly lower than for those who were not breastfeeding. It can therefore be concluded that women who start to introduce supplements to their child's diet at around five or six months postpartum (as currently recommended) but continue to breastfeed partially, can enjoy a significantly higher degree of protection against pregnancy during amenorrhoea for well over a year following the birth, than women who wean their child completely.

Further exploration confirmed that risks of pregnancy do not increase with time postpartum *per se* until beyond ten months postpartum. Table 3.9 presents the results of two models where the pattern of risk with time postpartum was examined, firstly for full breastfeeders alone, and secondly for partial breastfeeders who had initiated supplementation within the past six months.

It can be seen that there was no significant difference in the risk of pregnancy among full breastfeeders in the period 7-10 months compared to the period 2-6 months. Beyond ten months, however, the risk of pregnancy increased significantly. The same pattern was seen among partial breastfeeders who had introduced supplements within the past six months.

⁷⁸ It should be noted that some of the categories contain small numbers of observations, such as 'full breastfeeding 16-24 months' and 'no breastfeeding 2-6 months', meaning that the power to detect differences was lower than for other subgroups.

Table 3.9: Logistic regression odds ratios of conception associated with time postpartum modelled for different breastfeeding categories, Matlab 1978-9

Time period after birth (months)	Breastfeeding status			
	Model 1 Full breastfeeders		Model 2 Partial, supplements introduced 0-6 months ago	
	odds ratio	p	odds ratio	p
2-6	1	-	1	-
7-10	1.37	0.42	0.92	0.80
11-15	5.82	<0.001	3.49	<0.001
16-24	13.43	<0.001	9.98	<0.001
N	20446		16724	

In order to present the odds ratios associated with breastfeeding status and time postpartum simultaneously, the model was reparameterised, creating an interaction term. Table 3.10 presents the odds ratios associated with various combinations of breastfeeding status and time postpartum compared to a baseline of full breastfeeding during the 2-6 month period. In order to keep the number of cells manageable, three categories have been used for breastfeeding status: full; partial; and none. The results again illustrate that the risks associated with partial breastfeeding and no breastfeeding, compared to full breastfeeding, are higher in the early postpartum than later on, and that the risks in the 7-10 month period are no higher than in the 2-6 month period, for any particular breastfeeding category.

Table 3.10: Logistic regression odds ratios of conception associated with breastfeeding status and time postpartum, Matlab 1978-9

Time postpartum (months)	Breastfeeding status		
	Full breastfeeding	Partial breastfeeding	No breastfeeding
2-6	1	1.83	66.10
7-10	1.37 \$	2.03	45.20
11-15	5.82	6.81	52.27
16-24	13.43	22.58	45.39

Notes: 1. \$ signifies that the risk in the category is not significantly different from the baseline
2. N=51,970.

Other maternal characteristics

In addition to examining the pattern of pregnancy risks during amenorrhoea by time postpartum and breastfeeding status, it was of interest to explore whether other maternal characteristics are associated with risk of conception. In this stage of the analysis, age, number of living children, religion, education, and household area (a measure of socio-economic status) were considered as independent variables. Bivariate analyses suggested that risk of pregnancy during amenorrhoea is negatively associated with age, and positively associated with education. No significant association was found with number of living children, religion or household area.

The associations observed could be explained by differing breastfeeding patterns, and/or differing levels of underlying fecundability (fecundity and/or coital frequency). When models were estimated that included breastfeeding status, the effect of education was found to lose significance, suggesting that the higher risks of pregnancy among more educated women are explained by their tendency to introduce supplements to their child's diet earlier.

Table 3.11: Logistic regression odds ratios of conception: final model, Matlab 1978-9

	Odds ratio	p	95% confidence interval
Woman's age (years)			
30+	1	-	-
<30	1.89	<0.001	1.56 - 2.29
Time postpartum and breastfeeding status			
2-10 months, full	1	-	-
2-10 months, partial	1.87	0.005	1.21 - 2.87
2-10 months, none	54.62	<0.001	32.74 - 91.10
11-15 months, full	5.44	<0.001	2.69 - 10.97
11-15 months, partial	6.63	<0.001	4.57 - 9.60
11-15 months, none	54.65	<0.001	27.14 - 110.04
16-24 months, full	12.64	<0.001	4.92 - 32.51
16-24 months, partial	22.66	<0.001	16.08 - 31.92
16-24 months, none	52.62	<0.001	23.78 - 116.47

Notes: 1. Having fitted the model, the goodness of fit was examined. Neither the Pearson chi-squared statistic nor the link test suggested important deviations from the model assumptions. Pearson chi-squared = 6.88 (8 d.f.), p=0.55.
2. N=51,970.

In the case of age, however, even when breastfeeding status was controlled for, a significant negative association persisted, and in fact the size of the effect increased. Table 3.11 presents the results from the model where time postpartum and breastfeeding status were controlled for. The odds ratio for risk of pregnancy for women aged less than 30 compared to women aged 30 years or more, was 1.89 (p<0.001). No significant difference was found between women aged less than 20 years and those aged 20-29 years.⁷⁹

Having fitted the model, the predicted probabilities were used to calculate cumulative risks of pregnancy for hypothetical scenarios. In this way, it was estimated that 0.6% of women aged 30 or more who fully breastfeed for six months, would conceive during amenorrhoea by six months postpartum, compared to 1.1% of women aged less than 30. For women who fully breastfeed for six months and then go on to partially breastfeed up to 12 months postpartum, 3.0% of women aged 30 or more would conceive by 12 months postpartum, compared to 5.5% of women aged less than 30. For women who partially breastfeed from birth onwards, the risks are somewhat higher, though still low. Among women aged 30 or more, 1.1% would

⁷⁹ Earlier research in Matlab has shown a 'U' shaped relationship with age, with fecundability peaking in the twenties (Meredith John, Menken and Chowdhury 1987). No evidence was found for this in the current analysis.

conceive by six months postpartum, and 3.5% by 12 months, compared to 2.1% and 6.4% among women aged less than 30.

3.3 Summary

Analysis of data from Matlab and the USS populations showed that, on average, in the early 1990s postpartum amenorrhoea still lasted for longer than eight months in both populations. Although these durations are longer than many other populations, time series data from Matlab and the national population suggest that the duration of postpartum amenorrhoea is on the decline. The fall has been particularly sharp for the Matlab population. As well as a decline over time, large differentials in the length of postpartum amenorrhoea were found between subgroups of women in both the Matlab and USS slum populations. Among women aged less than 20, postpartum amenorrhoea lasted on average around just six months in both the study populations.

Changes in breastfeeding patterns are the most likely explanation for the observed downward trend in the duration of postpartum amenorrhoea. Though the duration of all breastfeeding (full plus partial) remains long, evidence suggests that the duration of full breastfeeding has decreased in Matlab. The available data did not allow a detailed comparison of infant feeding practices in Matlab and the national population, though the shorter durations of postpartum amenorrhoea suggest earlier introduction of supplements and less intensive suckling of the breast in Matlab than elsewhere.

Changes in maternal nutritional status are an unlikely explanation for the downward trend in postpartum amenorrhoea in either Matlab or the national population.

A negative association between the adoption of contraception and the duration of postpartum amenorrhoea was illustrated in both study populations. Possible explanations for this association were described. The question of whether increased contraceptive use has contributed to the decline of postpartum amenorrhoea in Matlab and elsewhere in Bangladesh is explored further in the chapters that follow.

In addition to extended durations of postpartum amenorrhoea, findings suggest that the risk of conception during amenorrhoea is lower in the study areas than in some other populations. Whereas previous analyses have stressed the increasing risk of pregnancy beyond six months postpartum for amenorrhoeic women (Kennedy, Rivera and McNeilly 1989), the present findings suggest that the probability of conception does not start to rise until around 10 months. This finding is in line with the results presented by Weis (1993) for data from the 1989 BFS. This means that, despite the fact that amenorrhoea lasts for longer, the overall percentage of women who can be expected to conceive during postpartum amenorrhoea by any particular time postpartum, is lower than has been found elsewhere. Multivariate analysis illustrated that full breastfeeding affords greater protection than partial breastfeeding, but that partial breastfeeders in Bangladesh also enjoy good protection against pregnancy during amenorrhoea in the months after birth. Findings also illustrated that older women have significantly lower risks of conception during postpartum amenorrhoea than younger women.

In common with the study populations, data presented from national surveys also showed long durations of postpartum amenorrhoea and breastfeeding. It therefore seems reasonable to assume that the estimates of pregnancy risk presented for the Matlab and Dhaka slum populations can be extrapolated to the rest of the population. Findings from the present study suggest that lactational protection against pregnancy is greater and lasts for longer in Bangladesh than in many other populations. This implies that conclusions regarding the suitability of alternative postpartum family planning strategies based on findings from other settings may not be appropriate. Clearly, lactational protection against pregnancy deserves careful consideration in the Bangladeshi context.

Chapter four: Use of contraception following childbirth

4.1 Introduction

In addition to apparent changes in the natural protection against pregnancy afforded by breastfeeding, Bangladesh has seen a huge rise in the use of modern contraception over the past 15 years, from around 8% in 1975, to close to 45% in 1994 (Mitra, Nawab Ali, Islam *et al.* 1994). In 1989, use of contraception was estimated to reduce overall fertility by around 29% (Cleland, Phillips, Amin *et al.* 1994). Despite a series of national surveys, and much published research into fertility and family planning in Bangladesh, little is known about contraceptive use following childbirth. The patterns of adoption of contraception in the postpartum period have not been described in detail, nor has the relationship between contraceptive use and natural protection against pregnancy.⁸⁰ An understanding of these prevailing patterns and trends is an important prerequisite for the development of appropriate recommendations regarding family planning policy in the period following childbirth.

This chapter draws on the longitudinal data from the Matlab RKS and the USS to describe the current patterns of contraceptive use following childbirth in the two populations. Trends over time are also explored for the Matlab population.

4.2 Findings

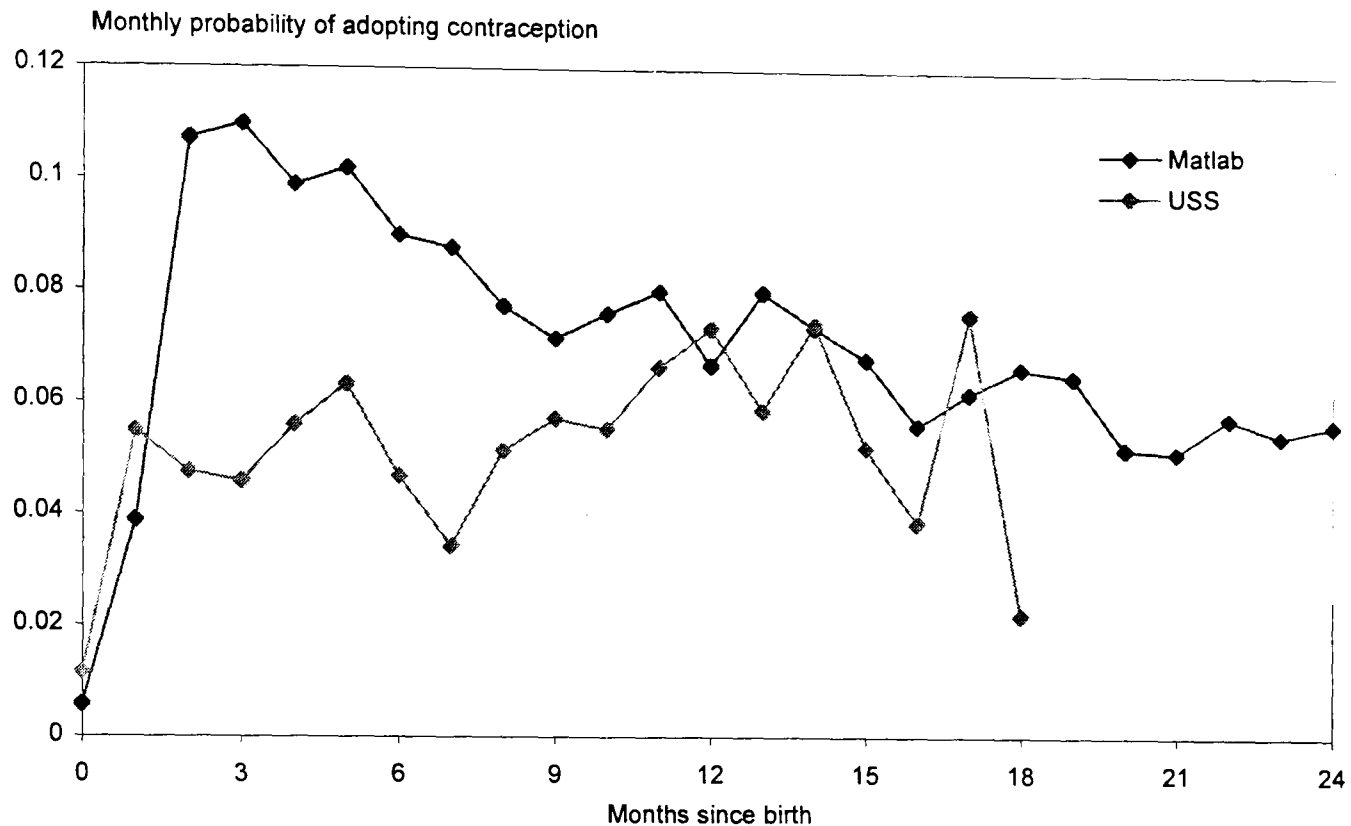
4.2.1 Time to adoption following birth: current patterns

Figure 4.1 shows the monthly probabilities of adoption of contraception among women by time following birth, for the 1990-1 Matlab cohort and for the 1992-3 USS cohort. The graphs show that in both populations the probability of adopting contraception rises sharply in the first two or three months after a birth. In Matlab, the probability peaks at around 0.11 between two and four months postpartum, and then slowly declines again. In the USS population the probability of adoption is always lower than in Matlab, but fluctuates around 0.06 from two months until beyond fifteen months postpartum. The pattern for Matlab suggests that women who want to use contraception are motivated to initiate use soon after birth and receive their supplies promptly. Thus, over time the group of nonusers progressively comprises women who are less and less prone to adopt contraception, for whatever reason. In contrast, in the USS population the attrition of women who wish to adopt contraception occurs more slowly. As illustrated below, it takes time for women to become sufficiently motivated to initiate use, one important factor in this being the resumption of menses. Limited access to services may also account for the delayed uptake in the slum population. By one year postpartum, 63% of the women in Matlab who remained non-pregnant had adopted a method of contraception, compared to 46% in the USS population.⁸¹

⁸⁰ The 1993-4 DHS collected information on the pattern of adoption of contraception following childbirth for the national population, suggesting that this is now recognised as an important issue. At the time of writing, however, these data had not yet been analysed.

⁸¹ These percentages were calculated from a life table censoring women who became pregnant or were lost to follow-up. As described in chapter two, loss to follow-up includes a number of censoring events: death; out-migration; missing information for more than two consecutive months; and loss of eligibility (e.g. widowhood, menopause).

Figure 4.1: Monthly probability of adopting contraception among all women by time since birth, Matlab 1990-1 and Dhaka slums 1992-3



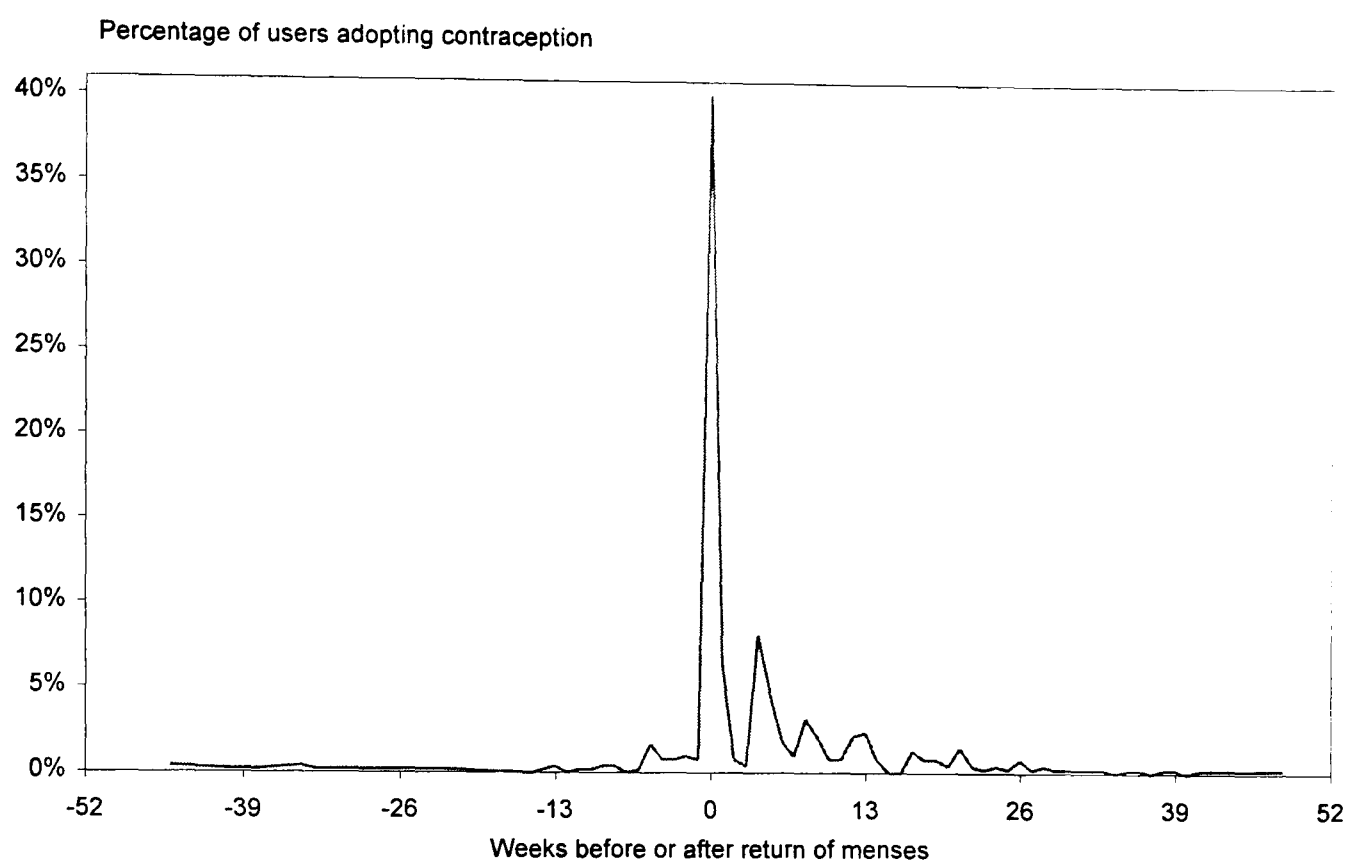
Notes: 1. Life table estimates, censored if pregnant or lost to follow-up.
 2. All methods of contraception, all women.
 3. 0 indicates adoption in the month following birth.

4.2.2 Adoption of contraception in relation to the return of menses: current patterns

Weis (1993) analysed current status data from the 1989 BFS and showed that amenorrhoeic women were much less likely to be practising contraception than menstruating women. Such an association suggests that the return of menses may act as an important trigger for women to initiate the use of contraception following a birth. However, as discussed in chapter three, there are several possible explanations for the negative association between postpartum amenorrhoea and the use of contraception. In particular, the relationship could be explained by reverse causality, in that the adoption of contraception could trigger the resumption of menses. The use of the oral pill is most likely to induce a return to menstrual cycling, but it is also possible that the adoption of other methods, such as the injectable or IUD could precipitate bleeding that may be reported as menses, or could lead to changes in breastfeeding patterns and a subsequent return to menses. The present analysis, using the longitudinal data from the RKS and the USS, is able to throw some light on this relationship, since the timing of adoption of contraception in relation to the resumption of menses can be explored.

In the USS, women were directly questioned about how long after their last birth they adopted contraception for the first time, and whether this was before or after the resumption of their menses. Thus, the temporal sequence of the two events can be elucidated. Figure 4.2 shows that the great majority of contraceptive users adopted their first postpartum method *after* their menses had resumed. For all methods, the percentage of users who adopted after menses was far greater than those adopting before (Table 4.1), except in the case of female sterilisation (and herbal methods for which the numbers were very small). The percentage of condom

Figure 4.2: Pattern of adoption of contraception in relation to the return of menses, Dhaka slums 1992-3



Note: 1. 0 indicates adoption in the week following first menses.

users who initiated use before menses was somewhat higher than for the other modern, temporary methods, at 33%. This is consistent with the finding that the condom is often promoted in the postpartum amenorrhoeic period by family planning providers (see chapter six).

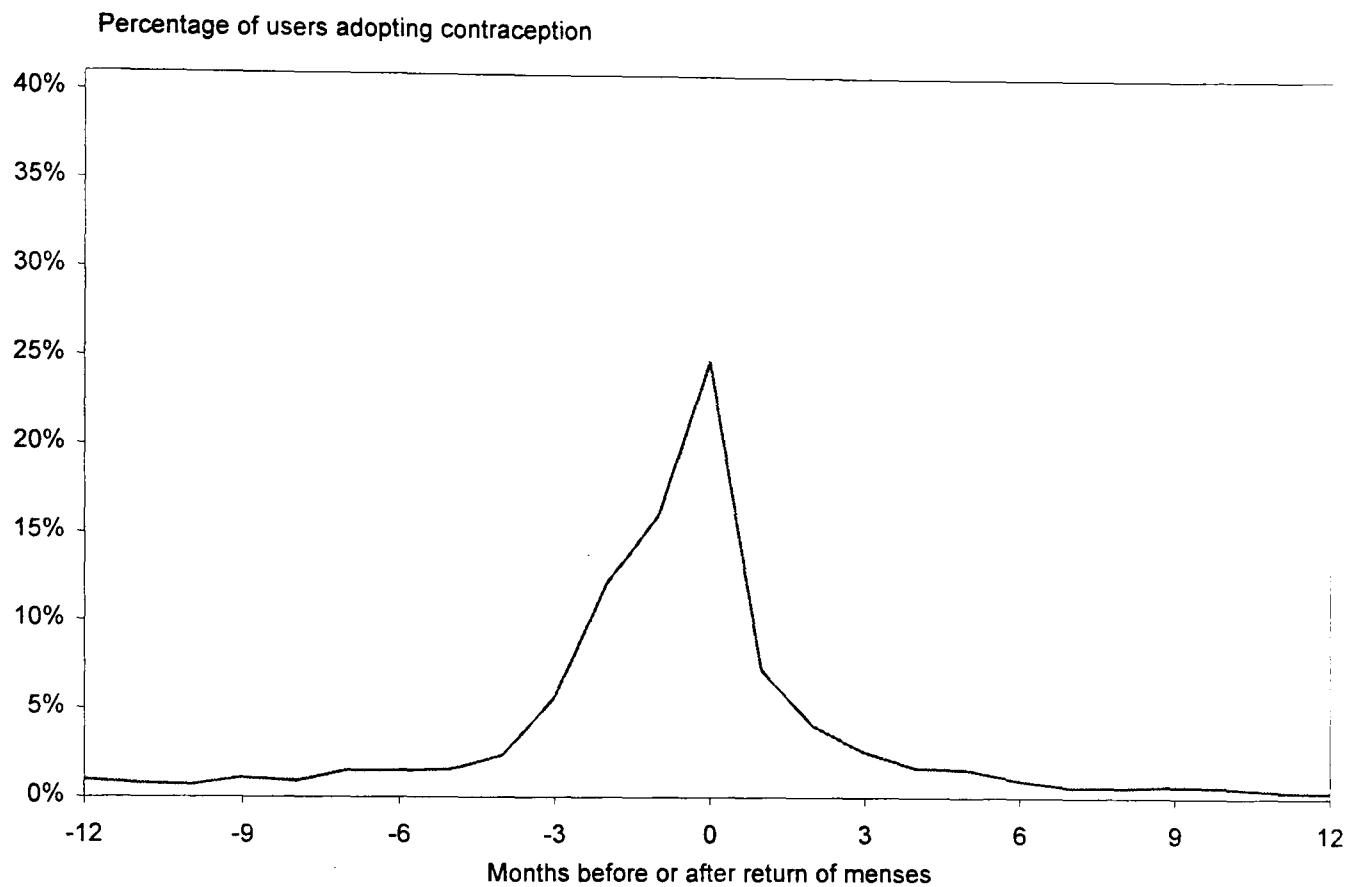
Table 4.1: Adoption of contraceptive methods in relation to the resumption of menses, Dhaka slums 1992-3

	Percentage of users adopting the method			N
	Before Menses	After menses		
		Anytime after	Within 1 week	
Pill	8.6	91.4	47.0	266
Injectable	18.2	81.8	37.6	88
IUD	10.0	90.0	50.0	10
Condom	32.6	67.4	17.4	46
Female sterilisation	69.2	30.8	7.7	13
Periodic abstinence	0.0	100.0	53.3	15
Herbal	50.0	50.0	25.0	12
Other	0.0	100.0	0.0	1
All methods	15.6	84.4	40.2	455

Note: 1. Information on timing of adoption was missing for one pill and one injectable user. The total number of women who adopted contraception within the period of follow-up was 457.

The hypothesis that menses acts as a stimulus to contraceptive uptake is strongly supported by the very large percentage of users who started contraception immediately after first menses. Forty percent of all users started within one week of first menses, and 51% within one month. Uptake was particularly concentrated around the

Figure 4.3: Pattern of adoption of contraception in relation to the return of menses, Matlab 1990-1



Note: 1. Including women who adopted contraception within two years of the birth.
2. 0 indicates adoption in the same month as first menses.

time of menses for pill and injectable users. Large numbers of pill users reported starting use on the 3rd, 5th and 7th day after menses started, and a large number of injectable users mentioned the 3rd day, reflecting the prevailing recommendations in family planning programmes (see chapter six). These findings suggest that large numbers of women are responding quickly to the resumption of menses and are managing to acquire supplies promptly. However, a further peak in adoption was seen in the fifth week after menses and smaller peaks were seen in the ninth and thirteenth weeks after menses. This reflects the fact that quite a large number of users reported initiating use after their second, third and fourth menstrual cycles postpartum. Clearly then, some users do not start use immediately their menses resumes and it is likely that other women who delay in this way become pregnant again before managing to initiate contraceptive use.

In the Matlab RKS, information was available on the contraceptive and menstrual status of each woman, for each month following the birth. Therefore, in all cases, except those where both menses returned and contraception was adopted in the same month, the temporal sequence of the two events could be identified. Figure 4.3 shows that, as in Dhaka slums, in Matlab there was a heavy concentration of adoption around the time of menses. The largest percentage of adopters adopted their first method in the same month as menses. In cases where adoption occurred in the same month as menses was first reported it is most likely that menses returned first and that this was followed by adoption, rather than vice versa.

However, it should also be noted that a large percentage of adopters initiated use in the month immediately before menses. This is unlikely to result from errors in reporting, since women's contraceptive and menstruating status are recorded and entered onto computer on a monthly basis in the RKS. An alternative

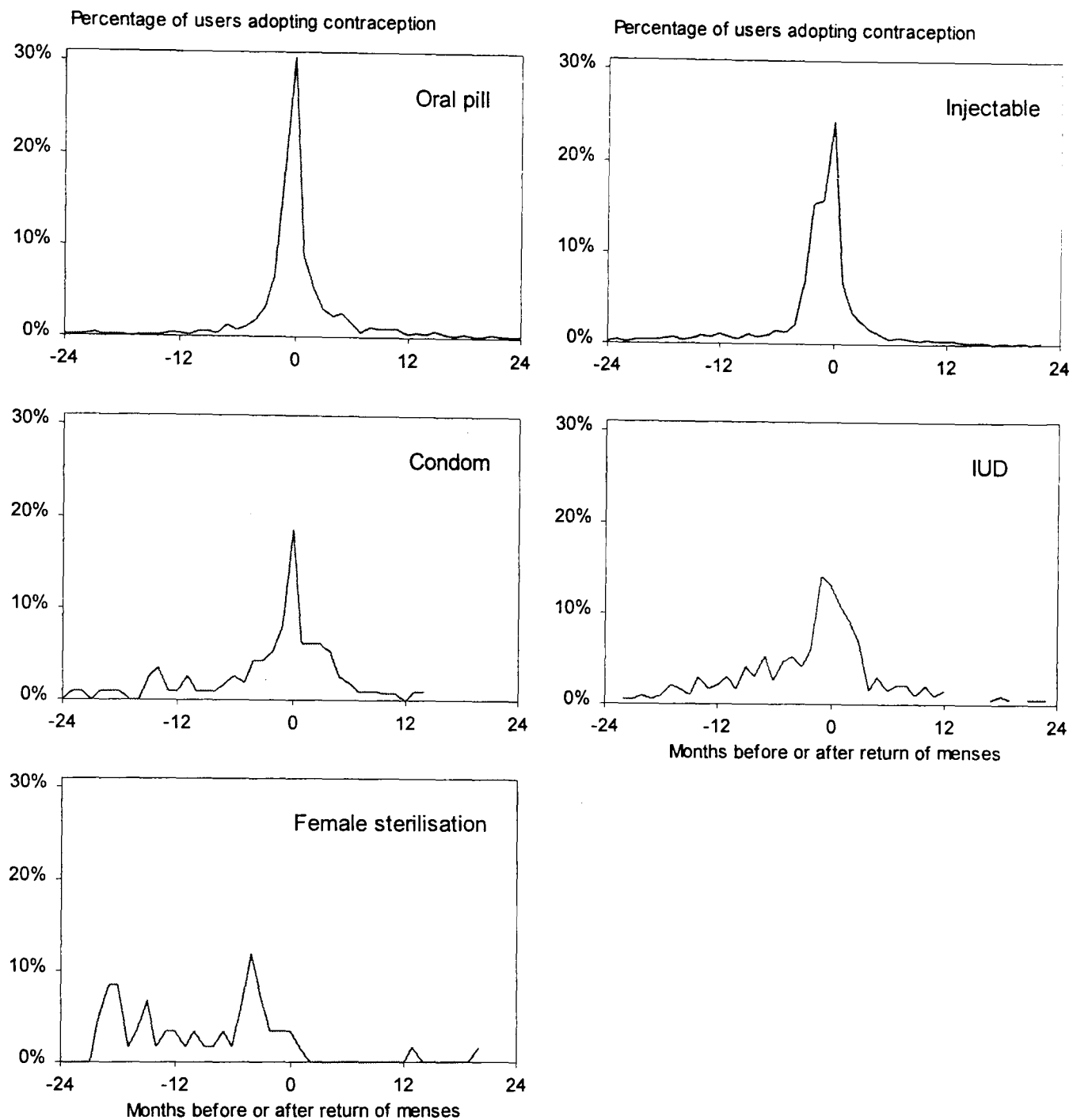
explanation is that women anticipate the return of menses from previous experience. This again seems a somewhat unsatisfactory explanation, since although women may anticipate a certain length of amenorrhoea based on their past history⁸² and there is evidence to suggest that successive durations of amenorrhoea are correlated (Ford 1992), it seems unlikely that women could predict the duration as accurately as to within one month. A final possibility is that the adoption of contraception itself causes the resumption of menses (or withdrawal bleeding reported as menses). As discussed in chapter three, this could be the result of a direct physiological effect, or via an impact on breastfeeding patterns. In the case of women whose menses returned immediately following the adoption of contraception, a direct physiological effect seems a more reasonable explanation, since it is likely that there would be a delay of some weeks before changes in breastfeeding were translated into a return of menses. As mentioned above, such an effect is well recognised for the oral pill,⁸³ and may also occur with the injectable. It is, however, less clear whether other methods could have a similar effect.

Figure 4.4 shows the pattern of adoption of contraception in relation to the resumption of menses for different methods in the Matlab 1990-1 cohort. The data for both the pill and injectable show a large peak around the time of menses, both in the month before and the month of first menses. The data for the condom and IUD also show a peak in the same month as first menses though it is less pronounced than for the hormonal methods. A greater percentage of users of these methods initiated use before menses than the hormonal methods, though adoption is not particularly concentrated in the month immediately before menses, in contrast to the hormonal methods. The pattern for tubectomy users shows little association with the resumption of menses, with the majority of users accepting the method before the end of the period of amenorrhoea. Figure 4.4 suggests that the adoption of both the pill and the injectable may induce bleeding shortly after first administration in amenorrhoeic women. Reports by family planning users and fieldworkers discussed in chapters five and six also support this assertion.

⁸² Data presented in chapter five show that past reproductive history is an important factor guiding use of contraception in the period following childbirth in Bangladesh.

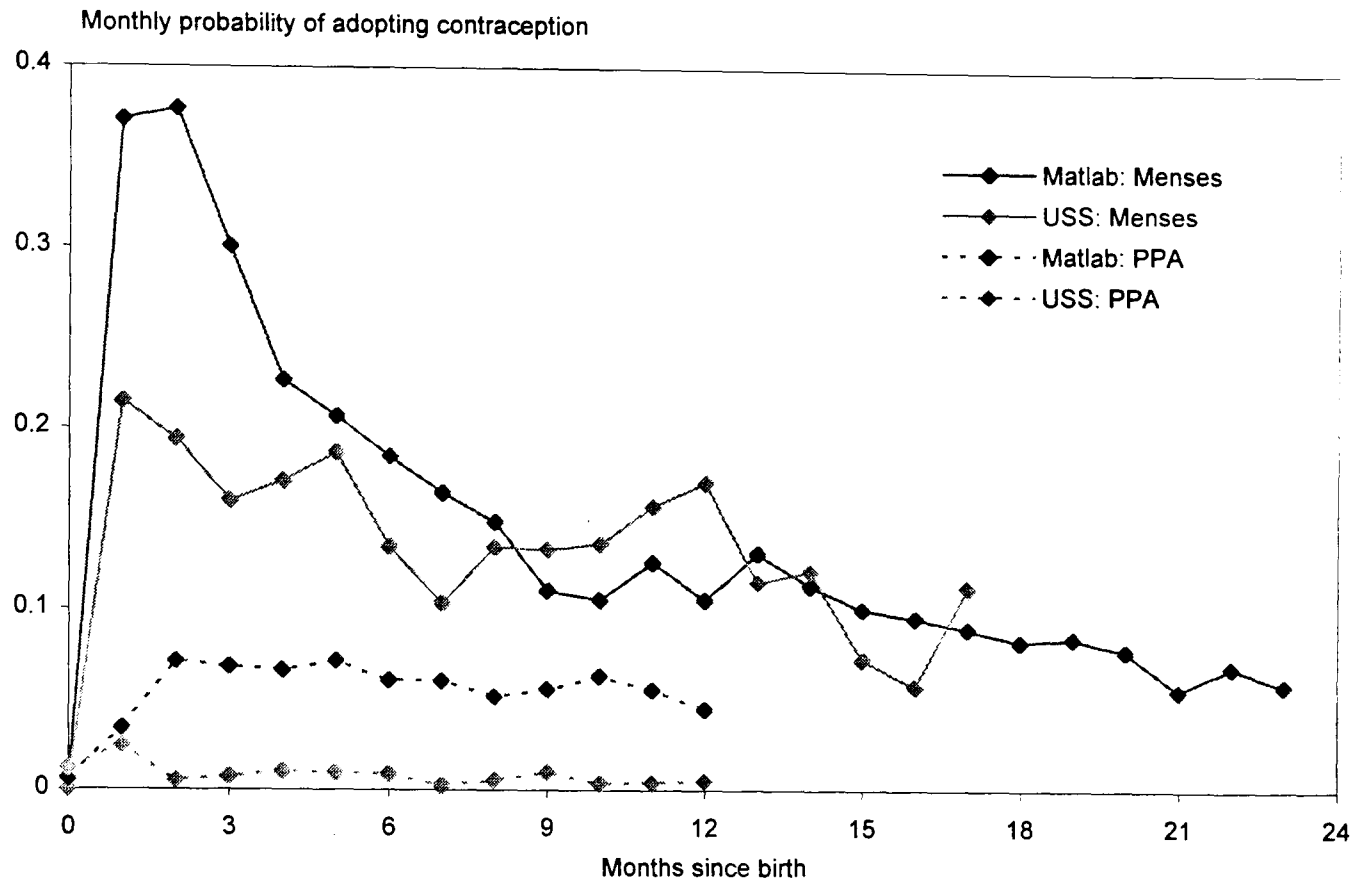
⁸³ In chapters five and six evidence is presented which shows that the oral pill is intentionally used to induce menstrual cycling in amenorrhoeic women in both the urban and rural settings.

Figure 4.4: Pattern of adoption of specific methods of contraception in relation to the return of menses, Matlab 1990-1



The data for both populations suggest that at least part of the negative association between the duration of postpartum amenorrhoea and contraceptive use described in chapter three, can be explained by a substitution mechanism. The return of menses postpartum appears to be recognised by women as an indicator of increased risk of pregnancy, and thus acts as an important stimulus for the adoption of contraception. This pattern was observed for all methods, except sterilisation. The question as to whether this reflects a conscious substitution of breastfeeding with modern contraception, or rather an unconscious substitution resulting from a response to the earlier resumption of menses (i.e. mechanism 2a or 2b described in chapter three), cannot be answered with the quantitative data available. However, findings presented in chapter five describe women's perceptions of pregnancy risk in the postpartum period in detail, including their understanding of the contraceptive effect of breastfeeding, and suggest that, for the majority of women, the substitution is unconscious and that breastfeeding is not intentionally employed as a contraceptive method.

Figure 4.5: Monthly probability of adopting contraception among amenorrhoeic and menstruating women by time since birth, Matlab 1990-1 and Dhaka slums 1992-3



Notes: 1. All methods of contraception, all women.
 2. Life table estimates, censored if pregnant, lost to follow-up or menses returned.
 3. 0 indicates adoption in the month following birth.

Having noted that the return of menses was a trigger to contraceptive adoption for many women in both populations, it is important to highlight the fact that the tendency to initiate use during amenorrhoea differed significantly between the two populations. Figure 4.5 shows the monthly probabilities of adopting contraception among amenorrhoeic and menstruating women in both the Matlab and USS populations. Among the menstruating women, the main difference between the populations was in the early months postpartum, where there was a much higher probability of women accepting contraception in Matlab than in Dhaka slums. That is, women whose menses resumed soon after birth in the urban setting were less likely to adopt a method of contraception than women in Matlab. However, beyond five months postpartum, the monthly probabilities of adoption were similar for the two populations, fluctuating around 0.14.

However, among amenorrhoeic women, there was a consistent differential between the two populations beyond two months postpartum. Amenorrhoeic women in Matlab were more likely to adopt a method of contraception than amenorrhoeic women in Dhaka slums at all times over the first year postpartum.⁸⁴ Figure 4.6 plots the life table cumulative percentage of amenorrhoeic women who adopted a method of contraception in the two populations. A striking differential was found, with around 50% of amenorrhoeic women adopting a method of contraception by 12 months postpartum in Matlab, compared to less than 10% among the USS

⁸⁴ In Matlab, the monthly probability was around 0.06 (se=0.004) compared to around 0.01 per month (se=0.003) for the USS population over the first year postpartum. Beyond twelve months the estimates are unstable because of the small numbers of women who were still amenorrhoeic.

population.⁸⁵ This difference is much greater than that found in the percentage of all women who adopted contraception, illustrated in Figure 4.7. In this graph, it can be seen that in Matlab, a little over 60% of all women (who remained non-pregnant) started to use a method of contraception by one year following their birth, compared to around 45% for the USS population.

The common use of contraception prior to the resumption of menses in Matlab means that the differential in duration of postpartum amenorrhoea between users and nonusers of contraception, described in chapter three, could be the result of early menstrual (or withdrawal) bleeding, induced by contraceptive use. However, since contraceptive use prior to the resumption of menses was rare in the urban population, this mechanism clearly cannot explain the negative association between contraceptive use and duration of postpartum amenorrhoea that was also documented in this population.

Table 4.2: Method mix among women who adopted contraception before the resumption of menses and within the first year postpartum, Matlab 1990-1 and Dhaka slums 1992-3

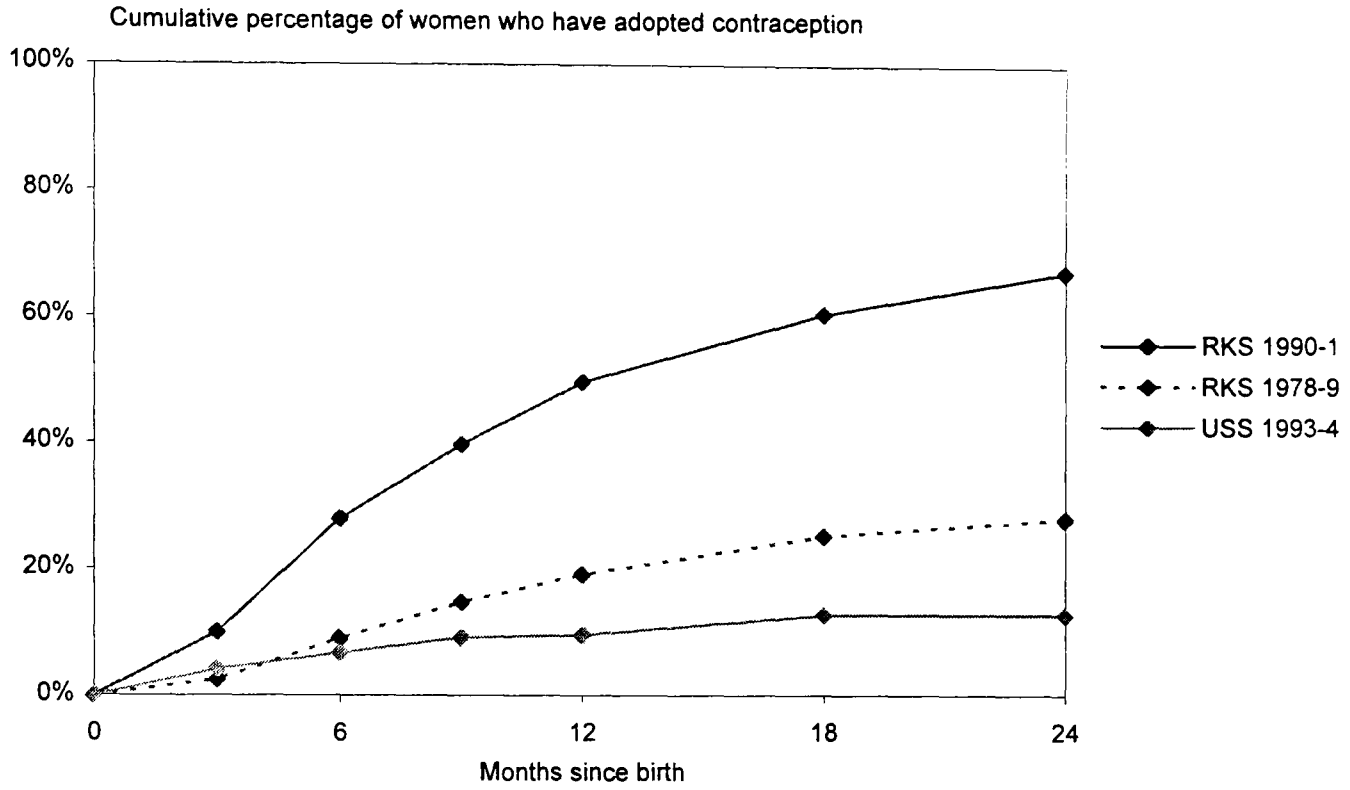
	Percentage of adopters	
	Matlab, 1990-1	Dhaka slums, 1992-3
Pill	17.7	30.9
IUD	6.8	1.5
Injectable	67.8	22.1
Condom	2.5	22.1
Female sterilisation	3.0	13.1
Other	2.2	10.3
N	1985	68

The large difference in the probabilities of adoption of contraception during amenorrhoea between Matlab and the USS population could be explained by different contraceptive method mixes in the two populations. Table 4.2 shows that the method mix among women who adopted contraception prior to the return of menses and within the first year postpartum, differed in the two populations. A much higher proportion of women adopted the injectable contraceptive in Matlab than in the urban slums. The IUD was also more common in Matlab, though it made up a small proportion of all the adopters. In contrast, 'early' adopters in Dhaka slums mainly started to use the pill, followed by the injectable and condom. Female sterilisation was more common among the urban users than in Matlab.⁸⁶ Clearly then, the Matlab women's greater adoption of contraception during amenorrhoea is not explained by a higher prevalence of sterilisation, nor of IUD or condom acceptance (methods often regarded as suitable in the postpartum period). Rather, the great majority of women adopting contraception soon after birth and during postpartum amenorrhoea used temporary hormonal methods.

⁸⁵ Throughout the RKS analysis, women who reported first use of contraception and first menses in the same month, were considered to have started contraception *after* the return of menses.

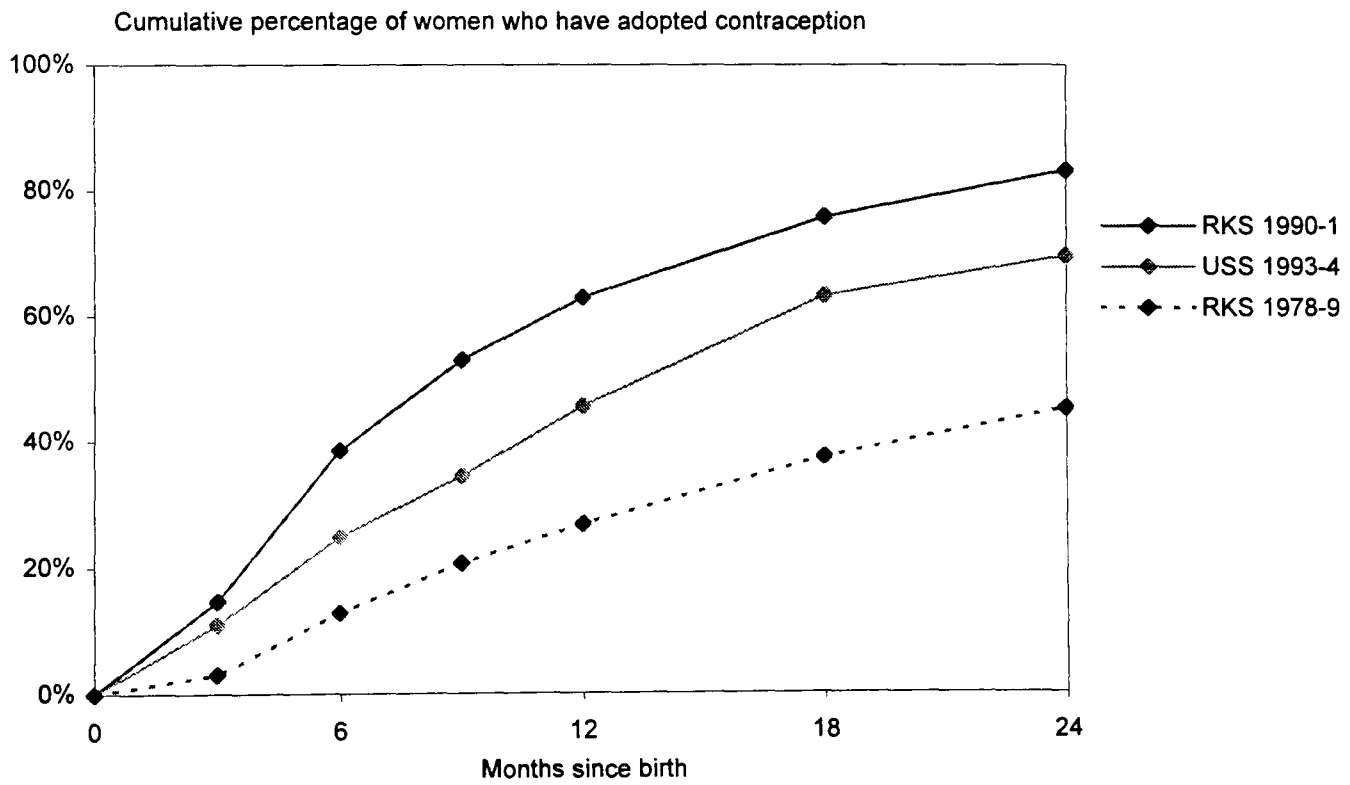
⁸⁶ The numbers of users in the urban cohort were small, but there is still an obvious difference in method mix. This reflects differences in the family planning services available to the two populations, an issue which is discussed more in chapter six.

Figure 4.6: Cumulative percentage of amenorrhoeic women adopting contraception by time since birth, Matlab and Dhaka slums



Note: 1. Life table estimates, censored if pregnant, lost to follow-up or menses returned.

Figure 4.7: Cumulative percentage of all women adopting contraception by time since birth, regardless of menstrual status, Matlab and Dhaka slums



Note: 1. Life table estimates, censored if pregnant or lost to follow-up.

4.2.3 Adoption of contraception in relation to the return of menses: trends over time in Matlab

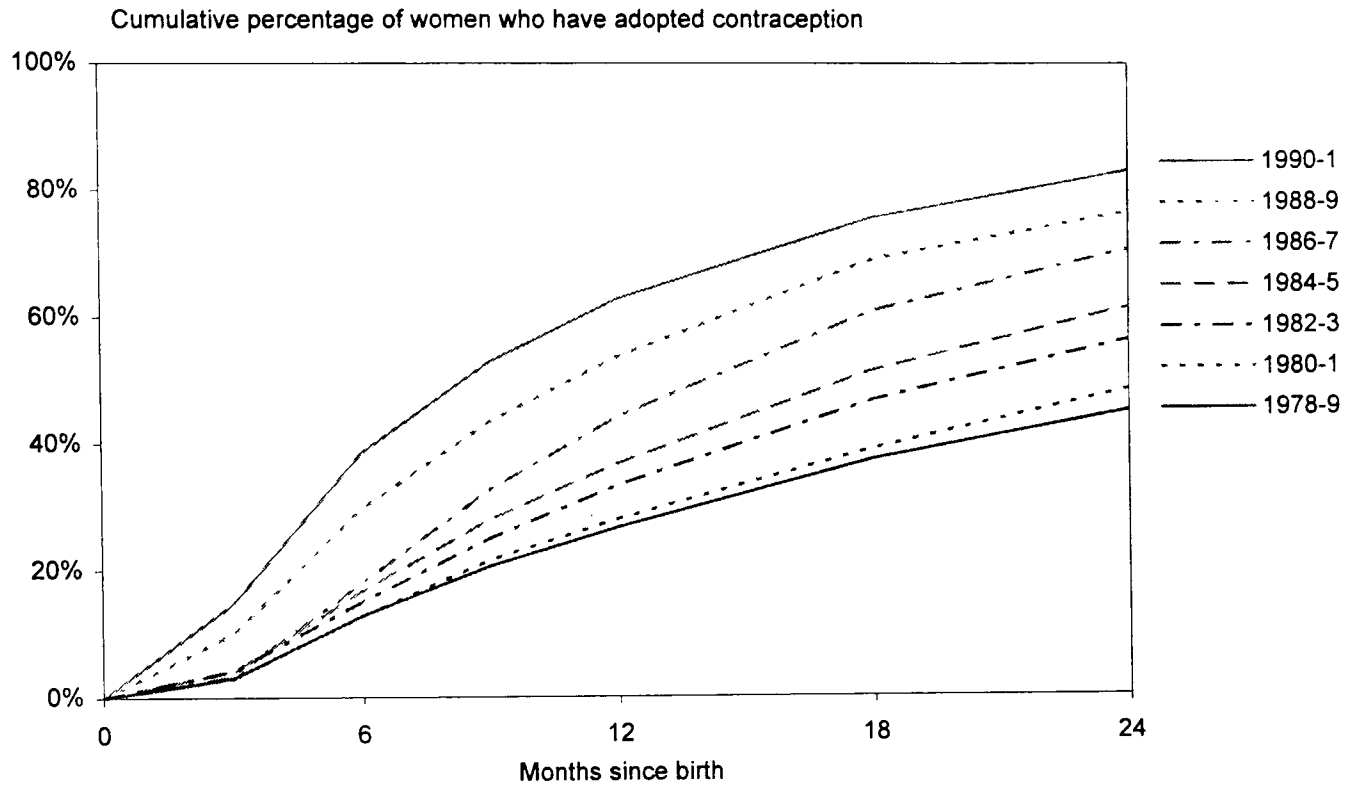
The different patterns of adoption observed above raise the question as to why women in Matlab should be so much more likely to initiate use of contraception during postpartum amenorrhoea than their urban counterparts. In this regard, it is of interest to explore whether this is a new phenomenon, or one that has existed since the start of the programme.

Figure 4.8 and Figure 4.9 plot the life table cumulative percentages of all women, and amenorrhoeic women respectively, who adopted contraception by time since birth in the Matlab cohorts from 1978-9 to 1990-1. Figure 4.8 reflects the steady rise in contraceptive use in general over the study period in Matlab (Koenig, Phillips, Simmons *et al.* 1987, Koenig, Rob, Khan *et al.* 1994). It also suggests that there was a change in adoption patterns in the early postpartum period in the latest two cohorts, with greater numbers of women starting use.

Figure 4.9 suggests that the proportion of amenorrhoeic women adopting contraception remained roughly constant between 1978-9 and 1980-1, and increased slightly in the 1982-3 and 1984-5 cohorts. Beyond 1984-5, there was a steady increase in successive cohorts.

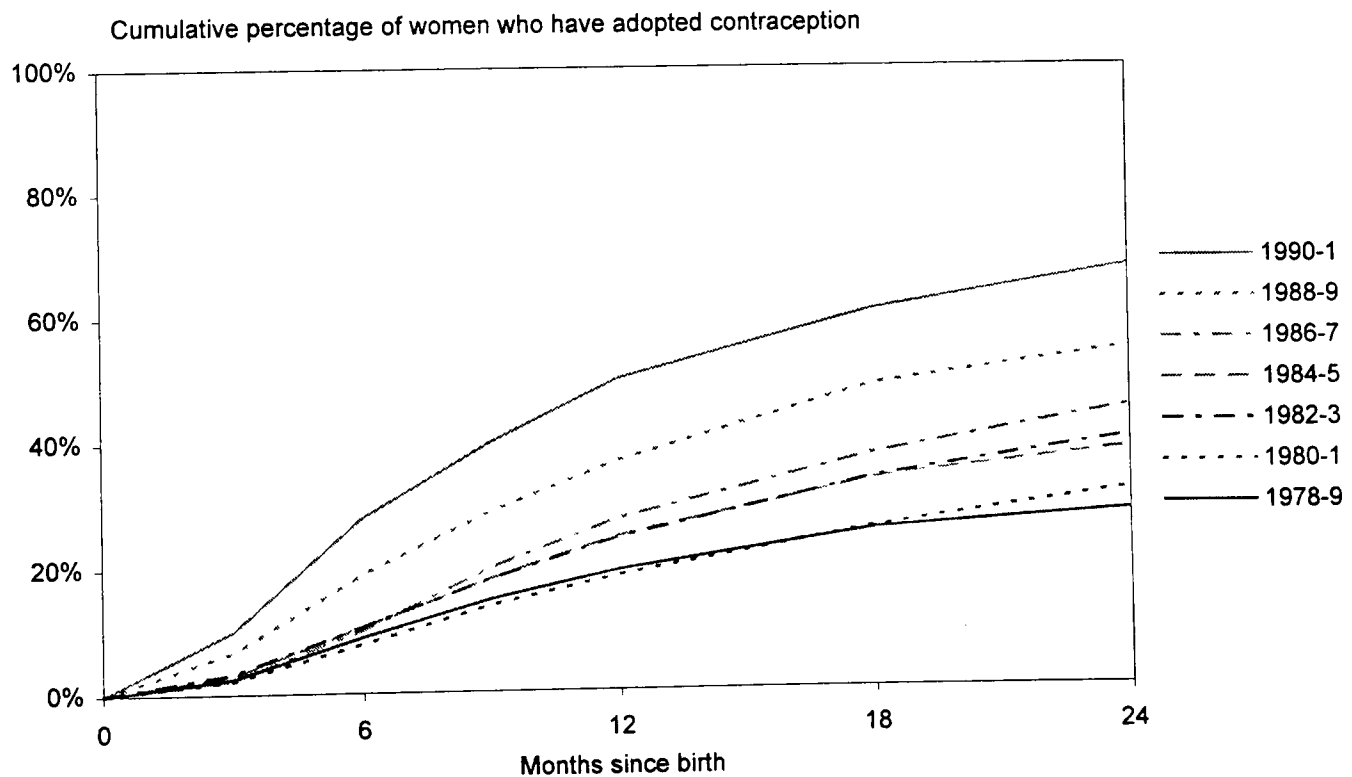
The above analysis shows that there has been a large increase in the proportion of women using contraception during postpartum amenorrhoea over time in Matlab. However, it should be noted that the levels of use in the early cohorts were still high compared to the USS and national populations. Figure 4.6 and Figure 4.7 compare the Matlab 1978-9 and 1990-1 cohorts with the USS 1992-3 cohort. It can be seen that, whereas among all women, the percentage adopting contraception in the USS cohort is closer to the 1990-1 Matlab cohort, when we consider amenorrhoeic women, the percentage is less than in the 1978-9 cohort in Matlab. National data from the 1989 BFS analysed by Weis (1993) show that over the first 12 months postpartum only 5-10% of women were using contraception while still amenorrhoeic. Thus, even at the very start of the FPHSP, an unusually large proportion of women in Matlab were initiating use of contraception while still amenorrhoeic. This suggests that there may be important differences in the provision of postpartum contraception in this population, compared to the urban setting (as well as other parts of Bangladesh). The extent to which the contrast reflects differing client preferences, or programme activities and objectives, or indeed a combination of these factors, is addressed with the help of the qualitative data in the chapters which follow.

Figure 4.8: Cumulative percentage of all women adopting contraception by time since birth, regardless of menstrual status, Matlab 1978-9 to 1990-1



Note: 1. Life table estimates, censored if pregnant or lost to follow-up.

Figure 4.9: Cumulative percentage of amenorrhoeic women adopting contraception by time since birth, Matlab 1978-9 to 1990-1



Note: 1. Life table estimates, censored if pregnant, lost to follow-up or menses returned.

Changes in method mix over time in Matlab

It is of interest to examine how the method mix has changed over time in Matlab, in order to see whether changing patterns of adoption of particular methods can account for the large increase in use of contraception during postpartum amenorrhoea. Analysis suggests that the patterns of adoption among users were different for different methods over time. Among IUD users, there was a steady move towards earlier adoption postpartum and an increase in the proportion of users who adopt before the return of menses. In contrast, there was little movement in the indicators for pill and injectable users until beyond 1986-7, when the mean time to adoption started to decline and the percentage of users adopting during amenorrhoea started to increase. For condom and sterilisation acceptors, there was little change over time in either the average time to adoption or the proportion of users starting use during amenorrhoea. Figure 4.10 and Figure 4.11 illustrate these trends for pill, injectable and IUD users. Despite variations between methods, the overall trend was towards shorter times to adoption and a larger proportion of users adopting contraception during amenorrhoea. In the 1990-1 cohort, among women who started use within the first two years postpartum, the mean time to adoption was 8.7 months (se=0.2) for pill users, 7.0 months (se=0.1) for injectable users and just 4.9 months (se=0.3) for IUD acceptors. These trends, showing quite sharp movements from cohort to cohort, suggest that changes in programme policy and field activities may have had an important impact on adoption patterns.

An examination of the method mix among women who adopted contraception during amenorrhoea provides further evidence that changes in programme policy have had an important impact on behaviour in Matlab. Figure 4.12 shows that the method mix among women who adopted contraception during amenorrhoea within the first six months postpartum changed markedly over time. In particular, in the first half the period there was an increase in IUD adoption and a corresponding decline in pill and injectable use. This reflects the fact that the period 1980 to 1983 saw an increased emphasis on the IUD within the programme, including the start of home-based insertion and heightened motivation for this method by workers in early 1983. In addition, there was active discouragement of adoption of the hormonal methods within the first six months postpartum. It is also noticeable that the contribution of the condom and female sterilisation, methods which one might regard as the most suitable candidates for early adoption, declined over time. The second half of the study period saw an increase in the percentage of adopters using the injectable. This reflects the fact that over this period, fieldworkers were trained to give women the injectable at any time postpartum, even during full breastfeeding, whereas the oral pill was still discouraged within the first six months postpartum (J. Chakraborty: personal communication, 1995).

Figure 4.10: Mean months to adoption of contraception, Matlab 1978-9 to 1990-1

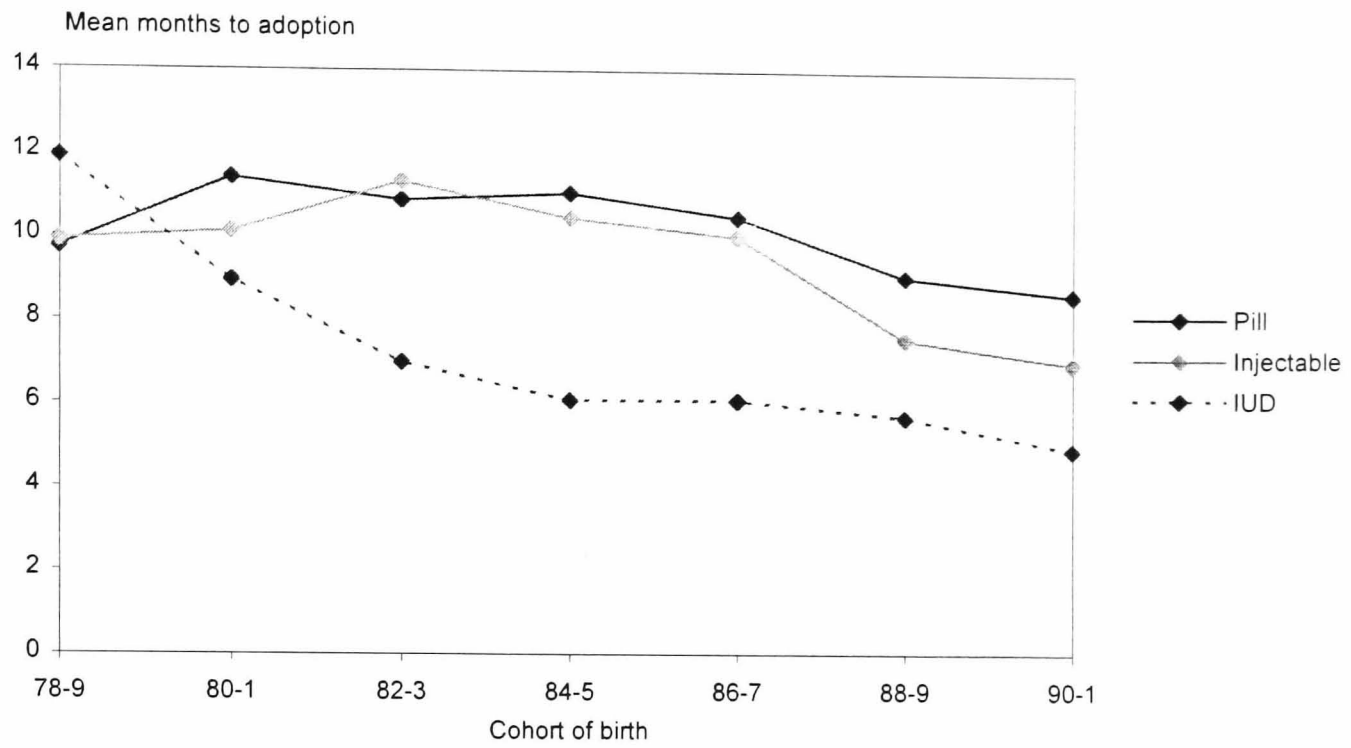


Figure 4.11: Percentage of users who start use before menses, Matlab 1978-9 to 1990-1

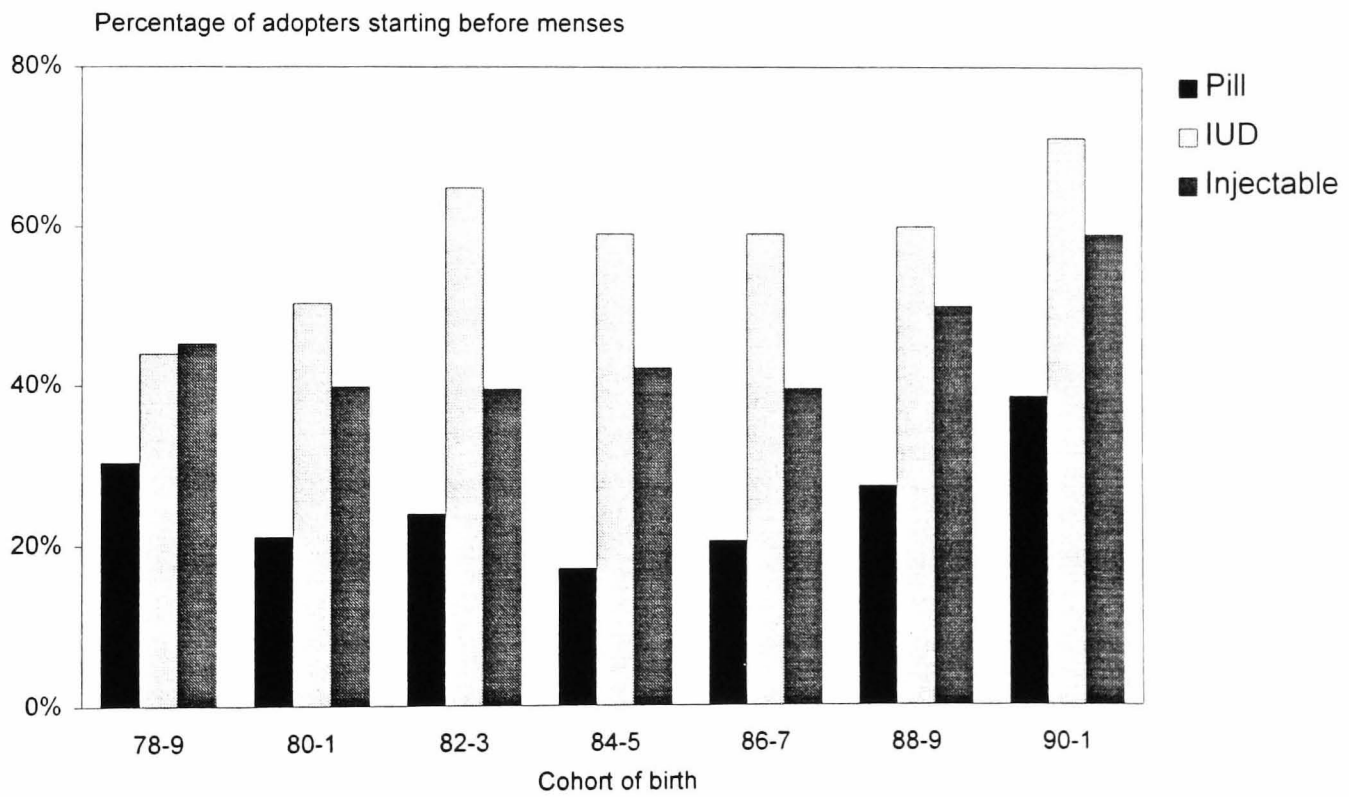
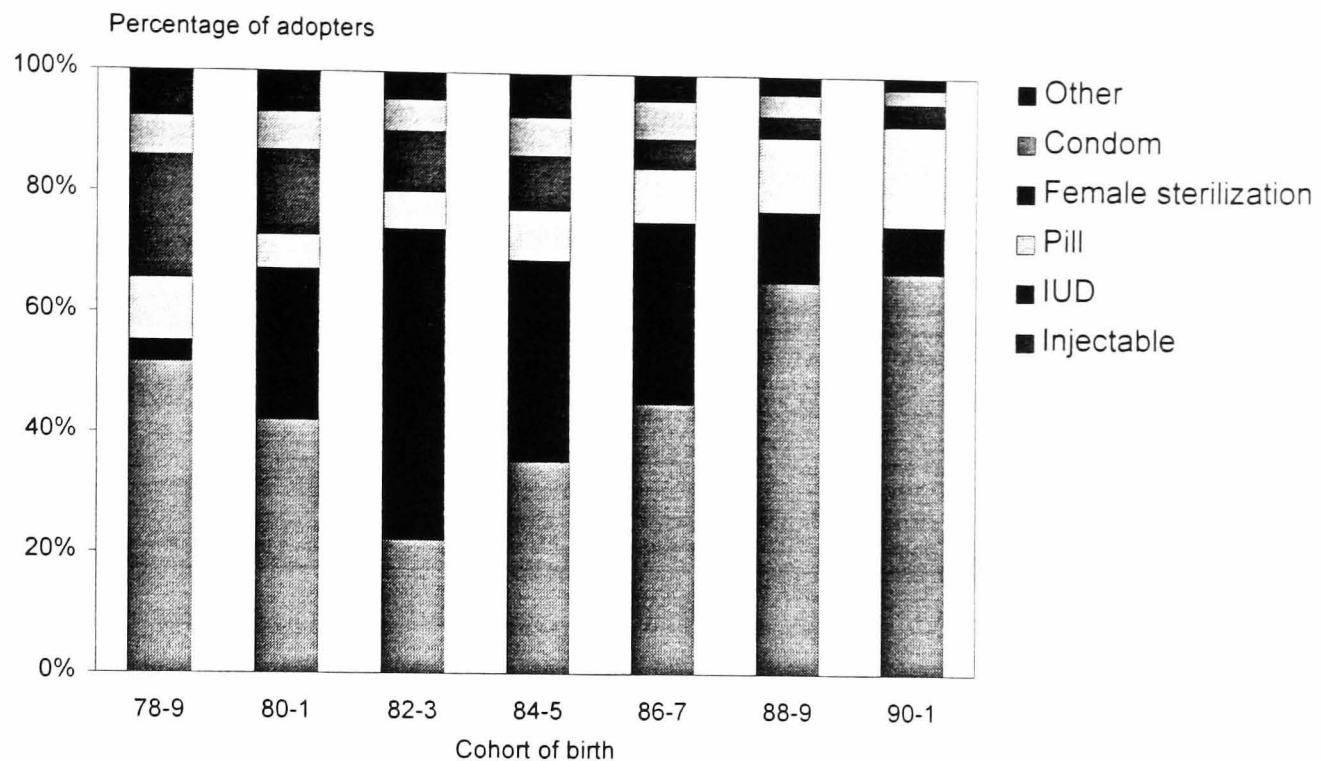


Figure 4.12: Method mix among amenorrhoeic women adopting contraception within the first six months postpartum, Matlab 1978-9 to 1990-1



In summary, the high and rising levels of contraceptive adoption during amenorrhoea in Matlab do not reflect high levels of adoption of sterilisation, the condom, or the IUD; rather it is the hormonal methods that predominate. The large contribution made by hormonal methods to contraceptive use in the early postpartum period in Matlab raises the issue of contraceptive use in relation to breastfeeding, which is discussed in the following section.

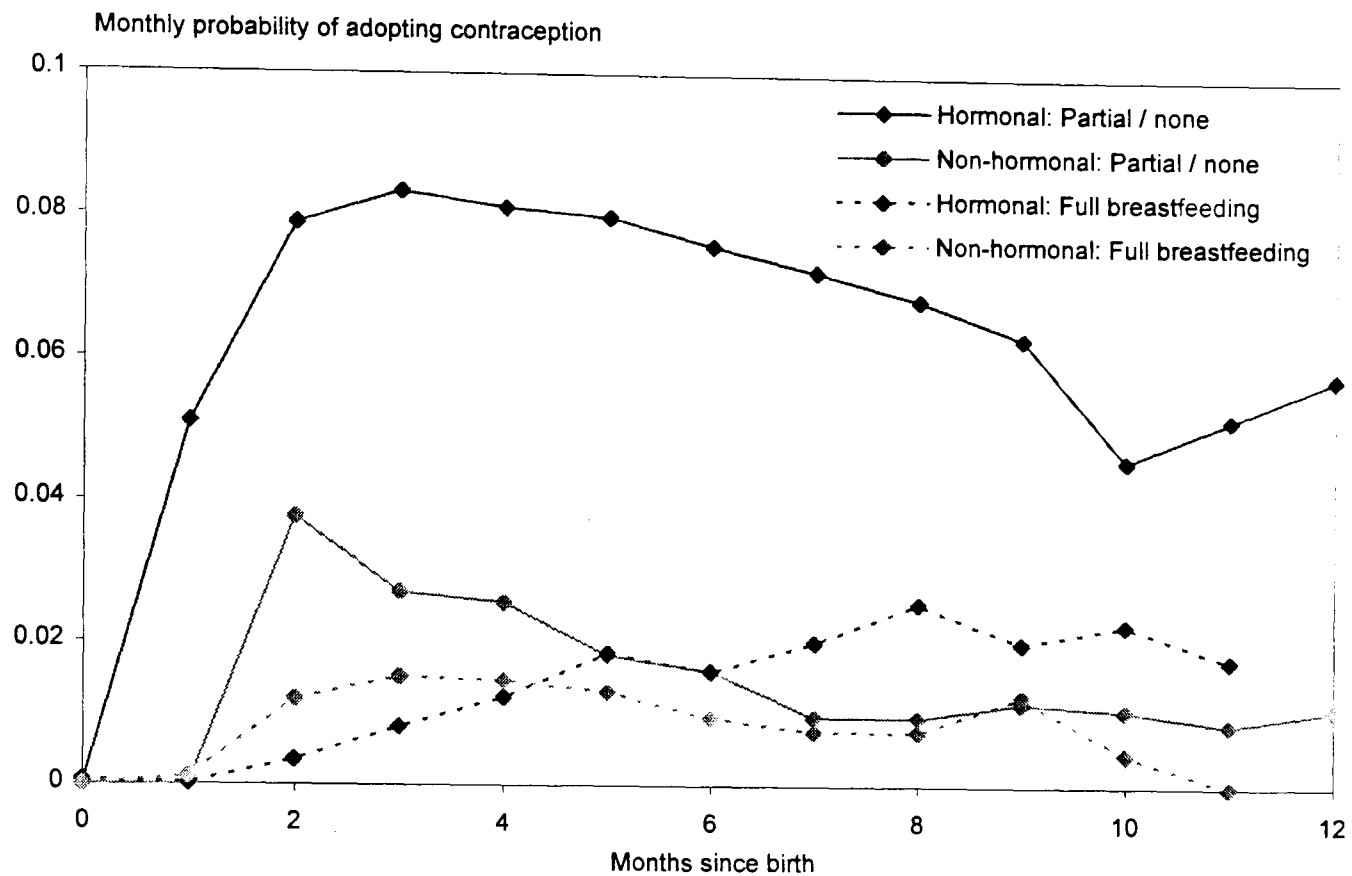
4.2.4 Adoption of contraception in relation to breastfeeding: current patterns

As noted above, it is unfortunate that breastfeeding information is available neither for all the cohorts in Matlab, nor the USS. Nevertheless, it is of interest to analyse the available data in order to gain some understanding of how the adoption of contraception postpartum relates to breastfeeding practices. Results are presented here, first for the most recent Matlab cohort for which data were available, 1986-7, and then for cohorts 1978-9 to 1986-7.

Since durations of breastfeeding are extended in Bangladesh, almost all women who initiate contraceptive use do so while still breastfeeding their child, at least partially. For example, in the 1986-7 Matlab cohort, 90% of women who adopted contraception within three years of their child's birth were still breastfeeding at the time of adoption. Thus, it is apparent that breastfeeding is not itself a barrier to the adoption of contraception.

Of perhaps more interest, however, is the use of contraception during the period of full breastfeeding, when the infant is very young and completely dependent on her mother's milk for nourishment. Figure 4.13 shows the life table monthly probabilities of adopting hormonal and non-hormonal temporary methods of contraception over the first year postpartum, among women who were fully breastfeeding, compared to women who were partially breastfeeding or not breastfeeding their child at all. Considering the hormonal methods of

Figure 4.13: Monthly probability of adopting hormonal or non-hormonal contraception among fully and partially breastfeeding women by time since birth, Matlab 1986-7



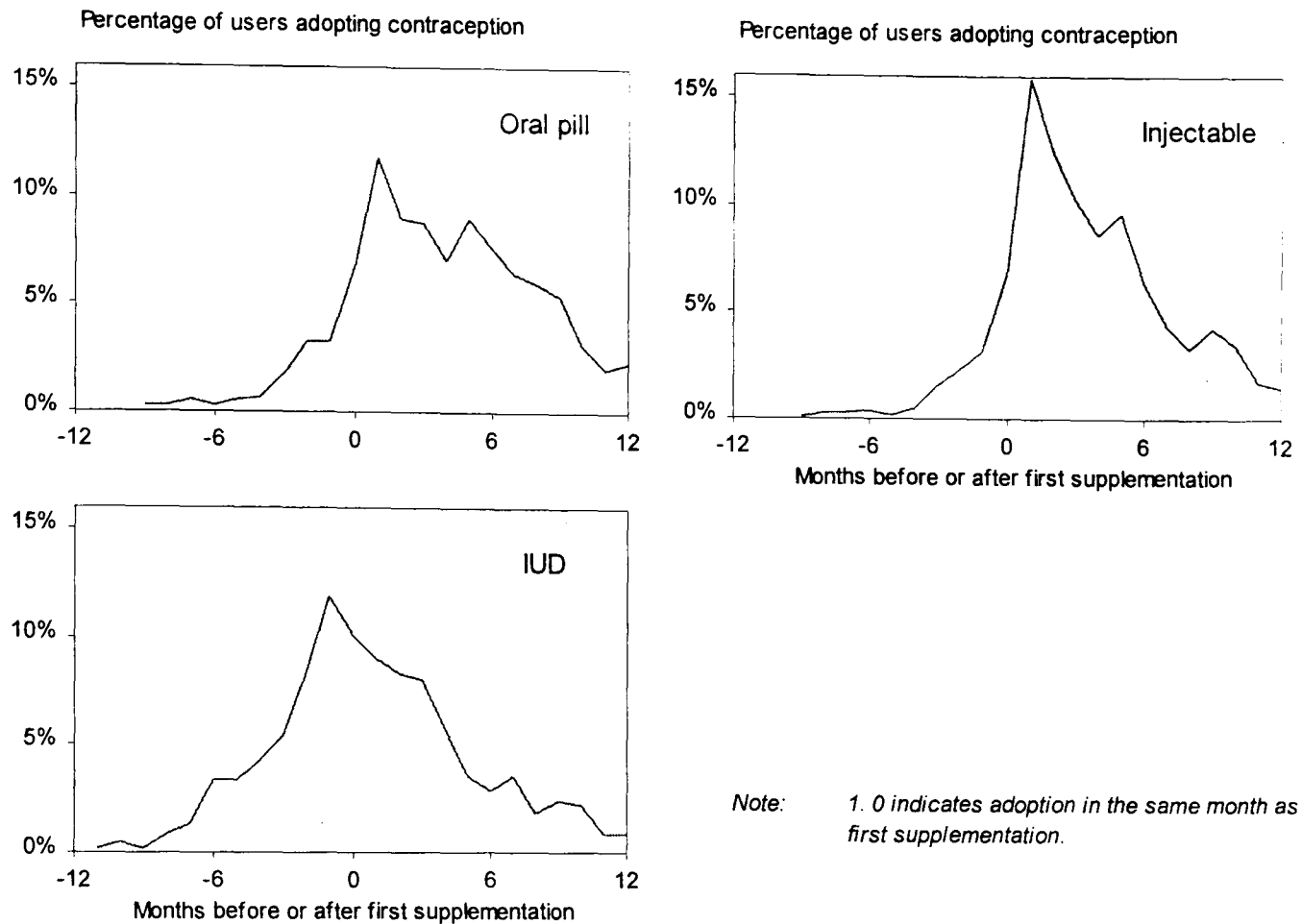
contraception, it can be seen that the probability of adoption was consistently higher among women who were partially breastfeeding or not breastfeeding, than among full breastfeeders, though the differential narrowed with increasing time postpartum.⁸⁷ The pattern is very different for the two sets of women, with the probability of adoption among partial/non-breastfeeders rising rapidly in the first two months and then falling again, in contrast to a steady rise over the first eight months postpartum and then a levelling out, among full breastfeeders.

Turning to non-hormonal methods of contraception, a different pattern is seen in Figure 4.13. Though partial/non-breastfeeders were significantly more likely to adopt these methods of contraception than full breastfeeders between the second and fifth month postpartum, the difference between the two groups was insignificant beyond this point. It should also be noted that, among the full breastfeeders, the probability of adopting a non-hormonal temporary method was not significantly higher than the probability of adopting a hormonal method at any time.

Having noted that the probability of adopting contraception was lower among full breastfeeders in the first 12 months postpartum, it is of interest to examine whether there is evidence that the supplementation of the infant's diet acts as an important trigger for the adoption of contraception, as was suggested for the return of menses. Such a trigger could exist if, for example, women perceived dangers associated with contraceptive use during full breastfeeding, or an increased risk of pregnancy once supplementation is initiated. It could also

⁸⁷ The 95% confidence intervals for the estimates are not shown on the figure, but were found not to overlap at any point within the twelve month period.

Figure 4.14: Pattern of adoption of specific methods of contraception in relation to the timing of supplementation, Matlab 1986-7



result from the promotion of uptake of contraception at the time of supplementation of the child's diet by family planning providers, or the refusal to provide methods before this time, or indeed the promotion of supplementation among women wishing to adopt contraception. Figure 4.14 shows the pattern of adoption of different methods in relation to the timing of supplementation. None of the graphs show as sharp a peak at the time of supplementation as was seen for the return of menses. However, in the case of both the pill and the injectable, there is evidence of concentration around the time of supplementation. Given the close relationship between supplementation and onset of menses, the bivariate analysis cannot conclusively show whether the introduction of supplements has an important, independent effect on the uptake of contraception. The multivariate analyses presented below explore this relationship further.

4.2.5 Adoption of contraception in relation to breastfeeding: trends over time in Matlab

Analysis of trends over time in the adoption of all methods of contraception during full breastfeeding suggested no important change during the period 1978 to 1987. The cumulative probability remained low in all cohorts at around 0.02 by three months postpartum and 0.1 by six months postpartum, with no appreciable increase over the period.

Turning to hormonal methods of contraception, the picture for the pill was very similar, with very low and constant probabilities of adoption over the period (Table 4.3). In the case of the injectable, however, the probabilities of adoption were on the whole higher. Table 4.3 shows that the probability of adopting the

injectable contraceptive during full breastfeeding decreased during the period 1978 to 1983 and thereafter increased slightly again. This is consistent with programme policy in Matlab over the period. In the early 1980s, hormonal methods were felt to be inappropriate in the early postpartum period and fieldworkers were instructed to promote other methods, in particular the IUD. Whereas training of fieldworkers has continued to emphasise avoidance of the oral pill within the first six months postpartum and during full breastfeeding, promotion of the injectable at any time postpartum and regardless of breastfeeding status, has been encouraged in recent years (J. Chakraborty: personal communication, 1995).

Table 4.3: Life table cumulative probabilities of adopting the pill and injectable postpartum while fully breastfeeding, Matlab 1978-9 to 1986-7

Cohort	Cumulative probability of adoption by six months postpartum			
	Pill		Injectable	
1978-9	0.0124	(0.0020)	0.0523	(0.0040)
1980-1	0.0081	(0.0016)	0.0497	(0.0037)
1982-3	0.0081	(0.0015)	0.0169	(0.0022)
1984-5	0.0127	(0.0020)	0.0222	(0.0026)
1986-7	0.0150	(0.0023)	0.0284	(0.0032)

Notes: 1. Standard errors are given in parentheses.
2. Cumulative probabilities were computed from a life table where cases were censored if pregnant, if supplements were introduced, if another method of contraception was adopted or if lost to follow-up.

The relatively low level of adoption of contraception during full breastfeeding might suggest that contraceptive use cannot be considered a factor in the decline in the duration of full breastfeeding over time in Matlab, and that changes in breastfeeding patterns brought about by contraceptive use cannot be considered as a mechanism explaining the negative association between contraceptive use and duration of postpartum amenorrhoea (that is mechanism 1b discussed in chapter three). However, it is possible that changes in breastfeeding are made *before* the method of contraception is adopted. Evidence presented in chapter six suggests that, in at least some cases, women who want to use the pill are encouraged to introduce supplements to their child's diet prior to starting the method. Therefore, planned adoption of a hormonal method may cause a woman to give up full breastfeeding. This means that the temporal sequence of the two events, introduction of supplements and adoption of contraception, cannot necessarily confirm the direction of causality.

4.2.6 Multivariate analysis of the probability of adopting contraception in the period following childbirth

Having described the overall patterns of contraceptive use following childbirth in the study populations using basic descriptive statistics, the factors that are associated with the adoption of contraception are now explored in more detail. In this regard, two sets of analyses are of interest. The first of these aims to describe the factors associated with the probability of adopting contraception over the period following childbirth. The second analysis, presented in section 4.2.7 below, focuses on only those women who adopted a method of contraception during the period of follow-up, and aims to compare the characteristics of women who adopted contraception before the resumption of menses, to those who waited until menses returned.

Methods of analysis

In order to explore the relationship between the adoption of contraception postpartum and covariates of interest, the logistic formulation of the hazard model was used. As described in chapter three, this type of model allows the incorporation of time-varying covariates and censored observations. In the present case, each woman contributes several months of observation to the analysis, one for each postpartum month during which she was followed up. A woman's period of follow-up continues from the month of her child's birth until she adopts contraception or is censored. In this case, censoring can occur for either of two reasons: loss to follow-up, or pregnancy.

For each observation, the dependent variable takes the value of '1' if contraception was adopted (including all methods of contraception), and '0' if contraception was not adopted. Fixed covariates take the same value for each observation relating to one individual, for example age, education or number of living children.

However, the value of time-varying covariates is allowed to change between monthly observations. For example, amenorrhoeic status may change over the period of follow-up from amenorrhoeic to menstruating. In addition, the models can be used to test whether the effects of variables vary over time. The models estimated therefore test the general hypothesis that the probability of a woman adopting contraception depends on both the time since her last birth, and a number of other factors.

In the present analysis, two time-varying covariates were of interest: amenorrhoeic status and breastfeeding status. In the Matlab dataset, in cases where the value of these variables changed in the same month as contraceptive use status, it was assumed that the change in the independent variable occurred first. Though it is unreasonable to assume that this was in fact the sequence of events in all cases, analyses presented earlier, and qualitative data presented later, suggest that this is the most appropriate assumption to make. The logistic model for the odds of adopting contraception for a given month after birth can be expressed as:

$$\log\left(\frac{\pi}{1-\pi}\right) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \dots + \beta_n x_n + \varepsilon$$

where:

π = probability of adopting contraception in a given month.

β_0 = constant term representing the value of $\log(\pi/(1-\pi))$ for months with the baseline value of all variables x_1 to x_n in the model.

x_1 to x_n = independent variables associated with the month of observation (which may be fixed characteristics of the woman, or time-varying characteristics, including time postpartum).

β_1 to β_n = unknown regression coefficients associated with the independent variables x_1 to x_n . A unit change in the corresponding independent variable produces a change in $\log(\pi/(1-\pi))$ of this amount.

ε = error or disturbance term representing unobserved variables that influence the adoption of contraception.

The above model was used to explore the relationships between adoption of contraception in the postpartum period and various independent variables in both the study populations. In the case of Matlab, analysis was performed on three of the available cohorts, using 24 months follow-up. The 1990-1 cohort was chosen since

it contained the most recent data available for the population. In addition, it was of interest to analyse the 1986-7 cohort, so that breastfeeding status could be considered, and the 1978-9 cohort, so that changes over time could be explored. A similar analysis was also performed using the urban cohort of 1992-3, using 18 months follow-up.

Matlab 1990-1 cohort

The first stage of the analysis for each cohort involved the examination of the bivariate relationships between the outcome of interest and individual independent variables, using graphs and two-way tables. Initial exploration of the 1990-1 data suggested that several variables were significantly associated with the adoption of contraception. As shown in Figure 4.1, the probability of adopting contraception was not constant over the months postpartum. Examination of the estimated probabilities suggested that the use of three time segments might adequately describe the relationship namely: 1-2; 3-6; and 7-24 months. The probability of adoption was found to peak in the 3-6 month period, and then to decline again.

A time-varying variable was included in the analysis to describe the menstrual status of each woman at each month postpartum. This variable was constructed in such a way that it took four values: amenorrhoeic, experienced first menstrual cycle (one month after first menses), two months after first menses, and three plus months after first menses.⁸⁸ Bivariate analysis revealed the expected association with adoption of contraception. Compared to women who were amenorrhoeic, women who had menstruated were more likely to adopt contraception. In addition, the odds ratio was found to be greatest for women who had just experienced their first menstrual cycle, and to decline in the second and third months after first menses.

Other variables that showed significant positive associations with adoption of contraception when entered into the model individually were education, desire for children later or not at all versus desire for another child soon,⁸⁹ and being Hindu rather than Muslim. Age, the number of living children and the number of living sons⁹⁰ were found to have a negative association with the probability of adopting contraception. Having experienced the previous conception prior to the resumption of menses (versus after the resumption of menses)⁹¹ and household area were found not to show any significant association with adoption of contraception.

Having explored the bivariate relationships, multiple variables, including time postpartum and menstrual status, were entered into the model simultaneously in different combinations in order to explore their combined

⁸⁸ Once a woman reported resumption of menses she was considered to have exited from the amenorrhoeic state and no allowance was made for the possibility that some women may experience irregular menstruation.

⁸⁹ This information was collected in July 1990. Consequently, for some women in the 1990-1 cohort it refers to the period following their most recent birth, whereas for others it refers to the period prior to their most recent birth. This means that in terms of describing desire for additional children following the most recent birth, some women will have been misclassified, for example as 'desiring another child soon', rather than 'desiring another child later or not at all'. This misclassification means that the differentials between groups may be under-estimated. In addition, this information is missing for any woman who was pregnant or temporarily absent in July 1990.

⁹⁰ Age, the number of living children and the number of living sons all refer to the time of the most recent live birth.

⁹¹ This variable was constructed from the RKS records of each woman's previous reported pregnancy. In some cases, information was missing for the woman's previous conception, meaning that this variable could not be constructed. In addition, information was obviously missing for those women who had only had one pregnancy.

effects.⁹² The positive associations between time postpartum and menstrual status on the one hand, and adoption of contraception on the other, persisted when both these variables were included in the model together. However, the size of the effects was reduced. When the number of living children and age were entered into the model simultaneously, the association with living children lost its significance, but the negative association with age remained. Further examination suggested that the relationship with age was adequately described using three age groups: less than 25 years, 25-34 years and 35 years plus. The positive association with education no longer persisted once desire for additional children was entered into the model, suggesting that this association is explained by differing fertility desires between better educated and less educated women. A persistent association was found with religion despite controls for other variables, showing that Hindus were more likely to adopt contraception at all times in the postpartum period than Muslims.

The final stage of model building involved the exploration of effect modification, or interaction, between independent variables. Evidence of interaction between time postpartum and menstrual status was found. As shown in Table 4.4, the odds ratios for adoption of contraception between women who had experienced their first menses and amenorrhoeic women, declined with increasing time postpartum. Similarly, the odds ratio for adoption between the 3-6 month postpartum period and the 1-2 month period, was found to be higher among amenorrhoeic women than among women who had experienced their first menses.

Table 4.4: Logistic regression odds ratios of adoption of contraception associated with menstrual status and time postpartum, Matlab 1990-1

Time postpartum (months)	Menstrual status			
	Amenorrhoeic	First month after first menses	Second month after first menses	Third month or more after first menses
1-2	1	29.8	-	-
3-6	3.9	30.9	11.6	8.9
7-24	2.7	27.4	10.9	3.7

Note: 1. $N=53,517$.⁹³

In other words, though both menstrual status and time postpartum were found to have an association with the odds of adopting contraception, their combined effect was less than the product of their individual effects. This may largely be because women who delay adoption of contraception once menses resumes are less inclined to adopt contraception anyway, so that even as time postpartum increases, the probability of these women accepting a method does not rise sharply.

⁹² Log likelihood ratio tests were used to determine whether the addition of new variables to the model significantly improved the goodness of fit, and therefore whether these variables should be included in the final model.

⁹³ The total here refers to the total number of months of observation contributed by all women in the sample.

No evidence was found for other important interactions between variables of interest. Table 4.5 presents the results from the final parsimonious model. Wanting a child later or not at all was associated with a 30% increase in the odds of adopting contraception, compared to wanting to have a child soon. Hindu women were more likely to adopt contraception than Muslim women (odds ratio 1.36). Older women were less likely than younger women to adopt contraception, a finding that is perhaps counterintuitive.

Table 4.5: Logistic regression odds ratios of adoption of contraception following childbirth: final model, Matlab 1990-1

	Odds ratio	p	95% confidence interval
Woman's age (years)			
<25	1	-	-
25-34	0.84	<0.001	0.78 - 0.91
35+	0.74	<0.001	0.65 - 0.84
Desire for additional children			
soon	1	-	-
later / not at all	1.30	<0.001	1.19 - 1.39
missing	1.23	<0.001	1.10 - 1.37
Religion			
Muslim	1	-	-
Hindu	1.36	<0.001	1.24 - 1.48
Time postpartum and menstrual status			
1-2 months, amenorrhoeic	1	-	-
1-2 months, first month after menses	25.21	<0.001	14.55 - 43.68
3-6 months, amenorrhoeic	3.91	<0.001	3.37 - 4.54
3-6 months, first month after menses	30.41	<0.001	25.48 - 36.29
3-6 months, second month after menses	11.63	<0.001	9.19 - 14.70
3-6 months, third month plus after menses	8.98	<0.001	6.96 - 11.58
7-24 months, amenorrhoeic	2.88	<0.001	2.47 - 3.34
7-24 months, first month after menses	28.63	<0.001	23.92 - 34.29
7-24 months, second month after menses	11.24	<0.001	8.99 - 14.07
7-24 months, third month plus after menses	3.78	<0.001	3.20 - 4.46

Notes: 1. Since a large number of cases had no information on desire for an additional child, these women were included in the model under the category 'missing' rather than excluding them completely from the analysis.
 2. $N=53,247$.
 3. After fitting the model, the Hosmer-Lemeshow chi-squared statistic was computed to test for the goodness of fit. It suggested no serious departure from the model's assumptions.⁹⁴ $H-L \chi^2(125)=108.0, p=0.86$.

Matlab 1986-7 cohort

Analysis of data for the 1986-7 cohort allowed the examination of the relationship between breastfeeding status and adoption of contraception in the period following childbirth, as well as the other variables of interest.

⁹⁴ Since the number of covariate patterns was large and the number of expected observations in several cells was small, the Hosmer-Lemeshow chi-squared statistic was used, rather than the Pearson chi-squared test which may not have been applicable (Stata Corporation 1993). This procedure was also used for the models which follow.

Bivariate analyses suggested that four time segments should be used to describe the relationship between adoption of contraception and time postpartum: 1-2 months, 3-4 months, 5-6 months and 7-24 months. Compared to the 1990-1 cohort, the probability of adopting a method of contraception peaked later, in the fifth and sixth months postpartum. In addition, the bivariate relationship with menstrual status was found to show a peak in the second month after first menses, rather than the first month after menses, as found in the 1990-1 cohort.⁹⁵

Breastfeeding status was first entered into the model as a variable with five categories: full breastfeeding, partial breastfeeding (supplementation started 0-3 months earlier), partial breastfeeding (supplementation started 4-6 months earlier), partial breastfeeding (supplementation started seven or more months earlier) and no breastfeeding. However, analysis revealed that the main differential was between full breastfeeding and the other categories, and therefore only two groups, full breastfeeding versus partial or no breastfeeding, were retained in the analysis. Bivariate analysis suggested that, compared to women who were fully breastfeeding, women who were partially breastfeeding or not breastfeeding at all, were significantly more likely to adopt contraception.

Considering other variables of interest, bivariate analyses showed that, as in the 1990-1 cohort, education had a positive association with adoption of contraception, and age and number of living children showed negative associations with adoption of contraception. Religion, however, showed no significant association with contraceptive adoption. Household area also showed no significant association. Information on desire for additional children was not available for this cohort.

Following examination of the bivariate associations, more complex models were developed in order to explore the combined relationships of the independent variables. During this stage of the analysis, most of the associations found in the bivariate analyses retained their direction and significance. However, when age and number of living children were entered into the model simultaneously, a significantly positive association emerged with number of living children, while the negative association with age remained. Having controlled for age, it was apparent that women with four or more living children were more likely to adopt contraception in the period following childbirth than women with less than four children.

Tests for interaction effects suggested that, although both breastfeeding and menstrual status had independent effects on the adoption of contraception, the size of their effects was not consistent over time postpartum. With increasing time postpartum, the odds ratio for partial/no breastfeeding compared to full breastfeeding was seen to decline. Similarly, the ratio of the odds of adopting contraception among amenorrhoeic women to those who had experienced their first menses, decreased with increasing time since the birth. In addition, an

⁹⁵ Odds ratios were as follows:

amenorrhoeic	1
first month after menses	5.69
second month after menses	8.55
third month plus after menses	2.52

interaction between breastfeeding status and menstrual status was found. The odds ratio for partial/no breastfeeding versus full breastfeeding was found to be smaller among women who had experienced their first menstrual period than among those who were amenorrhoeic. Likewise, among women in the partial/no breastfeeding group, the ratio of the odds of adoption between women who were amenorrhoeic and those whose menses had resumed, was smaller than among those who were fully breastfeeding. Table 4.6 shows the odds ratios produced from a model where the time postpartum, breastfeeding and menstrual status variables were replaced by a three-way interaction term.

Table 4.6: Logistic regression odds ratios of adoption of contraception associated with time postpartum, breastfeeding status and menstrual status, Matlab 1986-7

Menstrual status	Breastfeeding status	
	Full breastfeeding	Partial/no breastfeeding
1-2 months postpartum		
amenorrhoeic	1	4.8
menses resumed	32.5	102.9
3-4 months postpartum		
amenorrhoeic	12.9	32.8
menses resumed	100.3	201.9
5-6 months postpartum		
amenorrhoeic	17.9	39.1
menses resumed	104.1	188.4
7-24 months postpartum		
amenorrhoeic	18.3	29.8
menses resumed	100.8	106.2

Notes: 1. Education, number of living children and age controlled for.
2. N=62,134.

It was found that if a woman had resumed menses *and* was partially breastfeeding or not breastfeeding at all, then at all times postpartum the odds of her adopting contraception were higher than if she had only resumed menses, or if she had only ceased to breastfeed fully. However, the combined effect was less than the product of the two individual effects. This may be because women who delayed adoption of contraception following either one of these events (supplementation or resumption of menses), and were therefore open to experiencing the second event while still non-contracepting, were less inclined to adopt contraception anyway. Also, as in the 1990-1 cohort, the effects of a change to partial/no breastfeeding, or the resumption of menses, decreased over time.

Having controlled for the effects of time postpartum, breastfeeding and menstrual status, significant associations between adoption of contraception and age, number of living children and education were still apparent. Table 4.7 shows the odds ratios for these variables. As in the 1990-1 cohort, older women were found to be less likely to adopt contraception during the period following childbirth than younger women. Women aged over 35 years had 40% lower odds of adopting contraception than women aged less than 25 years. However, having controlled for age, women with more children were more likely to adopt

contraception than women with fewer children, as would be expected.⁹⁶ Education was found to have a significant positive association with adoption of contraception in this cohort, though the effect was not large. Women with six or more years of schooling had odds of adoption that were 18% higher than women with no education at all.

Table 4.7: Logistic regression odds ratios of adoption of contraception in the period following childbirth: final model, Matlab 1986-7

	Odds ratio	p	95% confidence interval
Woman's age (years)			
<25	1	-	-
25-34	0.83	<0.001	0.75 - 0.92
35+	0.60	<0.001	0.51 - 0.71
Living children			
1	1	-	-
2-3	1.25	<0.001	1.13 - 1.39
4+	1.52	<0.001	1.33 - 1.75
Education			
none	1	-	-
1-5 years / religious education	1.05	>0.05	0.96 - 1.14
6+ years	1.18	0.014	1.03 - 1.35

Notes: 1. Time postpartum, breastfeeding status and menstrual status controlled for.
 2. N=62,134.
 3. After fitting the model, the Hosmer-Lemeshow chi-squared statistic was computed to test for the goodness of fit. It suggested no serious departure from the model's assumptions. $H-L \chi^2(125)=125.8, p=0.46$.

Matlab 1978-9 cohort

Analysis of data from the Matlab 1978-9 cohort produced results that were largely similar to those for the 1986-7 cohort. As in the 1986-7 cohort, the probability of adopting contraception was found to peak in the 5-6 month period postpartum, and in the second month after resumption of menses. The associations between adoption of contraception on the one hand and education and number of living children on the other, were found to be in the same direction as in the 1986-7 cohort, though the size of the effects was larger. In the 1978-9 cohort, having controlled for other factors of importance,⁹⁷ women with six or more years of schooling were found to have an 80% higher odds of adopting contraception than women with no education. Similarly, the odds ratios associated with number of living children were found to be larger than in 1986-7. Compared to a baseline group of women with one living child, the odds ratio for women with two or three living children was 1.45, and for women with four or more living children, it was 1.93.

⁹⁶ When age and the number of living children are included in the model together, the pace of childbearing is effectively being controlled for.

⁹⁷ That is, breastfeeding, menstrual status, and time postpartum.

Changes over time in predictors of contraceptive adoption following childbirth in Matlab

The results of the logistic regression analyses for the three Matlab cohorts were, on the whole, similar. However, a number of differences should be highlighted. First, it appears that in recent years the pattern of adoption by time postpartum has changed, with the probability of adoption being higher in the early months after birth than in the past. It also appears that the pattern of adoption in relation to the resumption of menses has changed slightly. Though it is clear that resumption of menses was an important trigger to the adoption of contraception in all three cohorts, it appears that the response to this stimulus tended to be somewhat quicker in the 1990-1 cohort, than in the earlier years.

Another difference was in the association between religion and adoption of contraception. Whereas in the two earlier cohorts, no significant difference between Muslims and Hindus was found, in the 1990-1 cohort, Hindus were significantly more likely to adopt contraception than Muslims. In contrast, though education was found to be positively associated with adoption of contraception in the 1978-9 and 1986-7 cohorts, no significant association was found in the 1990-1 cohort.

Urban slums 1992-3

For the analysis of the adoption of contraception in the period after childbirth in the USS population, just 18 months of follow-up were considered, since beyond this time the numbers became small and estimates subject to large standard errors. An examination of the probabilities of adoption by time postpartum suggested that, aside from the first two months, when the probability of adoption was very low, there was little variation in the probability of adoption over the 18 month period.

Bivariate analyses explored the associations between various independent variables and the adoption of contraception. Women whose menses had resumed were found to have a much higher odds of adopting contraception than those who remained amenorrhoeic. Asset score (an indicator of socio-economic status),⁹⁸ women's education, husband's education, and receiving a visit by a family planning worker in the USS round following the birth (compared to no visit)⁹⁹ were also found to have significant positive associations with adoption of contraception. Age of the woman and the number of her living children were found to have negative associations with the adoption of contraception. The mother's occupation, her religion, and the number of her living sons were found to have no significant association with adoption of contraception.

Following the bivariate analyses, models were estimated that included various combinations of the independent variables, in order to explore their combined effects. When both the woman's education and her husband's education were included in the same model, the association with husband's education was found to lose significance. However, the woman's education (some versus none) and asset score were found to have independent positive associations with adoption of contraception. The relationship between asset score and

⁹⁸ See chapter two for a description of how this score was computed.

⁹⁹ This variable is not entirely satisfactory since it was not possible to state the time period following the birth within which this visit was received. Depending on the timing of the birth in relation to the USS data collection cycle, the time period to which the information refers could vary between zero and six months. In addition, since the information was only collected from round eight onwards (January to March 1993), no information was available for 250 women.

adoption of contraception was found to be satisfactorily modelled as a linear term. When the woman's age and the number of living children were entered into the model together, age retained a significant, negative association with adoption of contraception. However, the relationship with number of living children reversed direction. Compared to women with one or two living children, controlling for age, women with three or more children were more likely to adopt contraception.

In order to further explore the relationships between time postpartum, menstrual status and adoption of contraception, a variable was created that described time postpartum using four categories: 1-4 months, 5-8 months, 9-12 months and 13-18 months. Evidence was found for a significant interaction between menstrual status and time postpartum. Table 4.8 shows the odds ratios produced from the logistic regression model where the interaction term was included, along with woman's age, number of living children, asset score and visit by a family planning fieldworker. It can be seen that the odds ratio for adoption of contraception for women whose menses had resumed compared to those who were amenorrhoeic, increases beyond four months postpartum, and then decreases again beyond 12 months.¹⁰⁰ This suggests that the resumption of menses soon after birth is not such an important trigger for adoption as later in the postpartum period. The subsequent decline in the odds ratio beyond 12 months probably reflects a selection effect, with women increasingly less likely to adopt contraception remaining among the menstruating group. No evidence was found for significant interaction effects between the other independent variables.

Table 4.8: Logistic regression odds ratios of adoption of contraception associated with time postpartum and menstrual status, Dhaka slums 1992-3¹⁰¹

Time postpartum (months)	Menstrual status	
	Amenorrhoeic	Menses resumed
1-4	1	6.44
5-8	0.61 \$	8.78
9-12	0.43 \$	8.13
13-18	0.65 \$	6.96

Notes: 1. \$ signifies that the odds ratio is not significantly different from 1.
 2. Woman's age, number of living children, asset score and visit by a family planning fieldworker controlled for.
 3. N=8,990.

Table 4.9 presents the odds ratios and associated probabilities for the rest of the variables included in the final, parsimonious model. Having controlled for time postpartum and menstrual status, age continued to show a negative association with adoption of contraception. Women aged 25 years and older were found to have lower odds of adopting contraception than those aged less than 25 years. Compared to women with only one or two living children, women with three or four children had odds of adopting contraception that were 32% higher, and women who had five or more children had odds that were 80% higher. A higher asset score was associated with a higher odds of adopting contraception. A one unit increase in asset score was associated with

¹⁰⁰ The effect modification of time postpartum between 1-4 months and 5-8 months was found to be significant.

¹⁰¹ The total here refers to the total number of months of observation contributed by all women.

a 10% increase in the odds of adopting contraception. Women who reported that they had received a visit (either with or without a service) from a family planning worker in the USS data collection round following the round in which their last birth was reported, were more likely to adopt contraception than women who reported no such visit. Though there are problems with this variable, as noted above, and in particular, the temporal sequence of the visit and adoption of contraception cannot be elucidated, it seems reasonable to consider it as an indicator of the degree of contact a particular woman has with outreach services, and therefore as one indication of her access to family planning information and services.

Table 4.9: Logistic regression odds ratios of adoption of contraception in the period following childbirth: final model, Dhaka slums 1992-3

	Odds ratio	p	95% confidence interval
Woman's age (years)			
<20	1	-	-
20-24	0.86	0.265	0.65 - 1.12
25-29	0.62	0.009	0.44 - 0.89
30+	0.45	<0.001	0.29 - 0.69
Living children			
1-2	1	-	-
3-4	1.32	0.042	1.01 - 1.74
5+	1.80	0.005	1.20 - 2.70
Asset score (linear term)			
score=0	1	-	-
increase of 1 unit in score	1.10	0.044	1.01 - 1.21
Visit by family planning worker			
none	1	-	-
visit only	1.31	0.036	1.02 - 1.69
service received ¹⁰²	2.15	<0.001	1.63 - 2.82
missing	1.29	0.085	0.97 - 1.71

Notes: 1. Time postpartum and menstrual status controlled for.
 2. Since large numbers of cases did not have information on whether a visit had been received by a family planning worker, these women were included as a 'missing' category rather than excluding them from the whole analysis.
 3. N=8,990.
 4. After fitting the model, the Hosmer-Lemeshow chi-squared statistic was computed to test for the goodness of fit. It suggested no serious departure from the model's assumptions. $H-L \chi^2(8)=11.3, p=0.19$.

4.2.7 Multivariate analysis of the probability of adopting contraception prior to the resumption of menses

As shown in chapter three, postpartum amenorrhoea affords good protection against pregnancy for women in Bangladesh. In addition, evidence presented above suggests that many Bangladeshi women recognise the low risks of pregnancy during amenorrhoea, and that the resumption of menses acts as an important trigger for adoption of contraception. Nevertheless, some women do adopt contraception while still amenorrhoeic, and

¹⁰² Out of the 151 women who reported that they had received a service from a family planning fieldworker, 59% reported that they had received education, motivation or referral, 32% that they had received a method of contraception and 9% that they had received both a method and education/motivation/referral.

the number of women behaving in this way has increased markedly in the Matlab population in recent years. It is therefore of interest to explore the characteristics of women who choose to initiate use of contraception during postpartum amenorrhoea rather than waiting until their menses resumes.

Methods of analysis

For this stage of the analysis, only women who adopted a method of contraception following their recent birth were considered, and comparisons were made between the group of women who adopted contraception while still amenorrhoeic and those who initiated use once they had experienced their first menses following the birth. Initial analysis involved the examination of the bivariate relationships between the outcome of interest and individual independent variables, using graphs, two-way tables and chi-squared statistics. This process suggested which variables might have important associations with the outcome and also appropriate subgroupings for variables taking several values. This then enabled a series of standard, multivariate logistic regression models to be estimated in which the dependent variable was coded as '1' for women who initiated use of their first postpartum method while still amenorrhoeic, and '0' for women who initiated use of their first postpartum method after the resumption of menses. The model can be described by the following equation:

$$\log\left(\frac{\pi}{1-\pi}\right) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \dots + \beta_n x_n + \varepsilon$$

where:

π = probability of initiating contraception during amenorrhoea.

β_0 = constant term representing the value of $\log(\pi/(1-\pi))$ for individuals with the baseline value of all variables x_1 to x_n in the model.

x_1 to x_n = independent socio-economic, demographic and attitudinal characteristics of the users.

β_1 to β_n = unknown regression coefficients associated with the independent variables x_1 to x_n . A unit change in the corresponding independent variable produces a change in $\log(\pi/(1-\pi))$ of this amount.

ε = error or disturbance term representing unobserved variables that influence the dependent variable.

In the case of Matlab, the sample included all women who adopted a method of contraception within 24 months of their last birth.¹⁰³ As before, in cases where contraceptive use was initiated in the same month as menses resumed, the method of contraception was assumed to have been started after menses. Analysis was performed on three cohorts, 1990-1, 1986-7 and 1978-9. In the case of the USS cohort, any woman who initiated contraceptive use during the period of follow-up was included in the analysis.

Matlab 1990-1

Initial exploration of the data from the most recent Matlab cohort, 1990-1, suggested that several variables were associated with the adoption of contraception prior to the resumption of menses. The woman's age, the number of living children a woman had, the number of her living sons, being Hindu rather than Muslim, having experienced the last conception during postpartum amenorrhoea, and wanting to delay or avoid another

¹⁰³ The sample was restricted to these users in order to make it comparable with the USS sample.

child (versus wanting another child soon), were all individually, positively associated with the probability of adopting contraception during postpartum amenorrhoea. In contrast, education and household area (a measure of socio-economic status of the woman's family) were negatively associated with the probability of adopting contraception prior to the return of menses.

In addition, the duration of postpartum amenorrhoea experienced following the birth showed a positive association with the adoption of contraception during amenorrhoea. Graphical examination of the probabilities of adoption during amenorrhoea by different durations of postpartum amenorrhoea suggested that four groups would adequately explain the relationship: 1-4 months, 5-11 months, 12-17 months and 18+ months.

Having explored the bivariate relationships, a series of logistic regression models was estimated for each of the variables described above, controlling for the duration of postpartum amenorrhoea. This variable proved to be an important confounding factor for several other variables. For example, the odds ratio of adoption during amenorrhoea for women aged 25-34 years compared to women aged less than 25 years was reduced from 1.94 to 1.36 when the duration of postpartum amenorrhoea was controlled. Similarly, the odds ratio of adoption for women with four or more children compared to women with only one child was reduced from 2.40 to 1.30.

The models were next extended to include a variable describing the type of method that was adopted. Though adoption prior to menses did vary significantly between methods, the addition of this variable to the models did not greatly affect the coefficients of the other variables. In the case of education, the difference between uneducated women and educated women decreased slightly when adjustment was made for method type, reflecting the fact that educated women were more likely to use the oral pill and less likely to use the injectable, than uneducated women. Nevertheless, the difference remained significant, showing that, even among women adopting the same type of method, uneducated women were more likely to start use during amenorrhoea than educated women.¹⁰⁴

In the final stage of model building, the effects of various combinations of variables were explored in order to find a parsimonious model. Table 4.10 presents the estimated parameters for the variables in the final model. Several variables were dropped from the final model because their addition neither added significantly to the explanation of variation,¹⁰⁵ nor altered the coefficients of other variables in important ways. In this way, the age and number of living children variables were removed once the variables describing desire for additional children had been included. These three variables were closely correlated. Similarly, when information on household area was included in a model with education, the difference between educational groups ceased to be significant. Both these variables measure aspects of socio-economic status.

¹⁰⁴ The odds ratio for women with 1-5 years or religious education compared to uneducated women was 0.83 ($p=0.023$), and for women with six or more years of education was 0.73 ($p=0.002$).

¹⁰⁵ Log likelihood ratio tests were employed to ascertain whether variables should be retained in the model.

Table 4.10: Logistic regression odds ratios of adoption of contraception before the resumption of menses among contraceptive users, Matlab 1990-1

	N	Odds ratio	p	95% confidence interval
Duration of postpartum amenorrhoea (months)				
1-4	1337	1	-	-
5-17	2001	3.63	<0.001	3.11 - 4.23
18+	671	8.19	<0.001	6.50 - 10.33
Method type				
pill	1070	1	-	-
IUD	193	4.42	<0.001	3.09 - 6.32
injectable	2491	2.19	<0.001	1.89 - 2.56
condom	106	1.51	0.065	0.98 - 2.33
female sterilisation	64	9.33	<0.001	3.84 - 22.67
other	85	1.21	0.440	0.75 - 1.94
Desire for additional children				
soon	1212	1	-	-
later / not at all	2123	1.24	0.007	1.06 - 1.46
missing	674	1.20	0.118	0.96 - 1.50
Previous conception during amenorrhoea				
no	2418	1	-	-
yes	178	1.42	0.049	1.00 - 2.03
missing	1413	0.80	0.008	0.67 - 0.94
Religion				
Muslim	3322	1	-	-
Hindu	687	1.42	<0.001	1.18 - 1.71
Household area (sq feet)				
<300	3242	1	-	-
300+	767	0.75	<0.001	0.63 - 0.90

Notes: 1. N=4,009.

2. After fitting the model, the Hosmer-Lemeshow chi-squared statistic was computed to test for the goodness of fit. It suggested no serious departure from the model's assumption. $H-L \chi^2(58)=68.4, p=0.17$.

The probability of adopting contraception during postpartum amenorrhoea was found to be significantly higher among women with five or more months of postpartum amenorrhoea compared to those with only one to four months. However, there was no significant difference between women having 5-11 months postpartum amenorrhoea and those having 12-17 months. Therefore, in the final model these two groups were collapsed to form one group. The positive association between the duration of postpartum amenorrhoea and the adoption of contraception during amenorrhoea may in part be explained by the tendency for injectable users who initiate use during amenorrhoea to experience artificially inflated durations of amenorrhoea. However, having controlled for method type the association persisted, and models excluding injectable adopters produced similar results (results not shown). It therefore seems that the association is largely explained by the fact that a longer duration of amenorrhoea allows more time for adoption. In particular, it seems that a duration of amenorrhoea longer than four months is an important predictor of adoption during postpartum amenorrhoea.

Compared to pill users, women who started to use the IUD, the injectable, or who were sterilised, were all more likely to adopt the method during amenorrhoea. For IUD users, the odds ratio was 4.42, for injectable users, 2.19 and for sterilisation acceptors, 9.33. In contrast, there was no significant difference between pill users and condom users, or users of other methods (which included foam tablets and traditional methods). Users who did not want any more children or wanted to delay the next birth were more likely to initiate use during amenorrhoea than users who wanted another child soon (odds ratio=1.24). Hindu users were more likely than their Muslim counterparts to initiate contraception before menses (odds ratio=1.42). Taking household area as an indicator of socio-economic status, users in the higher socio-economic group were significantly less likely to adopt contraception before menses than those in the lower group (odds ratio=0.75). Finally, the model shows that users who had conceived their last child while in postpartum amenorrhoea were significantly more likely to adopt their first method before menses, than women who did not get pregnant during postpartum amenorrhoea last time (odds ratio=1.42).¹⁰⁶ A number of interactions were introduced into the final model in order to test whether the assumption of a constant effect of each variable across subgroups of the other variables was valid. No evidence was found for significant interaction effects and so these were not included in the final model specification.

Changes over time in predictors of initiation of contraception during postpartum amenorrhoea in Matlab

Having performed the above analysis for the Matlab 1990-1 cohort, the same procedure was followed for the 1986-7 and 1978-9 cohorts. As shown above, patterns of contraceptive use in the postpartum period changed considerably over the study period in Matlab, and it is of interest to examine whether predictors of contraceptive use during amenorrhoea have remained the same over time. Unfortunately, no information was available on the desire for an additional child for these two cohorts, and information on whether the previous conception had occurred during postpartum amenorrhoea or not, was available for only the 1986-7 cohort.

Initial exploration of the data suggested that several of the relationships found between the probability of adoption of contraception during amenorrhoea and the independent variables were similar to those for the 1990-1 cohort. In both the 1986-7 and 1978-9 cohort, positive associations between adoption during amenorrhoea and woman's age, and number of living children were found. Throughout the study period, it appears that among women who choose to use contraception following a birth, those with a stronger desire to avoid pregnancy, particularly those at the end of their childbearing careers, are more likely to adopt contraception during amenorrhoea, than women who intend to have more children anyway. In addition, a positive association was found for the 1986-7 cohort between having experienced a last conception during amenorrhoea and adoption of contraception before the return of menses.

However, despite these similarities, differences in the relationship with adoption during amenorrhoea were also found for some variables. In the 1986-7 and 1978-9 cohorts, no significant association was found between

¹⁰⁶ In order to avoid the necessity of discarding the large number of cases for whom there was no information on whether the previous conception had occurred during postpartum amenorrhoea or not, this group of women was included as a separate category in the analysis. Similarly, cases with missing information on desire for additional children were included in the model in a separate category. Estimation of the final model without these cases was found to have little effect on the coefficients for the other variables.

either religion, or household area, and adoption of contraception during postpartum amenorrhoea. The finding that religious differentials have appeared only in recent years mirrors that described above for the relationship with probability of adoption of contraception postpartum. Findings presented in chapter five suggest that Hindu women have a stronger desire to avoid a conception during amenorrhoea than Muslims, due to traditional beliefs concerning the negative implications of such a pregnancy. The absence of a differential by household area in the earlier cohorts is more difficult to explain, especially since the differential by education, another indicator of socio-economic status, was consistent in direction, and even somewhat larger, in the earlier period. One possible explanation is the fact that the recording of household area has changed over time in the RKS, suggesting that earlier and later measures may not be comparable.

In 1986-7 and 1978-9, users who adopted the injectable or who were sterilised following their most recent birth, were more likely than pill users to initiate use during postpartum amenorrhoea, as they were in 1990-1. However, the patterns for the IUD and the condom were not consistent across all the cohorts. Though there was no significant difference in the probability of starting use during amenorrhoea between IUD users and pill users in the 1978-9 cohort, by 1986-7, IUD users were more likely to start use during amenorrhoea, and this pattern persisted in the 1990-1 cohort. As discussed above in section 4.2.3, there has been a steady decline in the time to adoption of the IUD and an increase in the percentage of adopters starting use during amenorrhoea in Matlab over the study period, which reflects policies that have aimed to make the IUD more accessible to women and more acceptable in the period following birth. In contrast, compared to pill users, condom users have become less likely to adopt during postpartum amenorrhoea over time. In 1978-9 and 1986-7, condom users were more likely than pill users to initiate use during postpartum amenorrhoea. However, by 1990-1, there was no significant difference between pill and condom users. Again, this reflects programme activity in the Matlab area. Data presented in chapter six show that the condom is distrusted and rarely promoted by Matlab providers in the period following childbirth. It is often the last choice, given to women who are reluctant to use other methods.

The pattern of adoption of contraception before menses among groups of women experiencing different durations of postpartum amenorrhoea also differed somewhat between the cohorts. In the earlier cohorts, the findings suggest that longer durations of amenorrhoea were associated with steadily increasing probabilities of adopting contraception while amenorrhoeic. A significant difference in the probability of adoption was found both between women who experienced 5-11 months of amenorrhoea and those who experienced 1-4 months, as well as between those who experienced 12-17 months and those who experienced 5-11 months. In the 1990-1 cohort, although there was a sharp differential between women who experienced a duration of postpartum amenorrhoea of more than four months compared to those who had shorter amenorrhoea, longer durations of amenorrhoea were not associated with any further increase in the probability of adoption during amenorrhoea (until beyond 18 months of amenorrhoea). This is consistent with findings presented above (Figure 4.9) which suggest that adoption of contraception by amenorrhoeic women has increased substantially in recent years in the four to nine month period following a birth. Table 4.11 summarises these differences between the 1978-9 and 1990-1 cohorts.

Table 4.11: Logistic regression odds ratios of adoption of contraception before the resumption of menses among contraceptive users, Matlab 1978-9 and 1990-1

	1978-9			1990-1		
	N	Odds ratio	p	N	Odds ratio	p
Duration of postpartum amenorrhoea						
1-4	433	1	-	1343	1	-
5-11	673	4.29	<0.001	1322	3.37	<0.001
12-17	500	5.54	<0.001	681	3.65	<0.001
18+	480	14.60	<0.001	671	7.56	<0.001
Method type						
pill	293	1	-	1074	1	-
IUD	173	1.48	0.07	193	4.57	<0.001
injectable	1220	1.90	<0.001	2495	2.19	<0.001
condom	115	2.70	<0.001	106	1.48	0.08
female sterilisation	165	7.94	<0.001	64	9.28	<0.001
other	120	2.58	<0.001	85	1.19	0.495
Number of living children						
1	392	1	-	1207	1	-
2-3	674	1.58	0.002	1770	1.55	<0.001
4+	819	1.67	<0.001	1040	1.43	<0.001
missing	201	2.11	<0.001	-	-	-
Religion						
Muslim	1687	1	-	3329	1	-
Hindu	399	1.04	0.74	688	1.43	<0.001
Education						
none	1342	1	-	2125	1	-
1-5 years / religious	566	0.79	0.035	1114	0.87	0.096
6+ years	178	0.63	0.019	571	0.80	0.036
missing	-	-	-	207	0.72	0.036
Total N	2086			4017		

Note: 1. After fitting the models, the Hosmer-Lemeshow chi-squared statistic was computed to test for the goodness of fit. It suggested no serious departure from the model's assumptions in either case. 1978-9, H-L $\chi^2(48)=54.3, p=0.25$; 1990-1, $\chi^2(58)=67.7, p=0.18$.

Dhaka slums, USS 1992-3

As the findings presented earlier illustrate, the proportion of users who adopt contraception during postpartum amenorrhoea is much lower in the Dhaka slum setting than in Matlab. Therefore, the analysis of differences in the characteristics of women adopting before menses, compared to those adopting after menses, was restricted by small numbers. Though one would expect these two groups to differ in important ways, the small sample sizes meant there was low power to detect such differences. Nevertheless, the analysis was carried out in the same way as for the rural cohorts. Variables that were explored included duration of postpartum amenorrhoea, method type, woman's age, number of living children, number of living sons, woman's occupation, religion, asset score, visit by a family planning worker and husband's education.

In the bivariate analysis, the number of living children, woman's age, and the number of living sons, showed a significant positive association with the probability of initiating contraception during amenorrhoea. The husband's education showed a significant negative association with adoption during amenorrhoea. Significant differences were also found between different method types. Unlike the Matlab users, there was no evidence to suggest that the longer the duration of postpartum amenorrhoea, the more likely users were to initiate use while still amenorrhoeic.

When the variables for woman's age and the number of living children were entered into a regression model simultaneously, the coefficients for the age variables lost significance, and there was no evidence that including them in the model significantly improved the explanation of variance. This was also true of the variable describing the number of living sons. Further exploration suggested that two categories adequately described the association between number of living children and the probability of adoption during amenorrhoea: less than four living children; and four or more living children. When the number of living children was controlled for, no significant difference was found in the probability of initiating contraception during amenorrhoea by husband's education. This may be explained by the fact that more educated husbands are likely to be younger and to have fewer children than less educated husbands.

Table 4.12 shows the estimated odds ratios from the final model. Unfortunately, the small sample sizes mean that the precision of the estimated parameters is low, as reflected by the large 95% confidence intervals. Nevertheless, some patterns could be discerned. Aside from IUD users, adopters of all other methods were significantly more likely to start use during amenorrhoea than pill users. The odds ratios for the injectable, condom, female sterilisation and other methods were 2.19, 4.74, 22.98 and 3.19, respectively. Women who reported having received a visit from a family planning worker were more likely to start use during amenorrhoea than those who reported that they had not received such a visit (odds ratio 2.25). The odds ratio for women who reported receiving a visit and a service was not significantly different from those who reported no visit, possibly because of the small numbers involved (N=97). Users with four or more living children were more likely to start use before menses resumed, than those with less than four children (odds ratio=1.98).

Compared to the patterns observed for the 1990-1 cohort in Matlab, a number of differences can be highlighted. Firstly, no relationship with the duration of postpartum amenorrhoea was observed among the urban users. As shown below in chapter six, this is in large part explained by the prevailing programme policies and activities in Dhaka which make it very difficult for women to adopt contraception during amenorrhoea beyond the 40-45 day period following the birth. The association with number of living children was similar to that observed for the Matlab users. Women with larger numbers of living children are more likely to have reached their desired family size, and it appears that in both populations these women are then less prepared to run the risk of a conception before the resumption of menses, so that their motivation to initiate use during amenorrhoea is higher. However, in the urban population the differential was only apparent for women with four or more children, which may be explained by differences in desired family size and differences in influence of family planning personnel in the area. These issues are discussed further in the chapters that follow. No evidence was found for religious or socio-economic differences in the urban population, though the power to detect such differences was small.

Table 4.12: Logistic regression odds ratios of adoption of contraception before the resumption of menses among contraceptive users, Dhaka slums 1992-3

	N	Odds ratio	p	95% confidence interval
Visit by family planning worker				
none	166	1	-	-
visit only	111	2.25	0.026	1.10 - 4.58
service received	97	1.23	0.493	0.55 - 2.75
missing	79	1.40	0.783	0.61 - 3.22
Living children				
<4	333	1	-	-
4+	120	1.98	0.045	1.01 - 3.87
Method type				
pill	266	1	-	-
IUD	10	1.04	0.97	0.12 - 8.69
injectable	88	2.19	0.028	1.09 - 4.40
condom	46	4.74	<0.001	2.20 - 10.23
female sterilisation	13	22.98	<0.001	6.22 - 84.88
other	30	3.19	0.019	1.21 - 8.43
Total N	453			

Note: 1. After fitting the model, the Hosmer-Lemeshow chi-squared statistic was computed to test for the goodness of fit. It suggested no serious departure from the model's assumptions. $H-L \chi^2(18)=7.7, p=0.98$.

4.2.8 Contraceptive continuation rates in the period following childbirth

As well as describing the patterns of adoption of contraception in the period after childbirth, it was of interest to examine the continuation rates in the two populations. As noted by other researchers, the prevailing continuation rates are an important factor influencing the suitability of different postpartum contraceptive adoption strategies in a particular population (Potter, Masnick and Gendell 1973; Potter, Kobrin and Langsten 1979). However, few investigations have described patterns and differentials in continuation by timing of adoption postpartum and other user characteristics.

Methods of analysis

Analysis was performed on the most recent data available for Matlab, the 1990-1 cohort and the urban 1992-3 cohort. In the case of Matlab, all women who adopted a temporary method of contraception in the two years following the birth were considered. In the case of the urban population, all women who adopted a temporary method of contraception within the period of follow-up were included. Initial analysis involved the use of simple life tables to compute continuation rates for all temporary methods combined, and each method individually. Two measures of continuation were explored: first method continuation and all method continuation. First method continuation refers to the length of time a woman uses a particular method of contraception following adoption of that method. In the life table describing first method continuation, cases

are considered to have ‘failed’ either if contraceptive use is stopped completely,¹⁰⁷ or the woman changes to another method of contraception. All method continuation refers to the length of time a woman uses any method of contraception following adoption of a method. Therefore, in the life table describing all method continuation, cases ‘fail’ only if contraceptive use is stopped completely; a switch to a different method of contraception does not constitute a ‘failure’. In both life tables, cases are censored if the woman is lost to follow-up or if she or her husband accept sterilisation.¹⁰⁸

Following the basic analyses, proportional hazards regression was used to explore the relationship between continuation and a number of explanatory variables of interest, including whether the method was initiated during postpartum amenorrhoea or not, and the time after birth that the method was initiated. This analysis could only be carried out for the Matlab cohort, since the number of adopters was too small for the USS cohort. Proportional hazards regression is used to estimate models in which time to a well-defined event is the dependent variable. In the present analysis, two sets of models were estimated where the starting event was adoption of first postpartum method following the last birth. In the first, the time until cessation of use of the first method adopted was the dependent variable (first method discontinuation). In the second, the time until the end of use of all contraception was the dependent variable (all method discontinuation). In proportional hazards regression, an individual is assumed to be at risk of the ending event at every instant, and the instantaneous hazard rate function summarises this risk. The models estimated were log-linear in which the hazard rate was modelled as a function of time and the other independent variables of interest. The model is therefore described by the following equation:

$$\log \lambda_i(t) = \log \lambda_0(t) + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \dots + \beta_n x_n + \varepsilon$$

where:

$\log \lambda_i(t)$ = the instantaneous hazard rate at time t for subject i ,

$\lambda_0(t)$ = the unspecified baseline hazard rate at time t for an individual with baseline values for all the explanatory variables,

x_1 to x_n = the values of independent explanatory variables measured on subject i at time zero,

β_1 to β_n = unknown model parameters associated with the independent variables x_1 to x_n ,

ε = error or disturbance term representing unobserved variables that influence the hazard rate.

The two main assumptions of the model are, firstly, that the hazard rates for all individuals are proportional over the whole period of observation, and secondly, that the effects of the explanatory variables on the hazard rate are multiplicative (though this assumption is relaxed if interaction terms are incorporated).

¹⁰⁷ For the purposes of the present analysis, no attempt was made to distinguish between cases where the woman became pregnant during use of the method and those discontinuing use of contraception for any other reason.

¹⁰⁸ In both the USS and the RKS analysis, women were considered to have stopped using a method as soon as they reported nonuse of that method. However, some women may be intermittent users, stopping use for a short time and then restarting. Since these women were considered to have terminated use of the method, the present analysis may slightly exaggerate the rates of discontinuation.

Life table continuation rates

Table 4.13 presents the proportions of women in the two populations who continued use of their first postpartum method at different times after adoption. Discontinuation was considerably higher among the Dhaka slum population than in Matlab. By twelve months after adoption, only 51% of urban women were still using the method they first adopted following the birth of their child, compared to 65% in Matlab. Nevertheless, the rates of discontinuation were also high in Matlab, and by two years after adoption only 41% of women were still using their first method. First method continuation rates did not appear to vary greatly between methods in the urban slum population. By six months after adoption, 71% of injectable adopters were still using this method, compared to 68% of pill adopters, and by nine months, these figures were 64% and 60% respectively.¹⁰⁹ In Matlab, however, continuation varied considerably between methods. Injectable adopters had the highest rates of continuation. By six months after adoption, 89% of adopters were still using the method, and by 12 months, 73% were still using. Among IUD adopters, 83% were still using after six months and 65% after 12 months. Continuation was lower for pill and condom users in Matlab. By six months after adoption, just 67% of pill users and 60% of condom users were still using their first method, and at 12 months these figures were 50% and 37% respectively.

Table 4.13: Life table first method continuation of contraception following adoption after childbirth, Matlab 1990-1 and Dhaka slums 1992-3

Months since adoption	Matlab, 1990-1			Dhaka slums, 1992-3		
	Proportion of women still using first method	s.e.	Effective sample size	Proportion of women still using first method	s.e.	Effective sample size
3	0.948	0.004	3686	0.801	0.020	229
6	0.820	0.006	3112	0.664	0.027	111
9	0.729	0.007	2697	0.577	0.032	56
12	0.647	0.008	2313	0.513	0.038	23
15	0.575	0.008	1944	-	-	-
18	0.511	0.008	1607	-	-	-
21	0.465	0.008	1280	-	-	-
24	0.406	0.009	938	-	-	-

Notes: 1. All temporary methods of contraception.
2. Beyond 12 months, the sample size was too small to produce estimates for the urban cohort.

Table 4.14 presents the results from the life table analysis of all method continuation for Matlab and the urban slums, for all temporary methods of contraception combined. Again, the proportion of women continuing to use contraception was lower among the urban population than in Matlab, at all times after adoption. Though all method continuation was higher than first method continuation in the Dhaka slums, indicating that some switching of methods did occur, the proportion of women continuing use of contraception for one year was low, at just 63%. In Matlab, 82% of women who adopted contraception following the birth of their child were still using some method of contraception one year after adoption. The fact that the difference in all method

¹⁰⁹ The numbers of IUD and condom users were too small to compute separate continuation rates in the urban sample.

continuation is larger than that in first method continuation (19 percentage points compared to 13) suggests that there was a greater propensity for women in Matlab to switch to a different method of contraception rather than discontinue use altogether, than among the slum women. No evidence was found for differences in all method continuation by type of method first adopted in the urban slum population. In Matlab, all method continuation was highest among IUD adopters, which may reflect the fact that many of this group are women seeking to avoid another pregnancy altogether. By 12 months after adoption, among women who first chose the IUD, 88% were still using some form of contraception, compared to 86% of injectable adopters, 75% of pill adopters, and 76% of condom adopters. By 24 months after adoption, these figures were 74%, 69%, and 56%, for IUD, injectable and pill users respectively.¹¹⁰

Table 4.14: Life table all method continuation of contraception following adoption after childbirth, Matlab 1990-1 and Dhaka slums 1992-3

Months since adoption	Matlab, 1990-1			Dhaka slums, 1992-3		
	Proportion of women still using first method	s.e.	Effective sample size	Proportion of women still using first method	s.e.	Effective sample size
3	0.985	0.001	3830	0.838	0.018	237
6	0.922	0.004	3504	0.752	0.024	127
9	0.872	0.005	3226	0.685	0.029	91
12	0.824	0.006	2946	0.634	0.035	27
15	0.779	0.007	2630	-	-	-
18	0.732	0.007	2303	-	-	-
21	0.694	0.008	1956	-	-	-
24	0.654	0.008	1519	-	-	-

Note: 1. All temporary methods of contraception.

Despite the fact that continuation was clearly considerably higher in Matlab than in Dhaka slums, a large proportion of women in Matlab discontinued use after only a short period. Among all women who initiated use of a temporary method following the birth of their last child, only 65% continued use of some form of contraception for two years.

Proportional hazards models for contraceptive discontinuation

Having described the basic patterns of continuation, it was of interest to examine whether the risk of discontinuation varied between different subgroups of women. This stage of analysis could only be carried out for the Matlab 1990-1 cohort, since the number of users in the urban cohort was too low. In addition, initial exploration suggested that relationships between discontinuation and independent variables of interest differed between methods. Therefore, analysis was carried out separately for pill users and injectable users; the numbers of IUD and condom users being insufficient to allow separate analysis. The independent variables considered were: education; number of living children; religion; age; desire for additional children; household area; whether the method was initiated before or after the resumption of menses; and months postpartum that

¹¹⁰ The number of condom adopters remaining in the sample was too small to compute an estimate for 24 months post-adoption.

the method was initiated. Bivariate relationships were first explored between the independent variables and the hazard of discontinuation, firstly for first method discontinuation, and then for all method discontinuation, for the pill and the injectable separately. In order to check that the assumption of proportional hazards was reasonable for all independent variables, hazard ratios for separate six-month segments of follow-up were compared, and models were estimated including additional explanatory terms representing the interaction between time and the variables of interest. No important deviations from the assumption were found. Models were estimated including various combinations of explanatory variables in order to investigate their combined effects. Final parsimonious models are presented below.

Table 4.15: Hazard ratios for first method discontinuation and all method discontinuation following adoption of the injectable, Matlab 1990-1

	First method discontinuation		All method discontinuation	
	Hazard ratio	p	Hazard ratio	p
Initiation of contraception				
before menses resumed	1	-	1	-
after menses resumed	1.21	0.001	1.27	0.001
Months after birth contraception initiated				
1-6	1	-	1	-
7-12	1.05	0.427	1.25	0.008
13-18	1.14	0.155	1.71	<0.001
19-24	1.42	0.025	2.12	<0.001
Number of living children				
1	1	-	1	-
2-3	0.63	<0.001	0.51	<0.001
4+	0.53	<0.001	0.32	<0.001
Woman's education				
<6 years	1	-	-	-
6+ years	1.24	0.012	-	-

Notes: 1. Woman's education was found not to have a significant association with the hazard of all method discontinuation and therefore was not included in the final parsimonious model.
2. N=2,342.

Injectable

Table 4.15 presents the hazard ratios for first and all method discontinuation for injectable adopters. The number of living children a woman had at the time of adoption was negatively associated with discontinuation, both of the first method adopted, and of all contraception. This pattern is probably explained by the greater motivation to space or avoid another pregnancy among women with more children. Women with six or more years of education were found to be more likely to discontinue use of the injectable than women with less education. However, there was no significant difference between educational groups in all method discontinuation. This suggests that, although highly educated women who start the injectable are more likely to drop the method, they tend to switch to alternative methods, rather than discontinue use of contraception altogether. The hazard of first method discontinuation was found to be higher among women who initiated the

method beyond 18 months postpartum, than among those who initiate the method earlier. In addition, a positive association was found between months postpartum at adoption, and the hazard of all method discontinuation. This may be explained by the fact that women who initiate use later after birth do not need to continue use for as long as those who start use earlier, in order to achieve their desired spacing between births. Women who initiated contraceptive use during amenorrhoea were found to have better first method continuation than those who waited until menses resumed to start use. This may in part be explained by the fact that women who start use during amenorrhoea are particularly motivated to avoid another pregnancy. However, the fact that the association persisted even after controlling for the months postpartum at adoption, and the number of living children, suggests that other factors may be acting to increase the probability of continued use of the injectable.

Table 4.16: Hazard ratios for first method discontinuation and all method discontinuation following adoption of the pill, Matlab 1990-1

	First method discontinuation		All method discontinuation	
	Hazard ratio	p	Hazard ratio	p
Initiation of contraception				
before menses resumed	1	-	1	-
after menses resumed	1.03	0.73	1.26	0.027
Months after birth contraception initiated				
1-6	-	-	1	-
7-12	-	-	1.16	0.019
13-24	-	-	1.34	0.027
Number of living children				
1	1	-	1	-
2-3	0.88	0.014	0.67	<0.001
4+	0.67	<0.001	0.48	<0.001
Woman's education				
<6 years	1	-	1	-
6+ years	0.64	<0.001	0.55	<0.001

Notes: 1. The time after birth that the method was initiated was found not to have a significant association with the hazard of first method discontinuation and therefore was not included in the final parsimonious model.
2. N=1,015.

Pill

As with the injectable, in the case of the pill, a negative association between the number of living children and hazard of both first and all method discontinuation was found (Table 4.16). However, unlike the injectable, first method discontinuation for the pill was significantly lower among more educated than less educated women, as was all method discontinuation. No significant association was found between the timing of adoption of the pill, either in terms of months postpartum, or in relation to menses resumption, and first method discontinuation. However, all method discontinuation among adopters of the pill was found to be significantly higher among women who waited longer postpartum to start the method. Again, this may be

explained by the need for a longer period of use among women who start early in order to achieve a desired birth interval. Women who started the pill after the resumption of menses were more likely to discontinue use of contraception at all times postpartum than those who started use during postpartum amenorrhoea. Since no significant difference was found between first method discontinuation in these two groups, this difference may be explained by a higher motivation to avoid pregnancy among women who initiated contraception during amenorrhoea.

4.3 Summary

The above analyses have revealed some common features, but also important differences in the patterns of postpartum adoption of contraception, in the two study populations.

Comparing recent data for Matlab and Dhaka slums, it was found that the probability of adopting a method of contraception in the period following the birth was consistently higher in Matlab. In Matlab, a woman's education and the number of her living children were found to be positively associated with the probability of adopting contraception following a birth. Analyses suggested that socio-economic differentials in the probability of adopting contraception may have declined over time in Matlab, but that a religious differential has emerged in recent years, with Hindu women being more likely to adopt contraception than Muslims. Among slum women, the number of living children and socio-economic status were found to be positively associated with adoption of contraception following childbirth. Evidence was also found that visits by family planning workers may increase the likelihood of adopting contraception following childbirth.

Strong evidence was found that the return of menses acts as an important trigger for the initiation of contraception in both populations. However, use of contraception prior to menses was found to be considerably more common in Matlab than in Dhaka slums, and to have increased markedly in recent years. In the 1990-1 cohort, by one year postpartum, around 50% of amenorrhoeic women in Matlab had initiated contraception, compared to just 10% in the urban slums. Comparisons with national level data suggest that the pattern in Matlab is extremely unusual.

In both study populations, women with larger numbers of living children were more likely to initiate contraception during amenorrhoea than women with fewer living children. Findings suggest that as the motivation to avoid pregnancy increases, women are less willing to risk a conception prior to menses and therefore more likely to adopt contraception during amenorrhoea. Qualitative data presented in the chapters that follow strongly support this hypothesis. In addition, analysis of data from the Matlab population revealed that women who had conceived their last child during amenorrhoea were more likely to initiate contraception prior to the resumption of menses than those who had not had such a conception. Findings presented in chapters five and six confirm that fear of repeated conceptions prior to menses is an important factor motivating use of contraception soon after birth.

Whereas in Matlab there was evidence to suggest that different socio-economic groups of users behave differently, whether distinguished by education or household area, in the USS there was no evidence for

differential behaviour. This may in part be explained by the fact that there was little socio-economic variation among the USS sample; one might for example find differences if a more diverse sample of the urban population were analysed. In addition, small sample sizes meant that the power to detect differences was low. The greater tendency for uneducated users to adopt contraception before menses in Matlab than educated women is somewhat counterintuitive, since the desire to control fertility and prevalence of contraceptive use is usually found to be higher among educated women in Bangladesh (Kamal and Sloggett 1993). The observed pattern may reflect different treatment of clients by family planning workers according to their education and socio-economic status, and a differential ability among clients to withstand advice and motivation. Religion was shown to be significantly associated with adoption of contraception prior to menses in the 1990-1 Matlab cohort, with Hindus being more likely than Muslims to start before menses. The absence of evidence for such a relationship in the urban sample tells us little, since the number of Hindus in the sample was very small.¹¹¹ However, the absence of any association in the earlier Matlab cohorts is of interest. It suggests that over time, as the pattern of postpartum adoption of contraception has changed, Hindu users have become more inclined to use contraception while amenorrhoeic than Muslims. Findings presented in chapter five, suggest that Hindu women have a stronger desire to avoid a conception during amenorrhoea than Muslims, due to traditional beliefs concerning the negative implications of such a pregnancy.

Another important difference found between the Matlab population and the Dhaka slums, was the absence of a relationship between the probability of starting use during amenorrhoea and the duration of postpartum amenorrhoea, among the urban users. As shown below in chapter six, this is in large part explained by the prevailing programme policies and activities in Dhaka, which make it very difficult for women to adopt contraception during amenorrhoea beyond the 40-45 day period following the birth. Consequently, for the majority of urban women, a longer duration of postpartum amenorrhoea does not represent a longer time in which to adopt a method.

The mix of methods in use in the months following childbirth was found to differ in the two study populations, with the injectable being most common in Matlab, and the pill in the Dhaka slums. Despite the fact that the IUD and condom are often considered appropriate methods for postpartum women, in neither population was their use common, though the condom was somewhat more prevalent among the urban population.

Analysis of 1986-7 data from Matlab suggested that breastfeeding status had an independent effect on the probability of initiating contraception in the period following birth. Women who were fully breastfeeding were found to be less likely to initiate contraception than those who were partially breastfeeding or not breastfeeding at all.

Contraceptive discontinuation rates in Dhaka slums were similar to those reported in other studies and national surveys (Mitra, Nawab Ali and Islam 1994; Cleland, Phillips, Amin *et al.* 1994), whereas those in Matlab, particularly for the injectable, were lower. Compared to the continuation rates used in recent postpartum

¹¹¹ The overall USS sample includes very few Hindus and therefore does not allow comparisons between the two religious groups to be made.

contraception simulation models (Bracher 1992), all method continuation rates for Matlab were similar to the medium schedules, whereas those in Dhaka slums (and other studies in Bangladesh) were slightly higher than the high schedules. Education and number of living children were found to be positively associated with continued use of contraception in Matlab. Women who adopted contraception earlier postpartum were found to continue use longer than those who adopted later.¹¹² However, since early adopters would have to continue use longer to achieve the same birth interval as later adopters, it cannot be concluded that early adoption implies a longer period of protection against pregnancy. Injectable users who initiated use during amenorrhoea tended to continue use of the method for longer than those who started use after menses had resumed. This may reflect the fact that fewer side effects, in particular menstrual disturbances were experienced, something that was reported by many CHWs in Matlab (see chapter six). All method continuation was also better among both pill and injectable users who had started use during amenorrhoea than those who waited until menses returned. This may reflect the higher motivation to avoid pregnancy among this group of women.

The sharply contrasting patterns of adoption of contraception in the period following childbirth in the two study populations raise a number of important issues. In Matlab, the rising levels of use of contraception in the immediate postpartum period and during postpartum amenorrhoea, raises the issue of double protection. Given that lactational amenorrhoea provides good protection against pregnancy among Bangladeshi women up to around ten months postpartum, use of contraception at this time may imply wasted resources. In addition, low continuation rates may mean that the use of contraception has a limited impact on birth intervals and fertility. In contrast, in Dhaka slums, adoption of contraception prior to menses was rare, and this may mean that women experiencing long durations of postpartum amenorrhoea become pregnant unintentionally. There was also evidence to suggest that slum women do not always initiate contraception promptly following the resumption of menses. In particular, women whose menses resumes soon after birth were found to be less likely than their Matlab counterparts to adopt contraception. These findings suggest that many slum women do not adopt contraception in the period following childbirth even when the risk of pregnancy arises. The fertility implications of current patterns of adoption are discussed further in chapter seven. Before this, chapters five and six present qualitative findings, which help to explain the contrasting behaviour in the two populations that has been described here.

¹¹² Becker and Ahmed (1994) found a similar pattern for pill adopters in Peru.

Chapter five: The users

5.1 Introduction

Having described in some detail the current patterns and recent trends in natural protection against pregnancy and contraceptive use in the period following childbirth, the present chapter presents data of a different kind. In chapter one, the importance of considering the user's perspective in the design and implementation of family planning programmes was emphasised. To date very little research has addressed the issue of the user's perspective towards contraception following childbirth, and existing family planning programmes in Bangladesh have largely neglected this important dimension. This chapter seeks to fill this gap in our knowledge.

Though the focus of the study is contraceptive use in the period following childbirth, during the course of fieldwork it soon became clear that a broader approach was needed. In order to build up a picture of the factors influencing the patterns of postpartum contraceptive use, it was necessary to seek to describe the prevailing understanding of the postpartum period as a whole, as well as the sources of information and influence affecting this understanding and associated behaviours. The present chapter therefore presents findings on a number of different but interrelated topics.

First, general beliefs and practices regarding the postpartum period for the mother and child are described. Next, ideas regarding conception and risk of pregnancy in the postpartum period are explored. This is followed by the presentation of information on attitudes and knowledge regarding modern contraception and its use in the postpartum period. Next, these various dimensions of understanding are brought together in order to seek to understand how personal preferences regarding the adoption of contraception are formed. Finally, the various sources of information and influence on women's beliefs and behaviours in the postpartum period are discussed.¹¹³

5.2 Methodological comments¹¹⁴

The majority of the information presented in this chapter is drawn from a series of in-depth interviews conducted between November 1993 and May 1994 with women resident in the Matlab treatment area, and the USS sample clusters.¹¹⁵ The RKS and USS databases were used to select two groups of women from Matlab and the USS areas respectively. One group consisted of women who, following the birth of their last child, had adopted contraception prior to the resumption of menses (the before-menses group). The other group consisted of women who had adopted contraception after the resumption of menses (the after-menses group). In Matlab, a total of 39 women were successfully interviewed (19 before-menses cases, and 20 after-menses cases). In Dhaka, a total of 34 women were interviewed (20 before-menses cases, and 14 after-menses cases). The study focused on adopters of contraception since the main aim was to understand the factors influencing

¹¹³ How these insights into the knowledge and understanding of the users help to explain the prevailing patterns of adoption, and the implications they have for future policy direction, are discussed in detail in chapter seven.

¹¹⁴ Additional comments relating to the qualitative methods employed are given in chapter two.

¹¹⁵ The interview guideline used is shown in Appendix 3.

the timing of adoption of contraception, rather than the use of contraception *per se*. Since the analysis of the quantitative data and initial exploratory fieldwork had suggested the significance of the resumption of menses, it was decided that the selection of two groups of women, those who adopted before menses and those who adopted after menses, would present the opportunity for illuminating comparisons. Information from the RKS and USS also enabled the selection of respondents with a range of background characteristics. Appendix 5 presents descriptive tables for the respondents.

In addition to data from these in-depth interviews, information gathered through the following sources is included where appropriate: initial exploratory interviews carried out with women in the USS areas from January-March 1993 (Salway, Jamil, Nahar *et al.* 1993), in-depth interviews with service providers; observations in the field; and interviews conducted informally with additional respondents as the opportunity arose.

5.3 Findings¹¹⁶

5.3.1 Mother and child in the period following childbirth

The present study largely revealed similar patterns of behaviour and understanding regarding the immediate postpartum period as have been reported in previous studies in Bangladesh and other South Asian societies (Katona-Apte 1977; Bhatia 1981; Karan, Mathur, Qureshi *et al.* 1983; Blanchet 1984; Jeffery, Jeffery and Lyon 1989; Chalmers 1993; Goodburn, Gazi, Chowdhury *et al.* 1995). In both Matlab and Dhaka slums, conduct in the days following birth is dictated by two major concerns: 'namely, the pollution of the mother and child must be contained and protection against *bhut*¹¹⁷ must be ensured' (Blanchet p99, 1984).

Period and place of confinement (aus ghor, atur ghor, choti ghor, oshuj ghor)

The practice of segregating the mother and child after delivery addresses both of these concerns. Though all respondents reported a period of segregation, its exact nature, the location of the mother and child, the degree of contact permitted with other individuals, and the duration of confinement, were all found to vary considerably from case to case.

In some cases, women reported giving birth and spending the days following childbirth in a separate room, sometimes specially constructed for the purpose. In other cases, respondents showed how a room had been divided into two with a curtain or a bed placed on its side, in order to create a segregated area for the purpose of the birth and postpartum period. In other cases, particularly among urban respondents, segregation from the

¹¹⁶ In presenting the data gathered through the in-depth interviews, I have chosen to make liberal use of verbatim quotations from the respondents. The quotations are presented in English translation. In addition, where it is felt that the words used carry particular importance, or where the English translation may be somewhat inadequate, the exact Bengali words used have been presented in simple transliteration in parentheses. However, since it is recognised that such a transliteration (which does not adequately reproduce all the Bengali sounds) may cause confusion, these words are also presented in Bengali script in the glossary in Appendix 8.

As well as presenting the Bengali transliteration in parentheses, in some places, Bengali words have been used directly in the text where there is no easy way to translate the word, or the use of the local word is less clumsy and conveys the meaning better; a style that was effectively used by Jeffery, Jeffery and Lyon (1989). All words used in this way are in italics and are included in the glossary.

¹¹⁷ Various terms are used to refer to the evil spirits that threaten the health of the mother and newborn child, e.g. *bhut*, *petni*, *alga*, *batash*, *upori dosh*. It is beyond the scope of the present discussion to describe these in detail.

other members of the household had been achieved by resting and sleeping on the floor rather than on the bed.¹¹⁸

Dhaka after-menses, no. 67¹¹⁹

Respondent: *Now we do not have another room. Before, when we had, then I stayed separate, and in the village we stay separate. I stayed separate in the room and did everything separately, when we were in the village. But here we do not have this system. Here you have to do everything in the same room. There is no space.*

As well as the location, the duration of the confinement and the degree of contact with other individuals were found to vary between respondents. Again, practical considerations often mean that ideals are difficult to maintain. Several respondents reported that the days following the birth are marked by a series of small rituals that appear to signify stages of pollution (*choti, opobitro, napak*) being lifted, until the mother and child are once again pure (*pak, pobitro*) and are accepted into the wider family without risk of contamination. Among Hindu respondents, 21 days or one month was reported as the period required to return to a state of purity, and for Muslims this period was 40 or 45 days. In some cases, respondents reported that female relatives took over their household tasks for a period after the birth, giving them time to rest and return to a state of purity. For others, particularly urban women, the absence of female relatives and the lack of resources to hire additional help in the home, meant that they resumed household duties, and therefore interaction with other members of the community, much sooner after the birth out of necessity.

Dhaka after-menses, no. 69

Respondent: *No, I do not have anyone. How long will I stay like that?! I was here for six days and then I did everything myself. I washed the clothes. Those who have lots of money they can keep someone to do the work, we do not have such luck. I have to do my own things. I started to do my own things on the sixth day. Many stay separate for 45 days but this was not an option for me.*

In some cases, respondents reported that, though they resumed all other household chores, the cooking and serving of food was done by someone else, since this may imply risk for the other family members if carried out by a woman still in a state of impurity. In other cases, even cooking was carried out by the recently delivered mother.

Though strict confinement is not possible for all women, and many are forced to resume household activities soon after the birth, both urban and rural respondents were acutely aware of the dangers of indiscriminate movement in and out of the *aus ghor*. The world of malevolent spirits is just as alive in the city as the village. In her postpartum condition, the blood and openness of her body means that the mother is particularly

¹¹⁸ Blanchet (1984) observed that the need to contain the pollution of childbirth was felt more strongly by Hindus than Muslims in her study area, leading to the construction of a special birthing room. Nancy Fronczak, in her study of delivery practices in the slums of Dhaka, found that a higher proportion of Hindu than Muslim women chose to deliver in a clinic or hospital because the containment of the pollution of childbirth was felt to be difficult in the cramped living conditions of the slums and there was a desire to avoid delivery in close proximity to religious temples (personal communication, 1996).

¹¹⁹ Respondents are numbered as follows:

Matlab after-menses cases 1-20
Matlab before-menses cases 21-39
Dhaka before-menses cases 40-59
Dhaka after-menses cases 60-73

attractive to these spirits and must take special care. Certain times of day carry increased risk of attack, in particular midday (*dupur*, around 12-2pm) and early evening (*shondha*, around 6-7pm). Special objects are kept with the mother and child to help ward off evil forces. Respondents reported keeping fishing nets (since the evil spirits cannot get through the small holes), shoes, spikes from a broom, metal objects, garlic, and matches (signifying fire) close to the child, and carrying them with them when they went outside the room. In addition, the lighting of a fire was a common measure taken against these forces of evil.¹²⁰

In addition to containing the pollution of childbirth and affording protection against evil spirits, the period of confinement is a time for the mother to rest and to care for her newly born child.

Postpartum condition of the mother

Following the delivery of the child, the mother is in a state of weakness and vulnerability. Two main factors characterise her condition at this time: the lack of blood in her body and the raw state of her reproductive organs. The term '*kacha nar*' or '*kacha nari*'¹²¹ which can roughly be translated as 'raw tubes' describes the state of the woman's internal organs. This is also sometimes extended to '*kacha shorir*', referring to the whole body, indicating that the woman's weakened condition is not confined to her reproductive parts, but is a general state of depletion. Immediately after the delivery, having lost the child from the womb and a large amount of blood (which is heating) the woman is at risk of catching cold. She is bathed with warm water, often given warm water or tea to drink, and may also be given honey to eat. Tea is particularly beneficial, acting as a warming substance and also reducing pain and weakness.

Matlab before-menses, no. 24

Respondent: *I did not take cold water since this is harmful, I was cold anyway. Hot water is taken because the tubes (nar) are soft (norom). It's good to take hot water, and they also gave me tea for two or three days. They say that if you take tea then the body will not be so weak.*

Dhaka after-menses, no. 72:

Respondent: *If bread and tea are given then it is good, the tubes will dry and become tight. Here we give tea for three days.*

— Dietary rules

Since the woman's reproductive organs are *kacha* (raw, soft, flaccid, wet and open), there is great risk of damage and infection. In the immediate postpartum period her diet may be severely restricted with the objective of speeding the return of her internal parts to normal.¹²² Variation was found in the particular dietary rules followed by respondents, though the concerns lying behind them were common.¹²³ For example, foods that are heavy or wet must be avoided since they prevent the mother's tubes from drying out and may result in

¹²⁰ Blanchet (1984) reports that this is a common practice throughout South Asia.

¹²¹ It should be noted that the word '*kacha*' has a diverse range of meanings in Bengali and closely related languages such as Hindi (Tabor 1981).

¹²² These beliefs indicate the close relationship between the reproductive and digestive systems in the 'folk biology' of the community women, something that has been noted by other researchers in South Asia (Blanchet 1984; Jeffery, Jeffery and Lyon 1989).

¹²³ Although respondents were very consistent in the concerns they expressed regarding the need to restrict the diet, inconsistency was found in the allocation of specific foods to different categories. Jeffery, Jeffery and Lyon (1989) found the same to be true in their study of rural Uttar Pradesh.

stretching or swelling and infection of her insides, gas and diarrhoea. On the other hand, foods that are light and dry are beneficial, speeding the recovery of the mother's internal organs (see Table 5.1).

In addition to avoiding certain types of foods, the newly delivered mother should restrict the quantity of food taken, and may not be given three meals in a day. She should not eat enough to fill the stomach since her insides are soft and vulnerable and her digestive system fragile. Eating only a small amount will also mean that she does not need to go outside to the bathroom frequently, which carries with it the danger of attracting evil spirits.

The duration of dietary patterns that are aimed at protecting the mother's fragile state are maintained for differing lengths of time. Some respondents reported avoiding harmful foods for just 11 days, or 13 days, others for a whole month, and others for 40 or 45 days. However, as discussed in more detail below, a completely normal diet may not be resumed for many months since there is the important consideration of protecting the well-being of the child.

Though there was some evidence that dietary patterns may be changing, both among some urban and some rural families, concerns about the vulnerability of the woman's body in the postpartum period remain universal. Respondents in Matlab mentioned that CHWs say to eat normally after the birth, but that they nevertheless continue to follow the advice of their relatives and local healers to avoid certain things. Urban respondents who noted differences between the practices in the village and the town still maintained certain restrictions.

Table 5.1: Mother's dietary rules in the postpartum period

Foods to avoid	
Type of food	Danger
Wet Foods rice (large amounts should be avoided)	prevents mother's tubes from drying properly
Heavy Foods (<i>bhari</i>) rice (large amounts should be avoided)	mother's insides may become stretched and may come out body swells, face swells
Cold Foods (<i>tanda</i>) cold water / non-boiled water (<i>kacha pani</i>)	mother & child may catch cold mother's insides may become infected
Vegetables (<i>kacha torkari</i>)	mother's insides may become infected
Spicy Foods (<i>jhal</i>)	mother may get diarrhoea child may get diarrhoea
Sour foods (<i>chuka</i>)	swelling of the mother's insides
Left over foods (<i>bashi khabar</i>)	mother's insides may become infected
Fish dry fish (<i>shutki mach</i>), <i>puti mach</i> shrimp	attraction of evil spirits will cause <i>shutika</i> child will become ill, unconscious, suffer from itching
Meat goat's meat, beef	difficult to digest child will become ill
Milk	mother may get diarrhoea

Foods to eat	
Type of food	Benefit
Hot / Warming Foods (<i>gorom</i>) hot water / boiled water tea	prevents the woman's insides from getting infected reduces the woman's pain reduces the woman's weakness warms the woman's body
Dry Foods (<i>shukna, tan</i>) puffed/dried rice (<i>cheera, muri</i>) bread (<i>ruti</i>), salt	help mother's insides to dry up
Light foods (<i>halka</i>) bread (<i>ruti</i>)	mother's insides can tolerate, able to heal
Soft foods (<i>norom</i>)	mother's insides can tolerate, able to heal
Strength (<i>shukti</i>) giving foods honey certain fish: <i>magur mach, shing mach</i> eggs, milk	replenish blood and strength in mother's body protects against <i>shutika</i> help production of breastmilk provide vitamins
Bitter foods (<i>tita</i>) cumin (<i>jeera gura, kali jeera</i>) fried cumin (<i>jeera bhaja</i>)	protects the child against measles helps production of breastmilk mother's insides dry up reduces pain in stomach and waist

— *Shek newa (warming the body)*

As well as maintaining certain dietary habits, the mother may use warmed cloth pressed against the vagina or she may sit beside or over a smouldering fire or hot water (*shek newa, agun tengha*) to help ease the pain of delivery and also dry and tighten up her insides. This practice also encourages the bad blood of childbirth to be lost from the body. Both urban and rural respondents reported doing this, though some had opted for vitamin tablets and modern pain killers instead.

Matlab before-menses, no. 31

Respondent: *If you have any pain in the body then it's good to warm with the fire. We don't have any medicine or anything. We are poor people, what else can we do?!*

Dhaka before-menses, no. 44

Respondent: *Up to 40 days it's good to warm the body. If you take shek then the pain gets less in the body and the bad blood (bod rokto) is lost. The lumps of blood break up and are lost and then the stomach does not hurt.*

Though the *kacha nar* and its associated dangers may only continue for a month or six weeks, the period of weakness may last for many months and is exacerbated by lack of sleep and the work involved with caring for the newly born child. Table 5.2 summarises the terms used to describe the woman's condition in the postpartum period.

Table 5.2: Terms used to describe the postpartum condition of the mother

Bengali	English
<i>kacha</i>	raw, fragile
<i>nishokti</i>	without strength
<i>durbol</i>	weak
<i>nistej</i>	weak
<i>norom</i>	soft
<i>oshustho</i>	unwell
<i>komjor</i>	little strength
<i>noshoto</i>	broken
<i>khomota nai</i>	no power
<i>khali</i>	empty
<i>phuley</i>	swollen
<i>shukna</i>	dry, thin
<i>bhanga</i>	broken
<i>shashto kharap</i>	poor health
<i>shob shesh</i>	everything is finished

Matlab after-menses, no. 18

Respondent: *There is no blood in the body, there is no strength (shokti), there is no power (khomota). Everything has been sucked out and finished. Having the child, everything has been exhausted. To have the child blood, strength (rokto, shokti), everything is needed.*

Interviewer: *When a child is born then how long later does the blood and the strength come back?*

Respondent: *After two or two and a half years it may come. Those who can eat well, they regain it within a year.*

Dhaka before-menses, no. 59

Respondent: *Since the baby was born my health is just getting worse and worse. After the birth there was no improvement, I was like that [during pregnancy] or even worse. My body got weak and everyone said that I was getting thin. My husband said that I should see the healer (fakir) and take an amulet (tabiz), that I was getting thinner and thinner. My body was weak, completely weak. I did not have any strength at all in my body.*

In order to regain strength (*shokti*), the woman's blood must be replenished. Foods that increase the body's blood and strength are often described as containing 'vitamins' -- a term in common use by the medical profession and lay people alike. Certain types of fish, milk, eggs and banana are foods that provide 'vitamins' and strength and are therefore good for the woman after childbirth. However, such foods were well beyond the reach of the majority of our respondents, who had to make do with a meagre diet and a slow road to recovery following the birth of their child. In addition to special foods, those who can afford to, take traditional herbal preparations, such as '*shadona bottle*', and vitamin tablets or '*phials*' of syrup to help regain their strength.

Matlab after-menses, no. 17

Respondent: *As long as a woman cannot eat properly, she will remain weak. If she eats then she will get back to normal. After my older child, my body was OK, but after this one it still has not got better, my body still feels weak [11 months after the birth].*

As well as a strength-giving diet, the recently delivered mother should ideally also avoid hard work, take plenty of rest and should not shout or move about quickly. However, as already noted above, in reality many mothers have to start working soon after the birth, and this no doubt contributes to the general feeling of weakness and tiredness, and may also be the cause of more specific afflictions, such as uterine prolapse.

— *Uterine prolapse*

Prolapse of the uterus is recognised and feared and avoidance of hard work (including sexual relations) is largely maintained because of this.

Matlab after-menses, no. 8

Respondent: *After one month they gave me the small jug (bodna) to bring water. I first brought water with this, and then after 10 or 12 days they gave me the larger jug and I brought the water with that jug for 10 or 12 days. So that was for one month, 15 days with the bodna and then 15 days with the jug. This was so that I would not have pain. If you are not careful then that place may come out. Then I brought a little water in the bucket (balti) to the house from the pond, for one month just a little water, and then more. And after three months I managed to bring the full bucket, and then it was OK.*

— *Retention of the bad blood (dushito rokto, bod rokto, alga rokto)*

Though excessive blood loss at the time of delivery will reduce the woman's strength (which has already been sapped by nourishing the child in the womb), it is nevertheless important that there is a good flow of blood from the body at the time of delivery.¹²⁴ Since this blood is bad and stale, it can cause harm if it remains

¹²⁴ The ambivalent attitudes towards female blood in South Asian cultures has been noted by many researchers (Blanchet 1984; Good 1980; Reissland and Burghart 1988). Female blood is both strength- and life-giving, as well as potentially harmful and polluting.

within the body. Birth attendants (whether a professional *dai* or female relative) may make women remain standing after the birth to assist the flow of blood from the body.

Matlab after-menses, no. 15

Interviewer: *Was it [the blood lost at delivery] like menses, or more than that?*

Respondent: *More than that. It was black and it was smelly. It was different.*

Interviewer: *Why is it like this?*

Respondent: *It's different. For 10 months and 10 days the child has taken the good blood and only the bad blood is left behind.*

Matlab before-menses, no. 37

Respondent: *Well, imagine, a child has been born, it has been stored up for many days this is why it smells, whereas when the menstrual blood (*ritur rokto*) comes this is not stored up, that's why it does not smell. This is like a tide (*jowar-bhata*), whereas we call this blood at childbirth pond water (*pukurer pani*: i.e. stagnant), and that which comes for menses, that is the tide (*jowar-bhata*: i.e. coming and going, a fresh flow).*

— Adla kamor

A particular type of severe pain, often known as '*adla kamor*',¹²⁵ may also follow the delivery. The pain is severe and medicine may be needed. It may last for as long as six days. Though this pain was well recognised among both urban and rural respondents, few offered clear explanations as to why it happens. Some respondents explained it as the result of retention of bad blood. However, its cause is also often associated with malevolent forces, either the bad wishes of other individuals or evil spirits. A woman who suffers from *adla kamor* herself may pass this affliction to another woman if she touches her following the delivery.

Dhaka before-menses, no. 59

Respondent: *After the delivery I had this pain in the stomach, adla beytha. After the child was born this pain came. I had this pain all night. I was screaming. People say that this pain comes after the child is born, but whether it happens to everyone or only some, Allah knows that.*

The pain may also result from evil spirits entering the woman's body, and is often described as a biting pain associated with a hard lump in the abdomen. Two older rural informants, one Hindu and the other Muslim, offered remarkably similar explanations.

Older Hindu *dai*

Respondent: *There is one god called Bashudev, and the god who makes the child in the stomach (*peyt*) is Narayan. When the child is made in the stomach then Bashudev wants to eat it. But Narayan says 'do not eat it now, let it get ripe and then eat it'. Then, when 10 months and 10 days have passed then Bashudev says 'now I will eat it', and Narayan says 'OK eat it, but first go and get some spices'. Then Bashudev goes to get the spices and taking this opportunity Narayan gives a push and the child comes out. When Bashudev comes back and finds that his food is no longer there, then he starts to eat the stomach instead. This is the *adla kamor*.*

¹²⁵ Other local names used by respondents to refer this pain were *adla beyram*, *atta beyram*, *bhut kamrae*, *aduli kamor*, *adla khanda*, *adla beytha*, *atla*, and *hatla*.

Muslim mother-in-law

Respondent: *This is adla, this is a kind of illness (oshuk). When the pain starts then the child is born. Then, something comes close to you. This thing would have eaten the child, 'I will eat it'. But when it sees that the child is not there anymore, then it suddenly bites the waist (maja) instead.*

— Shutika

Previous studies have described *shutika* as postpartum diarrhoea and noted that its causes may be varied and are often linked to the woman's inappropriate eating habits or other faulty behaviour (Blanchet 1984; Mita and Whittaker 1990). In the present study, both urban and rural respondents were aware of this postpartum illness, and reports suggested that *shutika* may sometimes involve other types of disruption to the digestive system, not all manifested as diarrhoea.¹²⁶ As well as certain foods, incomplete expulsion of the bad blood of childbirth may cause *shutika* to strike.

Matlab after-menses, no. 15

Respondent: *The blood is bad blood (kharap rokto), if it stays in the body then it will cause pain, the head will hurt and shutika will strike.*

Interviewer: *What is shutika?*

Respondent: *Shutika?! For some they have hukna shutika (dry) and some have kacha shutika (raw) and some have ghat shutika (diarrhoea). I had this ghat shutika, I used to go three or four times in the day.*

Interviewer: *Do you mean diarrhoea?*

Respondent: *Yes.*

Despite social norms that dictate that women rarely complain about illness or discomfort and are often denied access to medical treatment, the above discussion clearly illustrates that pregnancy is no easy matter.

Bangladeshi women, particularly those who are poor, feel the effects of pregnancy long after the delivery. General weakness and tiredness, as well as more serious complaints were the experience of the majority of our respondents. Survey research in South Asia provides evidence to support this picture (Goodburn, Chowdhury, Gazi *et al.* 1994; Bhatia and Cleland 1995). Goodburn, Chowdhury, Gazi *et al.* (1994) found that in rural Bangladesh, 92% of women suffered symptoms of ill-health in the first two weeks after delivery, and 50% still reported symptoms at six weeks after delivery.¹²⁷

The mother-child dyad and the well-being of the child beyond the aus ghor

In addition to the mother's own well-being, concerns regarding her health in the postpartum period are in large part motivated by the desire to protect the child. The newly born infant is extremely vulnerable. Attack by evil spirits is a serious danger and diverse measures are taken to confine and protect the child in the days and weeks following the birth. It is important to emphasise here the close connection between mother and child. The child's well-being is intimately bound up with her mother's health and conduct, and as such the mother is blamed for any illness or accident that befalls the child.

¹²⁶ Goodburn, Gazi and Chowdhury (1995) also found different types of *shutika*, referred to as 'wet' and 'dry'.

¹²⁷ Findings from a Dhaka slum study of maternity practices and maternal morbidity will be available shortly (N. Fronczak: personal communication, 1996).

— *Mother's diet and breastmilk*¹²⁸

Since the child is fed at the breast, her well-being is largely dependent upon the mother's diet and health. As illustrated above in Table 5.1, many of the dietary habits followed by women in the postpartum are believed to be beneficial for both mother and child.

Matlab before-menses, no. 37

Respondent: *These are senior people's (murubira) rules. Only rice can be taken. If vegetables are eaten then the child will be unwell, and the mother will also be unwell. The stomach cannot tolerate it, because of the kacha nari.*

Interviewer: *What problem is there with the kacha nari?*

Respondent: *The kacha nar. The child will have diarrhoea (paikhana) because the child takes the mother's breastmilk.*

Dhaka before-menses, no. 59

Respondent: *I need to be careful. If I eat vegetables then my son's stomach will ache, and if I eat spicy things then his stomach will ache. The child sucks the milk from the mother doesn't he? So the mother must be careful.*

Moreover, since the child may continue to take breastmilk for many months, dietary practices felt to be important for the sake of the child may be extended well beyond the immediate postpartum period.

Matlab before-menses, no. 35

Interviewer: *How many days do you have to avoid these things?*

Respondent: *Until the child is very big, I still have not taken them.*

Interviewer: *So for how many months or years?*

Respondent: *Up to one or one and a half years you have to avoid these things, as long as the child is taking breastmilk you have to avoid.*

Dhaka after-menses, no. 61

Respondent: *This is what the religious books and the older people say. It's because the child is taking breastmilk. If the child gets less breastmilk then I will get the blame. You have to listen to your elders. My mother-in-law just says this, that I have to follow the rules. Don't take any cold foods. Whatever you do that will also affect the child.*

— *Cold*

The new infant is particularly susceptible to cold, having come from the warmth of the mother's body and being small and vulnerable. This risk of catching cold persists until the child is quite old, and may result from either cold foods taken by the mother, or behaviour which leads to her body and milk becoming cold, such as washing clothes in cold water or bathing.

Matlab after-menses, no. 29

Respondent: *If I work with water a lot, doing the washing and things like that, then I will get a headache and the child will also get fever.*

Dhaka after-menses, no. 72

Respondent: *Cold things cannot be eaten since the child will catch cold, and then cold things cannot be touched. If these rules are followed then it's good for the child and also good for me.*

¹²⁸ Another study carried out by the author and colleagues documents in more detail ideas surrounding breastfeeding and the quality of breastmilk, among women and men in Dhaka (Salway, Nahar and Ishaque 1996).

— *Movement beyond the home*

In order to protect the child, a mother's movements are restricted beyond the immediate postpartum period. When a mother moves outside the confines of the home she is likely to be struck by evil spirits which in turn will be passed to the child.

Matlab before-menses, no. 33

Respondent: *For say three or four months I could not go.*

Interviewer: *So if you went within this time would there be any problem?*

Respondent: *The child is small, what a lot of dangers there are, because of this.*

Interviewer: *What do you mean by this?*

Respondent: *This is the batash (evil wind, spirits), the child may be struck, it may die. This is a problem isn't it? There are so many things in the batash, bhut-petni, what a lot of things! My mother-in-law says not to go, if she allows it then I'll go.*

It is important to remember that movement over long distance by the mother is a risk even if the child is left behind, since she may bring with her evil spirits on her return, and these may be transmitted to the child through the breastmilk, or through contact. When women do have to move outside the home, they often take special precautions on their return before holding and feeding their child at the breast, such as spitting on their breasts, reading lines from the Quran, brushing the breast with a broom, and warming their hands and body over a fire.

Matlab after-menses, no. 8

Respondent: *There is fear of batash, of bhut. This fear lasts up to 18 months. The mother should be careful as long as the child is breastfed. In the batash there is petni, and if the mother is affected then the child will also get this through the breastmilk.*

In addition to those mentioned above, other inappropriate behaviour by the mother (such as sexual relations during the postpartum period of impurity, or insufficient deference to her elders) may bring harm to the child. As noted by other researchers (Norris Stark 1993; Blanchet 1984), it is striking how the rules of conduct dictated to protect the child's well-being are bound up with the ideas of a good wife and mother in general, including respect for the authority of superiors and observance of modesty and restraint.

The preceding discussion has described the key dimensions of understanding relating to the condition of mother and child in the period following birth. It is important to highlight here two broad themes. Firstly, the mother herself is commonly weak and unwell in the period following birth and is concerned that her reproductive organs recover and her body regains strength, both for her own sake and for that of her child. Secondly, the mother's behaviour, in particular her diet and movement outside the home (but also other actions), may have serious consequences for the well-being of her child and are therefore restricted. The significance of these factors for the adoption of contraception following the birth is elaborated further below.

5.3.2 Risk of pregnancy in the period following childbirth

Beliefs regarding conception

Maloney, Aziz and Sarker state that 'in common Bengali thought, 'male semen' and 'female semen' must combine to cause a conception', but also point out that superimposed on this understanding is the Vedic idea that genetic material and lineage is transmitted only by the male through his semen (p18, 1981). Blanchet

(1984) found that many of her respondents believed the woman to contribute no seed or semen to the formation of the child. In the present study, most respondents who expressed ideas about conception believed that the child is made from the man's seed (*bij*) alone.¹²⁹

Matlab before-menses, no. 36

Respondent: *The child does not come from the woman. If you do not go to the man's bed then does the child come?! If you go to the man then a child comes in the stomach. Where there is fire then the candle will burn. If you go to him four days in a row then sooner or later you will get pregnant.*

In one case the importance of the man's contribution was graphically described.

Matlab after-menses, no. 8

Respondent: *If you have sex and the seed (*bijo*) comes then the woman's whole body becomes beautiful, she becomes healthy. This cannot be bought by people. People say that if you take five kilograms of milk then one drop of blood will be made, and from ten kilograms of blood you will get one drop of sperm (*bijo*), you can't even buy it, you might be able to buy blood, but you can't buy sperm!*

However, in a few cases respondents stated that they felt both the man and the woman contributed something to the formation of the child, and two urban respondents mentioned the fact that the woman has eggs or seeds that must join with the man's seeds.

Although beliefs regarding the contribution of genetic material to the child were somewhat varied, all respondents clearly stated that the woman's body plays a role in the development of the child. The common understanding is that the woman provides the environment in which the seed grows and develops, nourishing the growing child with blood. The contribution of the woman is clearly illustrated by the fact that she is the first target of blame if a couple fails to produce any offspring.

Matlab after-menses, no. 18

Respondent: *It comes from both of them, if the man plants the land. If the land is good then the crop will also be good, and if the land is not good, then the crop will also be bad. It's like this, the man is the one who makes it and we are the land.¹³⁰*

Dhaka after-menses, no. 61

Respondent: *The child comes from the man and from the mother's menstrual blood. The child comes from this. The main thing (*ashol jinish*) comes from the man, the man gives the child life.*

Since conception and development of the child are dependent on the mother's body as well as the father's seed, a woman cannot become pregnant at just any time. Not every act of coitus will lead to a conception and the chance of conception is dependent on the state of the woman's body, in particular her menstrual status. Though there was some inconsistency in respondents' reports, the majority of both urban and rural women stated that the period following menstruation (*mashik*) carries the greatest risk of pregnancy. Seven to ten days

¹²⁹ Not all respondents were questioned about this. Of those who were, several had a very unclear idea about the process of conception.

¹³⁰ Analogies of sexual intercourse and childbearing with agricultural fertility are ancient themes in both Hindu and Muslim tradition. Other researchers in rural South Asia have noted the still common use of such analogies (Maloney, Aziz and Sarker 1981; Blanchet 1984; Jeffery, Jeffery and Lyon 1989).

after the start of menses the woman's *nari*, being once again clean, clear and open, is ready to receive the man's seed.¹³¹ Regular menstruation is thus favoured since it is a sign of fertility and the purification of the woman's reproductive system in readiness for conception.

Dhaka before-menses, no. 42

Respondent: *No, a child will not be conceived at any time. The time when a child is conceived, then the man is different, his head gets hot, he becomes different and then if they have relations then a child will come. If my menses has come and then seven days have passed, and I have become clean again (porishkar), then if I have relations with my husband then a child will come. At that time the husband and wife are very affectionate.*

Dhaka after-menses, no. 65

Respondent: *I have heard from people that after taking my bath, on the seventh day not to go near my husband. I have heard that at this time the child is conceived, since the nari is open.*

A few respondents expressed the belief that conception is likely during menstruation since the woman's body is open inside and the menstrual blood is present. However, it was more common for respondents to state that it is unlikely that conception will occur during menstruation since the flow of menstrual blood prevents the man's seed from entering the women. In addition, for both Hindus and Muslims menstruation is highly polluting, and menstrual blood both disgusting and dangerous. Sexual intercourse at this time is sinful and may cause harm to both the man and the woman.

Abstinence and risk of pregnancy with the kacha nar

Among both Muslims and Hindus in Bangladesh a period of sexual abstinence follows a birth. Explanations for this practice commonly refer both to the ritual impurity of the woman after delivery and also the potential damage that could be inflicted on the woman in her vulnerable state. Proscriptions against sex are explained as both religious and social rules and the moral and physical considerations are closely interrelated. Sexual relations in the immediate postpartum period could result in serious damage to the mother's health. Since the mother's body is weak and *kacha*, sexual relations may reduce her strength further, cause increased bleeding and pain, and lead to loss of weight. In addition, sexual relations at this time may lead to uterine prolapse and any number of diseases, including *shutika*.

Matlab after-menses, no. 9

Respondent: *Yes, it's a problem for the mother, that kind of problem. We are female aren't we?! Before 40 days that place is not dry, we use the fire to dry it, so then won't you feel it's a problem [to have sexual relations]?! At that time the health is not good. I know how it feels but I cannot explain all this. If you stay at this time then it's harmful, that place hurts.*

Sexual relations during the immediate postpartum may also be dangerous for the man, since it risks contact with the polluted blood and filth of childbirth (*dushito rokto, alga rokto, kharap jinish, moila, napak, oporishkar, sauci*).¹³² Such behaviour is described as sinful (*pap*) by some, and may result in the man's

¹³¹ Maloney, Aziz and Sarker (1981) report that their fieldwork and other studies in South Asia found similar beliefs about the risk of conception in relation to the menstrual cycle.

¹³² Terms used refer to both ritual and physical uncleanness, showing how closely related these often are.

strength being sapped, his life shortened and affliction by disease (*rowg, beyram, oshuk*), such as bleeding from the penis and diarrhoea.

Matlab after-menses, no. 18

Respondent: *If you stay with your husband then he will get ill. The husband's body will not have much strength. He will get a bad disease (rowg). The man's body will get thin, he will lose strength. It will be very bad, and if he goes out anywhere then there may be an accident. What a lot of dangers may happen suddenly.*

As well as dangers for the husband and wife, sexual relations may involve risk for the child via contamination of the breastmilk.

Matlab before-menses, no. 26

Respondent: *It's not really a problem for the child, but then again if someone does not wash properly afterwards and then they feed the breast, then the child will get diarrhoea from the milk (doodher aga).*

Dhaka before-menses, no. 42

Respondent: *Yes, it's a problem. If I have relations (milamisha) with my husband then I have to go out and bathe, use water [to clean the breast] before I can give the milk. It's a problem for the child, the health will get bad. They give enough trouble as it is.*

In addition to health risks for the mother, father and child, several respondents (though not all) expressed the belief that sexual relations in the immediate postpartum period may result in another pregnancy. As noted above, beliefs regarding conception involve an understanding that the mother's body must provide blood and must be open to receive the man's seed. The mother is believed to be at particular risk of a repeated pregnancy while she still has a *kacha nar* following delivery, since at this time blood remains inside and her tubes are open.

Matlab after-menses, no. 3

Respondent: *Yes, a child may come soon. Because the blood is there, from that it comes. Yes, this is the raw blood (kacha rokto). If the husband has relations then from this it [a child] comes again quickly.*

Dhaka before-menses, no. 58

Respondent: *I did not feel good, that's why we did not stay together. And then again people say that in the choti ghor, they say that if you stay together all the time then you will not be able to control it, and another child will come quickly. It's like after menses when people say you should not stay together quickly, that's why after the birth we stayed again after 21 days.*

Again it is evident that beliefs about physiological processes are bound up with ideas of correct moral behaviour. Sex soon after birth carries religious and social proscriptions and a quick subsequent pregnancy is evidence of loose moral behaviour, an inability to control one's sexual desires and lack of consideration for the child already born.

Having noted that postpartum sexual abstinence is the norm in Bangladesh, it should be pointed out that the duration of abstinence is not long and in practice is likely to have little impact on fertility levels, since only in rare cases does it extend beyond the period of postpartum infecundity. Among Muslim respondents, one month or 40 or 45 days were mentioned as the required period of postpartum abstinence, whereas among the

Hindus, some also referred to 21 days as the required duration.¹³³ Table 5.3 shows the durations of postpartum abstinence following the last birth reported by rural and urban respondents.¹³⁴ Almost all respondents reported that they had resumed sexual relations by two months postpartum and several of those who abstained for longer did so because their husbands were absent from home. It also seems likely that at least some respondents gave normative answers to this question and that durations of postpartum abstinence are even shorter in many cases. Discussion often lead respondents to mention that reality may be very different from the religious and social rules and that the resumption of sexual relations is usually dependent on one's husband's wishes. Men may seek sexual relations before the prescribed period is over, provided bleeding has stopped (and the risk of contamination is removed). One respondent mentioned that her husband used the condom at this time (and also during menstruation) to avoid direct contact with the polluting blood.

Table 5.3: Reported durations of postpartum abstinence following the last birth by location and timing of adoption of contraception

Duration of postpartum abstinence	Matlab users		Dhaka users	
	Contraception adopted:		Contraception adopted:	
	after menses	before menses	after menses	before menses
15 days	0	1	0	0
21 days	4	1	0	1
30 days / one month	4	3	0	0
40, 42, 45 days	8	6	6	7
2 months	1	3	4	6
3 months	2	5	2	3
4 months	0	0	1	0
no information	1	0	1	3
Total	20	19	14	20

Matlab before-menses, no. 22

Respondent: *Two months is the rule but do any of them follow this? Not one of them does. They observe this for the day that the child is born, but then they want to come all the time. Not all men are the same. Some want to come to their wife soon and if she doesn't let him then will she get food?!*

Matlab after-menses, no. 9

Respondent: *For 30 or 40 days is good. But this is up to the wishes of the man, some may abstain and others do not.*

Comparing the urban and rural respondents, it can be seen that more rural women reported durations of abstinence of less than one month. These were all Hindu women except one, and as mentioned above the

¹³³ The Quran states that a woman is impure for 40 days following a birth and that sexual relations must not be entered into for this period. Among Hindus, the period of postpartum abstinence varies from 21 days to two months depending on the caste and sex of the child (Maloney, Aziz and Sarker 1981).

¹³⁴ Where it is felt useful, counts have been presented to illustrate the frequency and range of responses given to certain questions. However, since qualitative work is by nature evolving and responsive, identical interactions did not take place with each respondent. Therefore, although every effort was made to cover the key areas of interest with all respondents, this was not always possible, and inevitably some respondents provided more information on some topics than others. This means that in some cases counts could only be presented for a subgroup of the respondents for whom the information was available.

number of Hindu women in the urban sample was small. Aside from this, no large differences were found between urban and rural respondents (or between before-menses and after-menses groups) in either their ideas regarding postpartum abstinence or their reported behaviours.

Postpartum amenorrhoea (mashik bondho)

All mothers know that a period of amenorrhoea follows the birth of a child and that the time to the return of menses varies from woman to woman. Since menses is a time of ritual impurity and carries with it restrictions on a woman's behaviour, including sexual relations, religious activities and, in the case of Hindus,¹³⁵ cooking and serving food, a woman's menstrual state is fairly common knowledge. In addition, since the return of menses following birth is a signal of renewed fertility (as described in more detail below), whether a woman's menses has resumed following her birth is a common topic of conversation. Respondents spontaneously compared their experience of amenorrhoea to those of their relatives and neighbours and mentioned discussing these issues with other women. New mothers who do not know what to expect after their first birth, are given advice and explanation from their female relatives and neighbours.

The most common explanation given for the period of postpartum amenorrhoea is that the woman does not have much blood in her body and therefore the menses cannot come (in Matlab 18 respondents and in Dhaka 10 respondents, spontaneously mentioned this). The lack of blood in the body is attributed to both the direct blood loss at delivery and also the blood that is drained from the mother's body in making the child. Out of all urban and rural respondents, only one spontaneously explained amenorrhoea as being related to breastfeeding.

Matlab after-menses, no. 7

Respondent: *The child sucks the blood from the mother's body and so the body is weak after the child is born. The blood is less and so the menses comes later. If the blood is there then the blood will come.*

Dhaka before-menses, no. 50

Respondent: *It depends on each person's body's blood. Those who have a lot of blood, their [menses] comes, and those who have less, their menses may not come.*

Although the period of amenorrhoea is perceived as normal and natural, since it reflects a lack of blood in the body, it also indicates that the body is weak (lacking in *shokti*) and has not returned to its pre-pregnancy state of well-being. As mentioned above, good food is needed to return the mother to full fitness, and good food is also often felt to be related to the return of menses.

Matlab before-menses, no. 24

Respondent: *I can't eat so how will blood be made? I can't eat the good things like milk, fish, eggs, and good vegetables. In the whole year I can't even have a few drops of milk. If I could eat well then maybe it would come [menses].*

Matlab after-menses, no. 8

Respondent: *After the birth the body's blood was lost. For the whole body's blood to come again, vitamins, egg, banana, if you eat everything then the blood comes again.*

¹³⁵ In the case of some Muslim households, women may be restricted from cooking and serving food when menstruating, though this is not actually proscribed by the teachings of the Quran.

Matlab before-menses, no. 37

Respondent: *When the child was born then a lot of blood was lost. The body becomes weak and when it again stores up then the menses will come. Now there is no blood in the body. This is why it is stopped, when it comes again then it [menses] will come again.*

Variation in the duration of postpartum amenorrhoea between women is recognised and often described using agricultural analogies, particularly among the rural population. Women whose menses returns quickly are likened to the 'aush' rice crop which is sown in the rainy season and ripens quickly within three months (*ausha shorir*), and those whose menses comes late to the winter paddy crop, known as 'amon' or 'poush', which ripens more slowly, taking six months (*amon shorir, pousha shorir*). The use of these terms reflects the perception that women's bodies tend to be of a particular type and therefore that they will tend to experience the same duration of postpartum amenorrhoea and the same gap between pregnancies, time and again throughout their reproductive lives. This idea has important implications for the use of contraception in the postpartum period and is discussed in more detail below.¹³⁶

For the great majority of women, the period of amenorrhoea is without particular problems, pain or worry; a natural state that will end when the time is right, with the resumption of menses. Many respondents stated that the longer the period of amenorrhoea the better, or expressed no particular preference regarding the duration of amenorrhoea (in Matlab 16 after-menses respondents and 17 before-menses respondents, and in Dhaka 9 after-menses respondents and 11 before-menses respondents gave this opinion). A long duration of amenorrhoea means that one can pray and fast and also removes the bother of washing soiled clothes. It also signifies that the next child will come later and allows the body's blood to be replaced, returning the woman to health and strength.

Although overall few respondents stated that it is good if menses comes soon after the birth (in Matlab 4 respondents, in Dhaka 9 respondents), it was noticeable that a significant minority of urban women who adopted contraception before menses held this opinion. The explanations for this preference were related either to the woman's health or to the risk of pregnancy. Respondents felt that a long duration of amenorrhoea would mean a build up of bad blood (which is heating) leading to aching in the body, burning of the hands and feet and a feeling of heaviness. These ideas are in sharp contrast to the more common understanding expressed, namely that the period of postpartum amenorrhoea is a time of little blood in the body and no accumulation of bad blood in the woman's reproductive system. Indeed, a number of respondents drew comparisons between the negative sensations associated with amenorrhoea at other times, particularly during use of contraception, and the absence of such problems during postpartum amenorrhoea. These differing opinions may partly be explained by the fact that five of the urban women who stated a preference for quick resumption of menses had never themselves experienced extended periods of postpartum amenorrhoea. It therefore seems likely that they were responding to the hypothetical question with the normative response that free and regular flow of menses is desirable for good health. As patterns of breastfeeding change and durations of postpartum amenorrhoea decline among the urban population, it is reasonable to assume that ideas regarding what is normal and desirable will increasingly undergo transformation in this way.

¹³⁶ A similar understanding was found by Van de Walle and Van de Walle (1991) among Muslims in Mali and Burkina Faso.

Although for most women, the period of amenorrhoea does not in itself represent a time of dangerous retention of bad blood within the body, during this period blood is gradually being replenished and will result in resumption of menses at the appropriate time. It is therefore desirable for this blood eventually to flow and leave the body, something that has important implications for the adoption of contraception during the postpartum period, as discussed further below.

Shorir bondho, the return of menses and risk of pregnancy

Once the period of postpartum bleeding is over and a woman enters a state of postpartum amenorrhoea, the chance of pregnancy is perceived to be very low. Though all respondents except one were aware that some women do conceive again before the menses returns (as discussed more below), the absence of menses is in many cases regarded as an indication that conception is highly unlikely, if not completely impossible. The period of amenorrhoea is sometimes referred to as '*shorir bondho*', meaning the body is closed; the same term that is used when a woman has reached menopause, or when certain types of contraception are being used. As mentioned above, the period of amenorrhoea is perceived to be a time when the body is getting back to normal and blood is being replenished. Though women are not in general aware of the process of ovulation, the idea that a period of recovery is needed before another child is conceived, is common. The return of menses is a signal to the woman that she is once again fertile and runs the risk of another pregnancy if she has relations with her husband.¹³⁷

Matlab after-menses, no. 9

Respondent: *Before menses a child will not come, when your menses comes then you need to take care [use a method].*

Dhaka after-menses, no. 68

Respondent: *After two and a half months I saw that something white was coming out [from my vagina] and I thought it was some kind of woman's disease. Then one day I went to the pond and then when I came back I was cooking and then I noticed that my clothes were full of blood. Then I said to my mother-in-law what had happened and she said that my menses had come again (shorir kharap hoese). I asked her whether this was just the blood from the childbirth but she said it was not that. Then I knew there was risk and so I started to take the pill. I was very scared. What if I got pregnant again?! I thought about this and then when apa (sister, i.e. family planning worker) came I took the pill.*

Mura baccha (conception without the resumption of menses)

Although the return of menses is commonly recognised as an indication of heightened risk of pregnancy, it is also common knowledge that pregnancy sometimes occurs without menses being seen. Local terms used to describe this are '*mura*' and '*muria*'.¹³⁸ It is important to emphasise, however, that the chance of conception before menses is by no means the same for everyone and the fact that such pregnancies are commonly recognised does not mean that all women perceive themselves to be at risk.

¹³⁷ In cases where menses resumes very soon after birth some women may not recognise the increased risk of pregnancy, as discussed below.

¹³⁸ The term '*lamera*' was also used by a respondent whose mother tongue was Urdu.

— *Like mother-in-law like daughter-in-law*

The understanding that reproductive history tends to repeat itself over generations is common. However, ideas about characteristics being passed down over generations are complex. In some cases respondents' understanding appeared to be very similar to western concepts of heredity and in others cases to be more akin to an idea of fate (*bhago*) -- something that can repeat itself over time among individuals that are members of the same line or family (*gushti, bongsho*) but in fact have no blood connection. Thus, it was common for respondents to talk about increased risk if one's mother or sister had had a *mura* pregnancy, but also that fear is heightened if one's mother-in-law or sisters-in-law had experienced this.

Matlab after-menses, no. 18

Respondent: *You can tell. We don't have this in our line (gushti), that's why I took it [contraception] after the menses, not before.*

Matlab before-menses, no. 29

Respondent: *If it is in the line (bongsho) then mura happens. My mother-in-law had two girls first and now I have also had two girls, now everyone is saying that I will have a son this time, it's like that.*

Dhaka before-menses, no. 42

Respondent: *There is a tendency, if there is this tendency (iro), then it happens. This means that it is within the line (jat). Like if the mother-in-law had it then the daughter-in-law will have it.*

Dhaka after-menses, no. 64

Respondent: *Those who have mura will have it. Why should it happen to me? My mother, my mother-in-law, nobody has had it. Why should it happen to me?*

— *Repeated experience*

Related to the idea that there are familial reproductive traits, is the understanding that a woman's reproductive experience will tend to repeat itself from one pregnancy to the next. Different women have different types of bodies and respondents talked about having a rule (*neom*) or pattern to their length of postpartum amenorrhoea and time between successive pregnancies. Thus, women who have had several conceptions following the resumption of menses in the past have confidence that they will not conceive before menses shows itself in the future. It is common, both in Matlab and Dhaka, to hear the phrase '*amar baccha emneyi deritey ashey*', that is '*my children just come late anyway*', as an explanation for why methods are not being used. Similarly, those who have previously experienced a *mura* pregnancy are worried that the same may happen again.

Matlab after-menses, no. 5

Interviewer: *So is there no risk of pregnancy before [menses]?*

Respondent: *(laughs) Isn't there?! But for me I have had three children, for me there is a rule, after four or five months it [menses] comes. I have this idea that I will take the methods like this, like in that specific month menses will come and then I will take it.*

Interviewer: *Is this always the correct idea?*

Respondent: *I don't know about everyone, but for me it has followed this pattern.*

Matlab before-menses, no. 33:

Interviewer: *Does menses always stay stopped for the same length of time for a woman?*

Respondent: *Yes, it will be like that. Like for me, I have had four children and after each of the four there was a gap of two or three years. The way it happened in the past is the way it will be.*

Dhaka after-menses, no. 72

Respondent: *I don't know how this happens [mura]. It happens to those who have it. It happens again and again to those who have it.*

— *Time postpartum*

As well as increased risk of conception once menses returns, a number of respondents expressed the opinion that the risk of *mura* pregnancy increases with time since the birth. This understanding was expressed more commonly among the Matlab women (10 respondents) than the urban women (3 respondents). It was also apparent that, whereas the Dhaka respondents recognised an increased risk beyond a year or a year and a half postpartum, the Matlab respondents stated that the rise begins much earlier; in one case at three months, in seven cases at six months, and in two cases at eight months. It seems likely that the opinions expressed by the Matlab women are the result of strong educational and motivational work carried out by the CHWs in that area, something that is discussed further below.

Matlab after-menses, no. 2

Respondent: *If I had seen that a long time was passing then I would have got scared that the menses had not come. Then maybe a muria would happen. Then I would take a method.*

Interviewer: *So when does this fear start?*

Respondent: *If I had seen that four months had passed and more time was passing then there could be a muria, then there would be risk, after four or six months.*

Matlab before-menses, no. 32

Respondent: *Pregnancy doesn't happen before the menses so soon after the birth. Not within the first six months. After this there is the fear (bhoy) of pregnancy.*

Dhaka after-menses, no. 63

Respondent: *This is a worry [mura]. When menses stays stopped for one year or one and a half years. If menses is stopped for a long time then this becomes a worry.*

Dhaka after-menses, no. 73

Respondent: *Yes, this [mura] may happen. It happens to people whose menses stays stopped for 18 months or more.*

— *Other factors*

Other factors related to the risk of pregnancy during postpartum amenorrhoea that were mentioned less often included: age, with younger women having a greater risk of a quick pregnancy than older women (three respondents); insufficient blood loss after the delivery resulting in greater risk of *mura* since blood remains inside the tubes (one respondent); and health, with healthier, better-nourished women having a higher risk of *mura* conception (one respondent).

— *Personal risk of mura pregnancy*

Although *mura* conception was almost universally recognised as possible, by no means all respondents acknowledged a personal risk. Table 5.4 shows the perceptions of personal risk of *mura* conception expressed by rural and urban respondents. A number of interesting points can be highlighted. First, as noted above, in both the urban and rural samples, prior personal experience or the experience of a close relative, were important reasons why individuals perceived a risk of *mura* conception.

Table 5.4: Perception of personal risk of *mura* conception following birth of last child by location and timing of adoption of contraception

	Matlab users		Dhaka users	
	Contraception adopted:		Contraception adopted	
	after menses	before menses	after menses	before menses
Perception of personal risk of <i>mura</i>				
No, no risk of <i>mura</i>	10	5	9	0
Maybe, some risk	5	0	4	0
Yes, risk of <i>mura</i>	5	14	1	20
Total	20	19	14	20
Out of women who perceived a risk of <i>mura</i>, main reason why fear aroused				
previously had own <i>mura</i>	0	2	1	6
close relatives had <i>mura</i>	3	2	0	5
close neighbours had <i>mura</i>	1	1	0	6
none of the above mentioned	1	9	0	3
Total	5	14	1	20

Matlab before-menses, no. 23

Respondent: *It happened to my mother. It may happen to me as well. It's not that it will definitely happen, you can't say that. But there is a fear. It happened to my mother so it might happen to me. It may happen, that's why we take a method two months after the birth.*

Dhaka before-menses, no. 40

Respondent: *After he was born I started the pill after just two months. Everyone said that it may happen again and I also thought this, that another *mura* may come. When one *mura* happens then another one may also happen. So in fear of this I started to take.*

Having said this, these reasons appear to be much more important for the urban respondents than the rural respondents. There appears to be a large number of Matlab women who perceive a personal risk of *mura* pregnancy even though neither they themselves, nor any of their close relatives, have experienced this in the past. As discussed further below, this difference is likely to be the result of frequent interactions with the CHWs. It is also interesting to note that in both groups, a number of women who waited until after menses to initiate use of contraception, nevertheless perceived some risk of conception during postpartum amenorrhoea. Factors which explain this apparent discrepancy are discussed below.

Breastfeeding, amenorrhoea and protection against pregnancy

Zeitlyn and Rowshan (1994) have described the belief among Bangladeshi women that breastmilk is made from blood. They suggest that women believe that the body cannot produce both milk and blood at the same time, meaning that the act of breastfeeding induces amenorrhoea and infertility. Van Ginneken (1974) also mentions a strong belief in the pregnancy-preventing capacity of lactation in some Muslim societies. Findings from the present study, however, reveal that understandings related to breastfeeding, absence of menses and renewed pregnancy, are varied and in many cases incomplete. There is no widespread understanding that the

way a woman feeds her infant will affect her risk of conceiving again. Table 5.5 summarises the beliefs of the Matlab and Dhaka respondents regarding the contraceptive potential of breastfeeding. It can be seen that, though some were aware of such a relationship, most recognised no connection between the two.

Table 5.5: Perceptions of the contraceptive effect of breastfeeding by location and timing of adoption of contraception

Contraceptive potential of breastfeeding	Matlab users		Dhaka users	
	Contraception adopted:		Contraception adopted:	
	after menses	before menses	after menses	before menses
Yes, in most cases	4	1	0	1
Yes, in some cases	1	2	2	3
Heard of this, but seems not to be the case these days	1	2	0	1
No connection recognised	14	14	12	15
Total	20	19	14	20

Among the few respondents who recognised a relationship between breastfeeding and conception, none felt that it could be considered to be universal and none could clearly articulate why such a connection exists. In those cases where such an understanding was expressed, the knowledge appears often to have come from older female relatives, that is, it does not seem to be newly acquired. In only one case did the respondent mention health workers as the source of this information.¹³⁹

Interviews with respondents also suggested that the belief in the contraceptive potential of breastfeeding is on the decline. Several respondents mentioned the fact that though breastfeeding used to afford protection against pregnancy, nowadays it appears to make little difference, though they did not suggest why this might be. Others mentioned that they had heard of such an effect from older relatives but saw no evidence of it themselves today.¹⁴⁰

¹³⁹ The suggestion that health and family planning workers do not, on the whole, convey information about the contraceptive effect of breastfeeding is supported by evidence presented in chapter six.

¹⁴⁰ Rukhsana Haider has found evidence that traditional, rural understandings regarding the contraceptive effect of breastfeeding are often undermined when women migrate to Dhaka and receive conflicting messages from health workers and neighbours (personal communication, 1996).

Matlab before-menses, no. 22

Respondent: *As long as the milk remains and the child takes it then the menses stops. I mean it may or may not come.*

Interviewer: *So does it stay stopped for most people?*

Respondent: *Yes it stops, but these days you know it does not stay stopped and the children come.*

Interviewer: *Even if the breastmilk is fed?*

Respondent: *Yes, even if it is fed the child comes fast, and a child may even come without the menses. In the past it used to be less.*

Interviewer: *What do you think about this?*

Respondent: *What can I say? My aunts and also the older people here say this, that if there is a small child and the milk is fed then a child does not come.*

Interviewer: *And what do you think, does this actually happen?*

Respondent: *In the past they [children] used not to come, but now it happens. Now the breastmilk does not make any difference, it still comes.*

Matlab before-menses, no. 26

Respondent: *It's [chance of pregnancy] the same whether you feed other things (alga) or breastmilk, it is not less. If the menses comes then it will come, it comes even if the breastmilk is taken. People used to say that if the breastmilk is taken then pregnancy comes later. I have heard this, but now it comes fast anyway.*

No evidence was found of breastfeeding being consciously employed as a contraceptive method either now or in the past. Respondents were questioned about their mothers' and older female relatives' experiences of childbearing, but none made any reference to the importance of breastfeeding in extending the time between pregnancies or the like. Even though many respondents expressed a preference for a long duration of amenorrhoea, it seems clear that breastfeeding is not practised intentionally for this purpose. This is perhaps not surprising, since breastfeeding in Bangladesh has until recently been almost universal and has lasted for very long durations. With patterns such as these prevailing, there has been little room for adjustment of behaviour and the majority of women have benefited from the contraceptive effect of their breastfeeding unintentionally.¹⁴¹

— *If the child dies young then another will come fast*

Although very few women expressed an understanding that breastfeeding in general protects against pregnancy, the association between a child dying early in life and the swift return of menses and a subsequent pregnancy, is well recognised among both rural and urban women. Senior female relatives were mentioned as the source of this knowledge, as well as personal observation. Local expressions were spontaneously used to describe this phenomenon, though their exact meaning could not always be explained.

Matlab before-menses, no. 30

Respondent: *If the child in the lap (koler baccha) dies then another child may come. People say that if the child dies then it may come again, this they call moillitey polli.¹⁴² My mother and my aunts say this.*

Though many of the respondents who referred to this association could offer no explanation as to why it should exist, several (in Matlab 9 respondents and in Dhaka 5 respondents) related it to the breastmilk not

¹⁴¹ Of course, with the changing patterns of breastfeeding now being seen in urban, and to a lesser extent in rural areas, the issue of adapting breastfeeding patterns to gain maximum contraceptive protection becomes more pertinent.

¹⁴² The word 'moilli' refers to death and 'polli' to germination or regrowth.

being fed. Though none of the respondents in the present study articulated the precise idea that the body cannot produce both breastmilk and menstruation at the same time, ideas expressed were similar to those discussed by Zeitlyn and Rowshan (1994). Again the word '*kacha*' was used, this time to describe the milk in the breast that is not taken by the child. This milk '*falls down into the woman's tubes*' where it '*makes the menses come quickly*', or it '*dries up*' which also means that the menses comes back.

Matlab before-menses, no. 29

Interviewer: *And what if the child in the lap (koler baccha) dies?*

Respondent: *Then it happens, it [a child] comes quickly. If the child were alive then the child would have eaten this milk. Now the milk has to dry up doesn't it? The old women say that if the raw milk (kacha doodh) falls into the stomach then a child comes in the stomach.*

Interviewer: *But why do they say this? How does the milk falling there mean that a child will come?*

Respondent: *I can't say that.*

Dhaka after-menses, no. 65

Respondent: *This is because of the mother's milk, this milk fell into the stomach (peyt) and that's why it happened. The child did not take the breastmilk, it dried up. The kacha doodh, that was not eaten by the child. This remained in the breast and dried up and then the menses came back and another child came.*

The current findings suggest that although traditional understanding does draw a connection between the breastmilk that is produced to feed the newly born child and a renewed pregnancy, this does not, for most women, extend to a general understanding of a connection between breastfeeding (for instance in terms of quantity of milk, frequency, duration or supplementation) and risk of conception.

The desire to avoid closely spaced pregnancies (ghono ghono baccha, kuti kuti baccha)

As well as describing the prevailing understanding surrounding the risk of conception in the postpartum period, it is important to consider the prevailing attitudes towards the avoidance of pregnancy. Of particular relevance here are the opinions and attitudes relating to birth spacing (though the desire to terminate childbearing completely also has important implications for postpartum contraceptive behaviour as discussed more below). As noted in chapter four, contraceptive use has increased markedly in recent years in Bangladesh as a whole, and particularly in the Matlab treatment area, with a rise in the use of contraception for spacing births, as well as for limiting childbearing (Cleland, Phillips, Amin *et al.* 1994; Koenig, Phillips, Simmons *et al.* 1987).

In the present investigation, all respondents felt that the gap between two births should not be less than three years and the majority felt that five years or even longer was ideal (in Matlab 20 respondents, in Dhaka 16 respondents). Some respondents even felt that eight or ten years gap is desirable. The family planning programmes in both urban and rural areas of Bangladesh have carried strong motivational messages regarding birth spacing and it might be suggested that respondents gave courtesy responses, rather than their true opinions. Though this may in part account for the stated popularity of the five-year gap, discussions with

respondents revealed strong ideas about the negative consequences of closely spaced pregnancies both for the welfare of the children (particularly the child already born) and the mother herself.¹⁴³

Matlab before-menses, no. 30

Respondent: *Five or six years gap is good. It's a problem for the children, they become weak (norom), one after another (ekta lengu ekta tengu).*

Dhaka before-menses, no. 46

Respondent: *Won't it be a problem?! That child was taking the milk, and then when it happens [mother gets pregnant] then it will just cry and it will get thin. If the mother conceives again quickly then this child will be jealous, the child will be able to tell. The child will not take the milk and will get thin and just cry.*

Dhaka after-menses, no. 68

Respondent: *I wanted to have them a long time later... .. It's a problem for my health. Now I am tired. I can't work. I can't do any heavy work. When I look at the work I just feel lethargic and if I lie down for a while then I don't feel like getting up again. I wash the clothes but don't have the strength to pick them up again. I don't have any strength. It's a big problem for my body.*

Closely spaced births are also recognised to cause broader family problems and may strain relations as well as the family's finances.

Ideals about the desirability of spacing children may have been reinforced by recent family planning efforts, but it seems clear that they have a long history. In a population where durations of breastfeeding and postpartum amenorrhoea have been extended, long birth intervals have traditionally been the accepted norm and the advantages of this have been recognised. Many local terms exist to refer to close spacing of pregnancies, including several that are far from complimentary. Respondents stated that it is shameful and embarrassing to have children too quickly and that people who do not space their births are thought to be stupid and irresponsible, behaving like dogs or goats.

Matlab before-menses, no. 25

Interviewer: *So what do people think of those who have their children like this [closely spaced]?*

Respondent: *They think it's bad. People say 'Good God! Can't you have the operation? You are having children like a dog!'*

Dhaka after-menses, no. 65

Respondent: *It's a problem. People will say bad things. Without one getting bigger another one has come. People gossip like this don't they? That's why I said that we would let this one get bigger and then have another.*

The findings from the interviews clearly show that among study respondents the importance of spacing births was well recognised and indeed most of the respondents were seeking to achieve this themselves. No

¹⁴³ Research in other settings where use of contraception is less common, has also highlighted traditional understanding that closely spaced pregnancies are undesirable (see for example Schuler, Choque, and Rance 1994 in Bolivia; and Bledsoe, Hill, D'Alessandro *et al.* 1994 in the Gambia).

important differences were found between the Matlab and Dhaka women, or between women who started contraception before and after the resumption of menses.¹⁴⁴

— *Negative implications of mura pregnancy*

There is a general understanding that a *mura* pregnancy is undesirable and unfortunate for those women who experience it. Problems most commonly mentioned were those that result from the fact that the pregnancy must have occurred soon after the last birth, rather than the fact that it occurred without menses coming *per se*. Thus, respondents talked about the impact on the children's and woman's health, the burden of childcare and the strain on the family.

Matlab after-menses, no. 10

Interviewer: *So how did your sister feel [when she had the mura]?*

Respondent: *She found it difficult, and for the child it was a problem. It's bad isn't it when a mura happens? She cannot work, she cannot care for her own health. You have to teach this one and wash that one, and the husband also says things like 'if you can't do the work properly then why did I bring you here?!' The husband cannot understand what a problem it is to be pregnant.*

Interviewer: *And what about the child?*

Respondent: *It may get diarrhoea, it becomes a bit soft/weak (norom). The one inside is sucking the blood and eating, the other one is sucking the milk and eating. Isn't this a problem?!*

In addition, some respondents identified other problems specific to the occurrence of a *mura* pregnancy. Respondents stated that such a pregnancy takes the woman by surprise and she cannot tell how many months pregnant she is. Aside from these practical considerations, the responses of some women suggested traditional beliefs regarding the inauspiciousness of such a pregnancy.

Dhaka before-menses, no. 48

Respondent: *It's a problem. You have to keep a mura child safe from the river and from electricity. This kind of child may drown in the river, or at the time of rain it may die from the lightening.*

Matlab before-menses, no. 36

Respondent: *If it happens once then it may happen again, and if there are two or three mura then an older person may die. Only one or two people in a hundred have mura. Those who have good luck (kopal) do not have mura. If you have bad luck then you have it. It has not happened to me and I have not seen it in our line (gushti) but I saw my sister's sister-in-law (jal) had this. She had this and her father-in-law died. And then my husband's aunt — she had three mura births and then her father died.*

Field staff working in the Matlab area suggest that beliefs regarding such negative consequences are more common among Hindus than among Muslims (J. Chakraborty: personal communication, 1995). Though the findings from the in-depth interviews could not confirm this conclusively, supplementary field visits in the urban areas provided supporting evidence. Hindu women reported that a *mura* pregnancy may bring with it a number of misfortunes for the family including, death of older relatives, serious illness for the mother and

¹⁴⁴ It should be remembered that the study respondents were all women who adopted contraception after their last birth and are therefore not representative of all Bangladeshi women (though as described earlier, the adoption of contraception is increasingly becoming the norm in both urban and rural areas).

father and a reduction in family income. A Hindu fieldworker revealed a similar understanding when she reported that after her brother's conception as a *mura*, her grandfather died suddenly.

5.3.3 Contraception following childbirth

The nature of modern contraceptives

It was striking to find that among our study women, all of whom were users of contraception, the overwhelming perception of modern contraceptives was that they are at best an inconvenience to be tolerated and at worst something that can cause great harm. Modern contraceptive methods are foreign to the body (*alga jinish*), they are strong (*kora*), and commonly reduce the woman's strength. Hormonal methods are described as medicine (*oshud*) and even poison (*bishakto jinish*).¹⁴⁵ Side effects are an indication that use of the method is causing imbalance within the body and in many cases affecting the body's blood. A woman is lucky if she can find a method that her body can tolerate (*shojo*) and the method in use will more often than not cause discomfort of some kind. Though the opinions expressed were not always consistent -- some respondents favouring the pill, others the injection, and still others the condom or IUD, common understandings and concerns could be identified.

— *Tolerating the method*

There is a common understanding that not all methods are tolerated by all women. Women have different types of bodies and the method that suits one individual will not necessarily suit everyone else.

Matlab before-menses, no. 21

Respondent: *They give different ones [contraceptive methods] to different people, it depends on which one the individual can stand (shojo). I had taken the injection before so I had got used to it. So because of this I took it, if I take the Maya bori [a type of contraceptive pill] then my head spins.*

Matlab after-menses, no. 15

Respondent: *If the injection is taken then the body does not get strength. Can't you see I don't get any strength?! And I cannot eat properly either. The pill suited me.*

Interviewer: *What are the problems with the injection?*

Respondent: *There are aren't there? Now I have taken the injection and my body does not get any comfort (shuk).*

Interviewer: *Is this the same for everyone or just you?*

Respondent: *No, not everyone. There are many who can stand it, and for one or two people it does not suit.*

Dhaka after-menses, no. 67

Respondent: *If the injection is given then it's good. But then it's not like this for everyone. Some do not tolerate the tablet and some do not tolerate the injection. For some their health improves and they become fat through taking the tablets, and then others become thin. It does not harm everyone. Say, maybe it harms you but it does not harm me.*

— *The need to eat well and preserve strength*

The pill, injection and IUD may all act to reduce the woman's health and strength. The hormonal methods in particular are strong, affect the woman's blood and lead to weakness.

¹⁴⁵ Studies in other parts of South Asia have also documented the belief that western medications are strong and may have serious side effects (Hunte and Sultana 1992).

Matlab before-menses, no. 38

Respondent: *With the copper-T I got thin (shukiey gesi), it sucked the blood and took it away, after three months I took it out.*

Matlab before-menses, no. 37

Respondent: *If this [the pill] is taken then it reduces the strength (jor) in the body and then the head spins, the body becomes thin and tight (tan hoey jaega). If this is stopped then the body's blood becomes clean. If it is taken then it keeps the body weak (nistej korey rakhey).*

Matlab after-menses, no. 4

Respondent: *I was taking the pill and then my health got bad. Everyone told me not to take a method with this kind of health.*

In order to combat these dangerous effects, good food is indicated. Respondents reported that relatives, friends and neighbours and also family planning staff advocate strength-increasing and vitamin-rich foods (*shokti jinish*). Inability to eat in this way was the reason given by many respondents for not initiating hormonal methods or for terminating use.

Matlab before-menses, no. 33

Respondent: *[If you take the injection or pill] You will get weak. Like so many people they have head spinning and lose blood. Because of this you have to eat well, and we cannot always eat well.*

Interviewer: *Why do you need good food?*

Respondent: *You need eggs, milk, and you should eat cold things.*

Interviewer: *Why do you need these things?*

Respondent: *Well you see, the head spins. If you have strength (shokti) then it's not so bad, if you are not strong then it's worse.*

Dhaka after-menses, no. 72

Respondent: *People said that if the pill is taken then the head spins, you cannot work, you feel weak. You need strength (shokti). Those who can eat well everyday can stand it, I have little strength.*

Though good food is needed to increase the strength, a common complaint is that the family planning methods affect the appetite, or induce a feeling of nausea, meaning that the woman cannot eat properly and becomes even weaker.

Other ways of combating the weakness caused by the methods include taking extra vitamin tablets or syrups, and adjusting the way the method is used. For example, some respondents reported taking pills only every other day, or taking a 'rest' from the methods every few months to allow the body to recover. Delaying or avoiding use of methods completely because of illness or weakness, in spite of a perceived need, also appears to be common. This is not restricted to any particular type of method, since all modern methods have the potential to cause weakness and ill-health.

Matlab before-menses, no. 33

Respondent: *After the baby was born the doctor came from CRL [ICDDR] and then S [CHW] came and said to take the injection. Then I said, 'Leave it, let my body get well and then I will take it'.*

Matlab before-menses, no. 35

Respondent: *I do not need any more children and I will have the operation. But I will do that later, not yet. Now I am too weak to do that. If I have it now I will not be able to do all the work.*

— *Permanent loss of fertility (nar bondho, nari joley jae, nari goley jae)*

One indication of the methods' strength, particularly the hormonal methods, is the belief in their potential to cause permanent infertility if used for extended periods of time. The idea that the pill and the injection cause permanent damage to the woman's reproductive organ, 'burning it up', 'dissolving it', or 'destroying it', was expressed by many respondents in both Dhaka and Matlab.

Matlab before-menses, no. 21

Respondent: *Everyone takes [contraceptive methods]. Some people take to have a bit later and some take so that the child will not come at all, taking the pill or the injection so that the nar burns up, so that there will be no more children.*

Interviewer: *So how long do you have to take for the nar to burn up like this?*

Respondent: *For some if they take for eight or 10 years then the nar will burn, and with the Maya bori [type of contraceptive pill] if you take for five years then it will happen.*

Matlab after-menses, no. 14

Respondent: *It mixes with the blood, the medicine. If it goes like that then no more children will come. If you take for five or seven years then everything is finished (shob shesh)*

Interviewer: *How is it finished?*

Respondent: *Why? The pill causes harm does doesn't it?! The way that the child comes, it ruins that (noshto korey pheley). Like now I am taking the injection then if a child came it would destroy it (noshto). If you take for five or seven years then no more children will come at all.*

Dhaka after-menses, no. 62

Respondent: *People say that if the pill is taken for five years, or the injection, then you will stop having children completely (emneyi bondho hoey jae).*

A number of respondents reported that they did not adopt contraception immediately after marriage out of fear that it might cause infertility, even though they would have liked to delay their first pregnancy.

Dhaka before-menses, no. 48

Respondent: *My mother-in-law and my sister said that it would be good not to have a child too fast. But after I had taken for two months everyone was saying to me that if I take the pill first then the nari will burn and then I won't have any children at all. So then for the next two years I did not take any method and after two years I got pregnant.*

As well as mentioning general concerns, respondents discussed the more specific side effects that are characteristic of use of modern methods of contraception. Most of the side effects experienced are caused by the upset of the natural balance of the body's humours and in many cases are related to the blood.

— *Disruption of menses*

The significance of menstrual disturbances for Muslim and Hindu women has been described in several studies (Maloney, Aziz and Sarker 1981; WHO Task Force on Psychosocial Research in Family Planning 1981).

Menstrual disturbances induced by use of contraception are undesirable whether they consist of amenorrhoea, or increased menstrual flow, in the form of spotting or irregular menstruation. It is important to emphasise that these disturbances are not only inconvenient, they are perceived as important risks to the woman's health.

The importance of regular menstrual flow has been mentioned above. The retention of this bad blood leads to excess heat within the body, pain and potentially more serious complaints.

Matlab after-menses, no. 6

Respondent: *When the menses comes (kapor holey) then the body does not feel bad, it feels light (patla), and if it does not come then you feel bad. You cannot eat. Like my sister-in-law (jal), she took the pill for three months and her menses did not come, wouldn't she feel bad?! Now she cannot eat. Haven't you heard that if you take the pill or the injection the blood stores up inside the stomach (peyt)? If the menses comes then this does not happen, haven't you seen that a lot of people die? Even here one person died from this lump in the stomach (peytey chaka jomey).*

Dhaka before-menses, no. 46

Respondent: *Now I have some problems. My menses is not coming clear. For the past three months it is not coming clear. I have pain in the stomach and it feels hard (shokto shokto). If it does not come soon then I will go and check with the apa at the medical and tell her that I am taking the pill and the menses is not coming clear.*

Interviewer: *So why do you find it a problem if the menses is stopped?*

Respondent: *Isn't it a problem?! The body feels hot, you sweat a lot. You feel like that when the menses is stopped. Also, since the menses is just coming a little bit (olpo olpo), because of this my eyes sting and my head spins. If I could just take some kind of medicine to make the menses come clear then my eyes would not sting and my head would not spin. I would get a little comfort.*

Though there is a desire for regular menstrual flow, excess blood loss is also a problem and will lead to weakness and ill-health. Concern about increased blood loss was expressed by respondents in connection with the IUD, injection and pill.

Matlab after-menses, no. 20

Respondent: *My aunt took the injection and pill for about four or five years. Through taking and taking it she lost lots of blood and she almost died. They took her to Chandpur. Through taking and taking it she got a serious infection (gha).*

Interviewer: *What happened through taking for so many years?*

Respondent: *The blood was lost, the nari was damaged (noshto), a wound was caused on the heart (dag porey gelo, kolija moddhey dag porey gelo).*

Interviewer: *What do you mean the nari was damaged?*

Respondent: *She took the pill for many years. If the nari was not damaged then would the blood have been lost? If you cut your ear then won't the blood come out? If you don't cut it then will blood be lost?*

Interviewer: *Did your aunt think this was because of taking the pill for a long time?*

Respondent: *Yes, everyone says this, because of this it happened. Because of this the blood was lost. She took the pill for a long time. Now they say that she will not have another one [child], and not to take the method anymore. She lost a lot of blood, it came out in lumps (chaka chaka) and she became very weak (nishokti). Everyone loses blood in normal menses, this is up to god, and then it stops again, but she could not stand up, get up or sit down. With the blood loss she became weak.*

— *Weakness and dizziness*

Another common side effect of contraceptive use, particularly hormonal methods is weakness and dizziness.¹⁴⁶ Hormonal methods are heating and this is why they often cause the head to spin. Respondents reported not being able to stand near fire, that their head spins when they go out in the sun and that it is good to take water and other cold foods while taking these methods.

Matlab before-menses, no. 34

Respondent: *After taking the injection I am feeling very bad. When I stand up after sitting down I get very bad head spinning like I am going to fall over. Since taking the injection my body feels dizzy and sleepy (jhim jhim korey). I can't even move because it's so bad.*

Matlab before-menses, no. 29

Respondent: *She [CHW] said for me to take the pill. I first took Ovacon [type of oral contraceptive]. Then I became very weak day after day, and then my mother-in-law scolded me, because my head was spinning. Things were so busy in the family I couldn't even sit for one second. If the tablet is taken the I feel bad. I could not lie down. If it's like this then you have to take some rest. My mother-in-law scolded me, she said that I had become weak because of the tablets and could not do any work. She told me to stop them, and also their father said that the tablets were making me unwell. That's why I stopped it.*

Dhaka before-menses, no. 45

Respondent: *Well my head just used to spin. If I took the pill then the spinning would get worse and I could not stand my head. I used not to be able to see anything. I could not eat anything my head spun so badly.*

Adopting contraception following the birth : the later you take the methods the better

The preceding sections have described in some detail both concerns regarding the weakness and vulnerability of the mother following childbirth and the potential harm caused through the use of modern contraception. With these prevailing themes of understanding it was not surprising to find that many women felt that the later contraceptive methods are used after birth, the better. Respondents talked about the desirability of 'letting the body get back to normal', 'letting the body's blood be replenished', and 'letting the body regain strength', before initiating contraception.

Matlab before-menses, no. 35

Interviewer: *So, in the past why did you start it after menses?*

Respondent: *It's better not to use for as long as possible, but then again it is needed before menses, since there is a risk of pregnancy.*

Dhaka before-menses, no. 48

Respondent: *I thought about taking the pill, but I did not take it. I thought I would let my body get back to normal. When the pill or injection is taken then the body becomes weak, so I thought I would take it after seven or eight months.*

Dhaka after-menses, no. 67

Respondent: *After the washing (abortion) they told me to take the injection or the copper-T, but still I have not started anything. I am still weak. I will take something, but later. I cannot use these things until the body is well again.*

¹⁴⁶ Both weakness and dizziness are commonly expressed symptoms of ill-health in Bangladesh and numerous words and phrases exist to describe these sensations. Previous research has highlighted the importance of weakness and dizziness as reasons for discontinuation of contraception and has suggested that these side effects may be associated with poor nutritional status (Measham, Khan and Huber 1980).

Using contraception before menses

As well as the common attitude that it is better to put off adopting a method for as long as possible, many women believe that it is best to delay adoption until after menses resumes following the birth. Among the Matlab women who started contraception before menses, 10 identified possible negative consequences of doing so, and among those who started after menses, all except three felt that it could cause problems. Among Dhaka women who started a method before menses, 10 thought that use of some methods before menses could cause problems, and among those who waited until after menses, 11 expressed such concerns.

Dhaka before-menses, no. 40

Interviewer: *Is there anyone among your relatives or friends who has taken a method before menses like you?*

Respondent: *No, but I heard from a neighbour that one person took it like this and they had problems, and another one took it and her menses came OK. That's why I bravely took it and my menses came and then I had no more worries [that I would get pregnant].*

— Letting the menses come clear¹⁴⁷

A common reason stated for not wanting to start a method of contraception before the resumption of menses is the desire for the menstrual blood to flow from the body, resulting in a feeling of lightness (*patla*) and well-being. This is particularly the case with women who want to use the injection, which they know may cause a prolonged period of amenorrhoea following adoption.

Matlab after-menses, no. 10

Respondent: *I said 'let the menses come and after that I will take a method'.*

Interviewer: *So then why did you not take it before?*

Respondent: *I did not take it. Well, in case there was any problem for me.*

Interviewer: *So you yourself did not want to take it?*

Respondent: *Yes, I did not take it. I took the decision not to take it. When the baby was born I did not lose much blood, so I said that if the menses comes then my body's pain (*beesh beytha*) will get a bit less, so that's why I did not take it.*

Matlab before-menses, no. 28

Interviewer: *Is it better to take before or after the menses?*

Respondent: *If I had taken after the menses then it would have been good, the menses would have come and then I would have taken it. Before I heard that if the menses comes then it's good, now I hear that you don't need to wait for it, you can take the injection before.*

Interviewer: *What do you think, if the menses comes it's good?*

Respondent: *I think that it's good if the menses comes. If it does not come and you take it then the hands and feet hurt.*

Matlab before-menses, no. 25

Interviewer: *So you took before the menses, was this OK?*

Respondent: *No, it's not right for me, having taken it myself I can tell.*

Interviewer: *What time would have been right for you?*

Respondent: *After the menses came it would have been right. If I had taken it after my menses had come then I would have felt a bit light (*patla*). Now I am feeling very heavy (*bhar bhar lagey*) but there is no other problem.*

¹⁴⁷ The English word 'clear' is used locally to express the idea that the flow of blood from the body has been satisfactory.

Dhaka before-menses, no. 55

Respondent: *If you take before then the mother's menstrual blood gets all stored up and it makes you feel bad in your head.*

It was common knowledge among both the Matlab and Dhaka women that taking the oral pill during postpartum amenorrhoea often results in the resumption of 'menses'. This makes the pill an attractive method to use in the postpartum amenorrhoea period for some women. Among both the urban and rural respondents, cases were found where oral pills had been taken intentionally to initiate bleeding. In some cases, women took the pill to initiate menses and then switched to another method, in other cases the pill was continued even after menses resumed.¹⁴⁸

Dhaka before-menses, no. 40

Respondent: *I took three red pills on three days and the following day my menses came.*

Interviewer: *So did you start with the red ones, didn't you take the white ones?*

Respondent: *No, at first I took the red ones for three days to make the menses come. If you take the red ones then it comes. I took the red ones. Another woman told me that she took the red ones and the menses came.*¹⁴⁹

Matlab before-menses, no. 27

Respondent: *For eight or nine months my menses did not come after the birth. Everyone said that if you take the pill then the menses comes. That's why I took the pill. Apa said to take the pill and make the menses come regular and then when the body got healthy again to take the injection.*

Not all women are keen to trigger menses through the use of the oral pill (or other methods), some preferring menses to return naturally.

Matlab after-menses, no. 5

Interviewer: *If menses had not come then would you not have taken?*

Respondent: *No, I would not have taken. If you take before then the menses comes and then that's harmful (kharap korey), and a lot of blood is lost. The blood flows a lot. If you force it rather than letting menses come according to Allah's wish, then there's a difference.*

Matlab after-menses, no. 11

Respondent: *When the menses is stopped then if you take the condom it will just stay stopped, it will not go inside the body. If you take the pill then the menses comes and with the injection this happens and with the CT this happens. With the condom then I don't think this will happen. My sister-in-law used the condom when menses was stopped and her menses did not come.*

— Other problems taking before menses

A number of other potential problems associated with starting methods prior to menses were mentioned including excessive blood loss, weakness and illnesses. However, in several cases respondents were not specific about the harm that could be caused, though they felt strongly that methods should not be started at this time.

¹⁴⁸ In chapter six, the use of the oral pill to initiate bleeding in this way by providers is discussed.

¹⁴⁹ The idea that it is the red pills, the iron pills that are taken at the end of the cycle, that cause menses to start was expressed by several respondents and appears to be a common misconception.

Matlab after-menses, no. 5

Interviewer: *What's the problem taking before menses?*

Respondent: *I took one time before the menses and I had a lot of bleeding. After my daughter, that time I took before the menses came and this happened. I took it for three or four months and then I did not take again. I lost blood, and since that time I take after menses.*

Matlab after-menses, no. 16

Interviewer: *And if any of your sisters-in-law asked you what method they should use to delay a child?*

Respondent: *Take after menses comes, don't take before this. If you take before this then you may never have another child. I would say not to take a method before the menses comes, to take after the menses comes.*

Dhaka after-menses, no. 64

Interviewer: *And why did you not take the method before menses?*

Respondent: *You can never take the method before menses.*

Interviewer: *Is there a problem with this?*

Respondent: *Yes, it may cause harm in the body. We do not take anything before the menses comes. When menses comes then we take the method.*

Dhaka after-menses, no. 69

Interviewer: *Is there anyone nearby who has taken the injection or pill without the menses coming?*

Respondent: *No, no. How would anyone be so stupid? They say that the pill and injection should be taken after the menses comes. If menses does not come then why should anyone take it? Even those who are mad don't take it before the menses.*

Dhaka after-menses, no. 74

Respondent: *I did not take it before since my menses had not come. I did not take it out of fear. Everyone says that it is good to take it afterwards. If there is any problem in the body then that will get worse. If you take it before the menses then the body will burn and the head will spin and you won't be able to see properly.*

— Possibility of another pregnancy

A further reason not to start a method of contraception while still in the state of postpartum amenorrhoea, is that another child may already have been conceived. This concern was voiced relatively infrequently by respondents. Among the Matlab after menses cases, five mentioned the fact that the chance of an existing pregnancy might be a consideration in whether or not to start a method, but only one respondent mentioned this as part of her own reason for waiting until menses before adoption of the method. In the urban sample, two women mentioned this concern, but neither gave this as their own personal reason for delaying adoption. Among the women who started contraception before menses, only two urban women reported having a pregnancy test prior to adoption.¹⁵⁰

— Beliefs regarding use of particular methods before menses

Having noted that many women have concerns about using contraception soon after birth and in particular before menses, it is of interest to examine in more detail the understandings relating to particular contraceptive methods. Discussions with respondents revealed that in many cases women believe that there are rules regarding use of the different methods which should be followed. However, except in relation to the condom (which all except one respondent felt could be used before or after menses) considerable variation in ideas about these rules was found. Table 5.6 shows the numbers of women stating that certain methods cannot be

¹⁵⁰ Unlike the users, urban providers are particularly concerned about the possibility of providing methods to women who are already pregnant. This concern and the issue of pregnancy testing are discussed further in chapter six.

used before menses. There were noticeable differences between the Matlab and the Dhaka women. In Matlab, even though women may not think it is the best thing to do, most are aware that methods can be initiated before menses. In contrast, among the Dhaka respondents almost all felt that certain methods cannot be initiated prior to menses. Not surprisingly, women who had started contraception prior to menses themselves were less likely to believe that methods cannot be used before menses. It was noticeable, however, that among the urban women who had started before menses, many nevertheless believed that not all methods could be used in this way. Out of all the urban respondents, only two felt that all contraceptive methods could be used before the start of menses, compared to 17 in Matlab.

Table 5.6: Beliefs regarding use of different contraceptive methods before the resumption of menses by location and timing of adoption of contraception

Beliefs regarding use of different methods before the resumption of menses	Matlab users		Dhaka users	
	Adopted contraception:		Adopted contraception:	
	after menses	before menses	after menses	before menses
Pill				
cannot be used	2	3	8	6
not sure	6	1	4	2
Injection				
cannot be used	3	3	9	5
not sure	6	1	5	7
IUD				
cannot be used	0	1	9	7
not sure	6	4	4	4
All methods can be used before menses	9	8	0	2
Only condom can be used before menses	0	1	11	5
Total	20	19	14	20

Concerns about negative effects on the woman's and child's health are particularly common for the hormonal methods, which are perceived to be strong, to mix with the blood and to cause disturbance to the body's internal balance. These methods carry particular concerns during the postpartum period since they have the potential to disrupt both the mother's menstrual status and the child's health via breastfeeding.

Among Dhaka respondents, many felt that the IUD could not be taken without the resumption of menses, though the number was similar for the pill and the injection. Although some respondents expressed concern that taking the IUD would make the mother weak and that this might affect the child's health as well, most comments regarding adoption of the IUD were not directly related to the postpartum period. There appear to be two main themes of concern, namely: fear of serious, potentially life-threatening, side effects; and embarrassment regarding method of insertion.

In contrast, the condom is perceived by many to be a light method (*halka*) -- not strong or damaging. It is a separate entity that remains outside the body and as such causes relatively little interference. It is therefore felt by many to be the most suitable method to use in the period following the birth of the child. Cases were found where women had adopted the condom initially when they felt their body was still recovering from the effects of childbirth and switched to another method when they felt they had recovered. Similarly, several respondents believed that other methods could not be used prior to menses and so used the condom until their menses returned and enabled them to adopt their method of choice.

Dhaka before-menses, no. 59

Respondent: *After 45 days my husband started to use the condom. As long as my menses did not come, in case of a mura, in case I got pregnant again. In fear of this my husband used the condom. And then after my menses came I used the injection.*

Dhaka before-menses, no. 50

Respondent: *The coil, the pill, the condom, they all can be used [before the menses]. But when the child is small it's best to use the condom.*

Though positive qualities of the condom are recognised, it is still not in common use following childbirth and is rarely used for extended periods of time. There appear to be two main reasons for this. Firstly, men are reluctant to use it -- an issue that is discussed further below, and secondly it is perceived to be less effective than other methods.¹⁵¹

Implications for the newborn child's well-being

As well as implications for the woman's health, it is important to consider perceptions of the potential impact of contraceptive use in the postpartum period on the child's health. As noted above, the mother and young child are intimately linked and the mother's contraceptive behaviour may have serious implications for the child's well-being.

— Breastfeeding

It is common knowledge in both Matlab and Dhaka that the oral pill may have negative effects on breastmilk production. Respondents talked about the volume of milk getting less or 'drying up' (*shukiey jae*). In some cases, concerns about the effect on breastmilk had led respondents to adopt methods other than the pill, or to switch from the pill or discontinue use after adoption.

Matlab after-menses, no. 11

Respondent: *If you take the pill then the milk gets less, the child does not get the milk. My child took the milk for one year and then I took the pill and she did not get any more milk, now she does not take the milk.*

Interviewer: *Why did you wait for the menses?*

Respondent: *For so many days she was taking the breastmilk and the menses did not come, I just depended on Allah.*

¹⁵¹ It is interesting to note that many clients and providers do not appear to categorise the condom as a true '*bebostha*', a term which literally means arrangement or preparation, and which is commonly used to refer to modern methods of contraception.

Dhaka before-menses, no. 47

Interviewer: *So why did you start after two months, was there no risk before this time?*

Respondent: *There was a risk, but I did not start because I would not get milk, that's why.*

In other cases, the desire to adopt the method of contraception appears to have led to the introduction of supplements to the child's diet.¹⁵²

Matlab before-menses, no. 27

Interviewer: *Is there any problem using this method [injection] while breastfeeding?*

Respondent: *No, there is no problem for the child, what's the problem? If the injection is taken then there is no problem. But when I took the pill then the child did not get milk and so I fed other things (alga). If the pill is taken then the milk dries up.*

However, some respondents appear to have managed to combine breastfeeding and pill use without problems.

Dhaka before-menses, no. 47

Respondent: *If the pill is taken then the breastmilk gets less. The doctors say this, everyone says this. The child gets milk, but it gets less milk. Many people say this. My mother-in-law scolded me for this, saying that the child would get thin, but I didn't see this myself.*

A number of women (in Matlab 12 respondents and in Dhaka 6 respondents) reported that, in addition to the pill, the injection also causes the breastmilk to get less. It appears that this understanding stems not only from local experience, but is also often reinforced by information received from health and family planning workers. As noted above, the pill and the injection are perceived to have very similar properties and it is not therefore surprising that women expect them to have a similar effect on breastfeeding. It is important to emphasise that if a woman adopts a method of contraception which she believes will adversely affect her breastmilk production, it is highly likely that such an effect will ensue, even if no such physiological mechanism is recognised by the medical profession.¹⁵³ Breastmilk production is extremely sensitive to the mother's psychological state (Van Esterick 1989; Laukaran 1987). In the present investigation, a number of respondents reported that they themselves had experienced a reduction in breastmilk production following the adoption of the injection. Also, since the effect of contraceptive methods on breastmilk production is often understood in terms of a general deterioration in the mother's health, methods other than the pill and injection may also have this impact.

Matlab before-menses, no. 34

Interviewer: *If anyone takes methods before menses then can there be any problem for the small child?*

Respondent: *There are. After the injection was given then what a situation I am in every day! The child is getting thin.*

Interviewer: *So if you take the injection then why should the child get thin?*

Respondent: *He takes the breastmilk doesn't he?!*

Interviewer: *Does he get less or more milk?*

Respondent: *He gets less. After taking the injection he gets less.*

¹⁵² Evidence that fieldworkers sometimes promote supplementation so that women can use the pill is presented in chapter six.

¹⁵³ In Bangladesh, the injectable contraceptives available are all of the progestagen-only variety.

Matlab before-menses, no. 38

Respondent: *If the method is taken before the menses then sometimes the child may have problems. Like with the copper-T and the injection, because the body gets thin (shukiey jae) the child does not get milk.*

Matlab before-menses, no. 27

Interviewer: *Is there any problem for the mother if she takes a method when she is breastfeeding?*

Respondent: *The mother has head spinning and her eyes burn. She feels weak.*

Interviewer: *Why?*

Respondent: *She has taken the method, won't it put a strain on the body?!*

— *Other effects*

In addition to the negative effects on child health operating via breastmilk production, other less specific negative effects were mentioned.

Matlab before-menses, no. 28

Interviewer: *So, when you were breastfeeding you took the injection?*

Respondent: *Yes, I fed breastmilk and I also gave other things (alga).*

Interviewer: *Was there any problem for the child with the injection?*

Respondent: *The child's health has got bad.*

Interviewer: *What do people say about this?*

Respondent: *They say that it is because I took the method.*

Interviewer: *What has happened because of taking the method?*

Respondent: *I took the method. Well, you know that some can tolerate and others not. Not everyone can tolerate it.*

Matlab before-menses, no. 26 [Talking about going to the hospital to be sterilised 25 days after the delivery]

Respondent: *I talked with my husband, not with anyone else. I had the operation. He became angry, and the village people said bad things. They said 'Look at her! Leaving the newborn child she went off and did it, what a nerve! She is as brave as a cow! She just left the child and went. Such a small child, can it be fed anything but breastmilk?!'. I was there for one night, they kept me in a separate room for one night there.*

As discussed above, there is a general understanding that risks to the mother's health also endanger the child. Therefore, any negative effect of contraceptive use on the mother will also have implications for the well-being of the child.

5.3.4 Personal preferences regarding adoption of contraception following a birth

Having explored the various dimensions of understanding that have relevance for contraceptive use in the period following childbirth, I turn now to consider how these are translated into personal preferences.

For the majority of respondents it was apparent that active decisions regarding the adoption of contraception in the period following birth were made, in which the associated advantages and disadvantages were weighed up. In forming preferences regarding the timing of use of contraception following the birth of a child, the main considerations are, the risk of conception and the negative implications of another pregnancy, versus the risks associated with the use of the method for mother and child.

Starting before or after menses

Return of menses is an important event because it symbolises both increased risk of pregnancy and progress towards the body regaining its pre-pregnancy state of health and strength. For this reason, the distinction

between the adoption of contraception before or after the resumption of menses is a meaningful one for local women (as well as for policy makers).

For most women, the adoption of contraception before menses carries with it potential problems. Therefore, it is only when the risk of *mura* pregnancy and/or its associated negative implications are perceived to be great, that the preference is to adopt a method prior to menses. In some cases, women perceive themselves to be at high risk of a *mura* pregnancy. Factors which appear to lead to this perception include: previous personal experience of *mura* conception; familial history; and interactions with other women who have experienced a *mura* conception. In addition, motivational messages from family planning workers appear to have heightened the awareness of personal risk of *mura* pregnancy in Matlab.

Matlab after-menses, no. 3

Respondent: *Those who have children before menses can take [contraception] and those who are not like this do not take it.*

Matlab after-menses, no. 5

Respondent: *Methods can be taken before or after [menses returns], but it's better to take after. But if you have doubt [that you will get pregnant] then you should take before. This depends on each person's own experience. You can ask the doctor what to do, but what if another child suddenly comes?! You can tell from your own experience. Even if the doctor comes then you will have to tell them [your past experience], they will ask about this.*

Dhaka after-menses, no. 63

Respondent: *If a mura has happened in the past then that's why people start the method before the menses. You know, once bitten twice shy (doosh khaya hoosh hoe).*

Dhaka before-menses, no. 40

Respondent: *I thought about taking the method while I was pregnant. I did not want another one to come. I was afraid of another [mura] and didn't want to be foolish anymore. The apara (sisters) say that the methods cannot be taken before the menses comes.*

Interviewer: *So had your relatives taken methods before menses?*

Respondent: *No, but I heard from a neighbour that one person took it... .. that's why I bravely took it.*

Other women acknowledge only a small personal risk of a *mura* pregnancy, but perceive large negative implications of another pregnancy. This group includes women who wish to have no more children at all, as well as those who have experienced two or more births in quick succession and feel another birth would be highly problematic for health, social or economic reasons. It seems that when the negative consequences of another pregnancy are large, the potential hazards of starting the method during postpartum amenorrhoea are outweighed.

Matlab before-menses, no. 35

Respondent: *In the past she always took after menses because she thought that the longer she could delay use the better, but this time she did not want any more children at all. Her last child was a mistake and she was determined not to have another. So, despite feeling that the method is harmful for the body, she started the injection during postpartum amenorrhoea.*

Matlab before-menses, no. 28

Respondent: *After her first child she waited until after menses to start a method. This time, however, she really wanted to avoid another pregnancy. Now she has two children to care for and is finding it a strain. It would be a big problem for her if she got pregnant again now and so she started the method before her menses came back.*

Dhaka before-menses, no. 45

Respondent: *This time I took the pill in fear, in case of a mura. I had had three children, what if I had any more?! When they get bigger then maybe I will take another one if I want to, but not now. So this time I intentionally started the pill before the menses.*

Dhaka before-menses, no. 44

Respondent: *Her first four children were born well spaced without using any method of contraception. But then the youngest one came quickly, conceived just eight months or so after the previous child. She didn't really want this child and so this time she decided to take a method quickly. Now she knows that she does not want any more children, and so she did not want to risk another pregnancy. On advice from a neighbour, she took the pill first during amenorrhoea to start the menses and then she took the injection.*

In some cases, despite acknowledged risk of *mura* pregnancy, women perceive the dangers associated with contraceptive use prior to menses to be too great and so still prefer to delay adoption until menses resumes.

Matlab after-menses, no. 15

Interviewer: *But you've said that many have a mura?*

Respondent: *So, what is that?! If a mura happens it happens. But if not, then what if there is a problem [taking the method before menses]?! That is more harmful (beshi khoti). If that happens it is more harmful for us.*

Interviewer: *So if you take before menses then may there be a problem?*

Respondent: *Yes, it may happen to some people.*

For a large number of women, the perceived personal risk of *mura* pregnancy is very small or nonexistent. This is coupled with an understanding that modern contraceptives are harmful and better avoided. These two perceptions reinforce each other so that women have a strong preference to delay adoption of contraception until after menses resumes. Adoption prior to menses is seen at best to offer no benefit and at worst to carry risks for both the mother and newborn child.

Dhaka after-menses, no. 61

Interviewer: *So, if your menses had come later then would you have started the pill?*

Respondent: *No, I would not have taken it, there would be no benefit (labh).*

Interviewer: *So if menses does not come then won't another child be conceived?*

Respondent: *No, why should I take the pill? And why should a child come? As far as I know if menses does not come then a child will not come. I know that if menses does not happen then I will not conceive a child.*

Matlab after-menses, no. 9

Interviewer: *You could have taken it before the menses?*

Respondent: *Why would I have taken it before the menses?! There was doubt once the menses came and so I took it. Does anyone take the injection or pill before the menses?!*

Once menses returns the risk of pregnancy is increased to such an extent that, despite the potential problems, many women feel compelled to start contraception.

Matlab before-menses, no. 33

Respondent: *If the injection is taken before the menses then there is no benefit. The body just becomes even weaker. But when menses comes back then there is the risk of pregnancy. Then you have to take it. Even though it makes you weak, you have to take it.*

Among women who prefer to adopt a method prior to menses, the exact timing may also be influenced by the two main concerns described above. Women who perceive a high risk of pregnancy immediately following birth may choose to adopt the method after 40-45 days, whereas those who perceive the risk to increase only later, will opt to delay adoption on the grounds that the later the method is used the better.¹⁵⁴

Delay beyond menses

Though there is general understanding that the return of menses signifies an increased risk of pregnancy, concerns regarding the use of modern methods of contraception soon after the birth may mean that women prefer to delay adoption even longer.

Dhaka after-menses, no. 67

Respondent: *After her fifth child her menses came back again very quickly, after just a couple of months. She was advised to take a method but did not want to. She thought that in the past the children had been spaced out and she was very scared of starting any of the methods. She did not feel she could start a method again until she was completely well. In the meantime, she got pregnant again.*

Dhaka after-menses, no. 65

Respondent: *Once menses came back this time she delayed adopting a method of contraception. She tried using periodic abstinence since she felt it would be better to avoid a modern method of contraception for as long as she could.*

It is also evident that, in some cases, women do not perceive the risk of pregnancy following the resumption of menses and consequently do not respond by adopting contraception swiftly. This seems to stem from the understanding described above that birth intervals will tend to be the same throughout a woman's reproductive history, so that if a woman had a long space between two births she assumes that the next conception will also be delayed.

Dhaka after-menses, no. 64

Respondent: *After 40 days I should have taken the method but I didn't.*

Interviewer: *Why not?*

Respondent: *No reason, nothing really, I just didn't go and get it. My children come after two or three years so I thought that I did not need it after 40 days. In the past they came after three or four years and so I did not take anything, and then doing this I got pregnant again.*

It may also be the case that, when menses returns very soon after birth, women do not recognise this as such, mistaking it for blood loss from childbirth. This was reported by some of the family planning providers who were interviewed.¹⁵⁵

¹⁵⁴ Timing of adoption is also greatly influenced by the prevailing family planning programme policies in the two areas, as described in detail in chapter six.

¹⁵⁵ The situation is further complicated by the fact that the term '*mashik*' may be used by women to refer, not only to monthly menstrual bleeding, but also to other types of blood loss from the reproductive tract.

CHW in-depth, no. 7

Respondent: *But if the menses comes at 45 days then they do not call it menses (mashik). At that time they call it blood from the waist/hip (major rokto). They say that it was in the waist/hip (maja) after the child was born, so that when menses comes at 45 days they say that this is not menses. They do not think there is a risk of pregnancy. They think that this kind of bleeding is normal, that it happens, but that it is not menses. They say it is just the blood that was stored up (amar joma rokto). After two months or so then they will think of this as menses, before this it is considered to be stored up blood (joma rokto). They hear this from the older women, their mother-in-law, their mother and people like that.*

Adoption in relation to breastfeeding

As illustrated above, there is no general understanding among either urban or rural women that breastfeeding affords protection against pregnancy. Breastfeeding tends to last for many months, and in most cases, menses resumes prior to the end of breastfeeding, thus signalling the need for contraception. Breastfeeding is not regarded as a complete contra-indication to contraceptive use and most women who choose to use contraception initiate use while still breastfeeding their child. However, preferences regarding use of contraception in relation to breastfeeding are influenced by concerns for the mother's and child's health. The majority of respondents felt that use of modern contraceptive methods during breastfeeding, particularly the pill, could have negative implications for the mother's and child's health. The understanding that pill use can lead to a reduction in breastmilk production is common, and appears to result in either delayed adoption (until the child is older and taking other foods alongside breastmilk) or the intentional introduction of supplements to compensate for the negative effect of the contraceptive method.

Preference for particular methods

It is difficult to make generalisations regarding preferences for particular contraceptive methods in the period following birth, since personal experience and that of close relatives and neighbours, are very influential. Nevertheless, it is clear that concerns about negative effects on the mother's body are paramount, and that these in turn have implications for the child's well-being. Women tend to opt for methods that they believe their body can tolerate (*shojo*). Method preference is also related to the choice of timing of adoption. Not all methods are perceived to be equally suitable before and after menses. A number of common themes were identified.

Hormonal methods are strong and may be particularly harmful in the period following birth when the woman's body is weak and vulnerable. These methods may cause problems by disturbing menstrual cycling. The injectable is problematic since it may prolong the period of amenorrhoea beyond its natural duration, causing the bad blood to be trapped inside the body. In contrast, the oral pill will induce bleeding earlier than is natural. For some this is a negative side effect and a reason for avoiding the pill during amenorrhoea. Others take advantage of this effect, since they desire the menses to come 'clear' in order to make the body light and also to be sure that conception has not occurred, before the use of other methods.

The condom does not mix with the body's substances in any way and is perceived by many to be a suitable method in the postpartum period, particularly prior to menses. Use of the condom will not disturb menstrual flow and will not weaken the woman's body.

The IUD is rarely used in Bangladesh and was mentioned far less by respondents than other methods of contraception. Knowledge and experience of use of this method was low among both urban and rural respondents, and the concerns expressed tended to be general, rather than to relate to the period following childbirth *per se*.

Recognising alternative options

Having identified the key themes of understanding that shape women's preferences, it is important to point out that in some cases women are unaware of alternative options regarding the adoption of contraception in the period following childbirth. In the present study, this was true for several urban respondents. Limited knowledge and experience meant that some women were unaware of the possibility of adopting any method of contraception prior to menses (two respondents), and that others believed only the condom could be used prior to menses (16 respondents). Clearly, for these women choices are limited.

Even where women recognise alternatives, their own preferences are often not the only factor of importance. In some cases, decisions regarding the adoption of contraception following birth are largely beyond the control of the woman, with other individuals playing an important part. The sources of information and influence that affect women's contraceptive behaviour following childbirth are considered in the next section.

5.3.5 Sources of information and influence regarding use of contraception in the postpartum period

Though the preceding sections have focused on exploring the understanding and preferences of women, it is important to emphasise that women do not act in isolation in their decisions regarding the use of contraception. Their understanding is shaped by the environment in which they live and their preferences and behaviour are influenced by other actors. In the preceding discussion, some reference has been made to the sources of information and influence over women's understandings regarding the period following childbirth. Differences between the urban and the rural samples have been highlighted, as well as contrasting traditional and newer ideas. In this section, the role of other individuals in shaping contraceptive behaviour following birth is explored in more detail.

Family planning providers

Perhaps not surprisingly, in both Matlab and Dhaka, family planning providers, emerged as an important source of information and influence regarding the adoption of contraception following childbirth. Their influence was particularly marked in Matlab, where all respondents talked spontaneously about their interactions with the CHWs, the conversations they had had and the services they had received. Among the urban respondents, interactions with family planning workers were mentioned less often, though they were clearly still an important avenue for information exchange.

In terms of timing of contraceptive use in the postpartum period, almost all respondents in Matlab reported that CHWs and other family planning staff had advised them to initiate contraceptive use prior to the resumption of menses. Among the women who started a method after menses, 12 recalled that the CHW had tried to persuade them to start the method earlier, before menses returned. Among women who started to use

contraception prior to the return of menses, all reported that the CHW had advised them to do so. In the majority of cases (12), the CHW appears to have provided encouragement to the woman's own desire to initiate use prior to menses, supporting the client's belief that there is a risk of pregnancy and reassuring her that the use of contraception during postpartum amenorrhoea will not be problematic.

Matlab before-menses, no. 39

Interviewer: *After your earlier child you used the method after menses but this time you used it before, how did you know that this could be used before? That it can be taken before menses?*
Respondent: *They say this. M [CHW] said that it could be taken even before menses, that's why I took it.*
Interviewer: *So then you discussed with M when your menses did not come?*
Respondent: *Yes.*
Interviewer: *Did anyone tell you that you should wait for your menses and then take a method?*
Respondent: *Many people say this, the village people say to take a method after menses, but I didn't listen to this.*

Although most before-menses users in Matlab stated that they themselves wanted to initiate contraceptive use prior to menses, in several cases (7), CHWs appear to have used strong motivation to persuade reluctant clients to accept a method during postpartum amenorrhoea.

Matlab before-menses, no. 33

Respondent: *After four or five months she gave it and said that I should take it in case a mura pregnancy should happen.*
Interviewer: *What did you say?*
Respondent: *I said no, this would not happen to me. She said that without menses the child may come, and I said no this would not happen. She said to take it and see how I felt, whether I could tolerate it or not.*
Interviewer: *So did you take it?*
Respondent: *Yes, just one packet. Now he is one year, I took it at five or six months. Now I have not brought it, now I will take the injection.*
Interviewer: *When will you take the injection?*
Respondent: *After six months or so. I'll take it, when menses comes.*
Interviewer: *Without menses won't you take it?*
Respondent: *No.*
Interviewer: *So did she say anything about you not taking the pill?*
Respondent: *Of course she did! She said won't you take anymore? I said, 'No, leave it. My menses has still not come, if I take it now there will be no benefit.'*

Matlab before-menses, no. 36

Respondent: *Yes, in the past I took after the menses, only after this girl I did not wait to take it. They [CHW] came to tell me to have the operation after this girl, they came in the choti ghor at nine days. But when they came my sister-in-law hit them. Could they come to touch me in my condition so soon after the birth?! My sister-in-law did not let them come in... .. Then my sister-in-law said not to have the operation now but to use the injection instead, so in the end I took the injection.*

In one case the respondent stated that she was actually forced against her will to start the method prior to menses.

Matlab before-menses, no. 34

Respondent: *Yes, I discussed with the nurse [CHW]. She came to give the injection and I said that my menses had still not come. And then everyone told me not to take the injection before my menses had come. 'Don't take a method', they said. But she forcefully gave me the injection, she gave me one forcefully. I said that I would take after the menses came, but still she gave me it.*

In sharp contrast to the Matlab users' reports, many of the Dhaka respondents reported that family planning workers had advised them to start use of contraception following the resumption of menses. Among the Dhaka after-menses cases, ten recalled being given specific advice by family planning workers. Of these, eight had been told to delay adoption until menses, one had been told to start use at 40 days postpartum or to wait until menses, and one had been told to start the condom before menses, or to wait for menses to start other methods.

Dhaka after-menses, no. 73

Respondent: *We have heard that people use after menses and the doctor also said to use after menses.*

Interviewer: *So can it not be taken before menses?*

Respondent: *No, it's not good if the menses has not come.*

Dhaka after-menses, no. 68

Respondent: *When I went to get the injection [TT injection], when B was seven months in my stomach, then the apa told me that, following the birth, without my menses coming I could not take the injection.*

Dhaka before-menses, no. 49

Respondent: *The apara (sisters i.e. fieldworkers) say that when menses comes the tablet is taken, if the menses does not come you cannot take it.*

Among the urban women who initiated use prior to the resumption of menses, ten recalled specific advice that had been given by family planning workers. Two respondents reported that they had been told that they should wait until menses returned. Seven respondents reported that family planning workers had advised them to start before menses. In five cases, they had been told that they could only use the condom before menses resumed. In one case, the respondent had been told to start methods at 40 days, or use only the condom before menses. Only one respondent reported that a family planning worker had supported her own desire to take a method other than the condom prior to the resumption of menses and beyond 40 days postpartum.

Among both the Matlab and Dhaka respondents, very few reported that they had been advised by family planning workers to initiate contraception immediately after birth, at 40-45 days postpartum. Evidence presented in chapter six suggests that in fact, in Dhaka family planning programmes, the prevailing policy is to promote contraception at 40-45 days postpartum. The findings from interviews with users, however, suggest that this message is not clearly received. One possible reason for this is that contacts with many women do not occur until beyond the 45 day period, when the message conveyed by family planning workers is that one must wait until menses before adopting a method. In contrast, the Matlab family planning workers are not in general instructed to promote adoption of methods immediately after birth.

Although the most common pattern in Matlab seems to be that CHWs encourage use of contraception earlier than women would opt for if left to their own devices, cases where CHWs had postponed adoption were also

reported. Among the women who started a method after menses, four respondents reported that the CHW had told them that they must wait for menses to return before starting to use a method. In these cases, the women themselves had expressed interest in starting contraception prior to menses and been told to wait. In two cases, the respondents recalled that the CHW had said that there was no risk of a pregnancy soon after the birth. In all four cases the woman's menses resumed before six months postpartum. Thus, it seems that in some cases CHWs try to delay adoption of contraception when women are naturally protected against pregnancy anyway. This issue is discussed further in the following chapter.

Among the urban respondents, postponement of provision of methods by family planning workers was also reported. In all such cases, family planning workers stated that methods could not be provided to the women before the resumption of menses, though it appears that they did not offer any more detailed explanation.

Dhaka after-menses, no. 69

Respondent: *Those who come like you, they say to start after the menses. Before, when I wanted to start before menses, they said that they would give it after the menses came if I told them.*

Dhaka after-menses, no. 63

Respondent: *I told her that I had not had my menses for one year and that I was worried in case there was any problem, and I asked whether a method could be taken. She said that if there was any problem that nothing could be done now and that I should let my menses come and then after menses take the pill.*

As well as having an influence over the timing of adoption of contraception following birth, family planning providers may affect which methods are used. As noted above, among the Dhaka respondents many reported that family planning providers refuse to provide anything other than the condom before the menses resumes.

Dhaka before-menses, no. 59

Interviewer: *So why did you use the condom, not the pill or the injection?*

Respondent: *Well, I went to see the doctor and the doctor said that until the menses came then no other method could be given. She said, 'Now your menses is stopped, after a child is born the menses stops like this, when the menses comes then you can come here and take a method'. Then I said, 'What if a mura comes'. And so in fear I took the condom.*

Dhaka before-menses, no. 43

Respondent: *The apa (sister i.e. fieldworker) who comes here told me to wait until the menses to take a method (beboস্থা).*

Interviewer: *So, before the menses can no method be taken?*

Respondent: *No, she said that I must take the condom.*

In Matlab, though all methods appear to be promoted and provided by CHWs in the period following childbirth, cases were found where certain methods had been strongly promoted in favour of others. Five respondents reported that CHWs had given strong motivation for the IUD, despite the fact that they themselves preferred other methods. Nevertheless, almost all the respondents in Matlab reported getting the type of methods they wanted, when they wanted.

Family planning workers are clearly an important source of information and influence in both Dhaka and Matlab. However, it should be remembered that women do not always trust the advice of these workers, are

open to other sources of information and influence, and may often behave in ways that contradict the prescription of these workers.

Matlab after-menses, no. 10

Respondent: *Now I have taken the injection. I asked S [CHW] whether the milk would get less. She said no it does not get less with the injection, with the pill it gets less. But then I asked about the pill and she said that it does not get less, there is no problem with it. But you know, for her if she can give the method then it's good for her, she is doing her job. If she can give the method than that's OK for her.*

Female relatives and neighbours

In rural Bangladesh, the most common living pattern is patrilocal. Women usually move to their husband's home after marriage and live as part of a group of households clustered around an open courtyard, called a *bari*. Here a woman is surrounded by her husband's senior female relatives, together with the wives of her husband's brothers. Though a woman may visit her father's *bari* from time to time, interactions with women within her father-in-law's *bari* appear to be a more important source of information and influence.

Among the Matlab respondents, many reported that they had received conflicting advice regarding the adoption of contraception from the CHWs and their relatives. As discussed above, despite increasing use of contraception prior to the resumption of menses in Matlab, the understanding that it is better to delay contraceptive use as long as possible, and that use before menses is better avoided, remains widespread. Among those who started to use the method prior to menses, eight had been told by female relatives that they should delay use until their menses came. Among those who delayed adoption until menses, eight recalled being advised to start before menses by the CHW and after menses by their female relatives.

Matlab after-menses, no. 12

Interviewer: *So did anyone tell you when you should take the method?*
Respondent: *They said, didn't they?! My sisters-in-law said to take a method after menses came.*
Interviewer: *And the woman who works here [CHW] what did she say?*
Respondent: *She said that if you don't take a method before the menses comes then you may have a mura child. No, we don't think that this will happen to us and so we did not take this.*
Interviewer: *How did you know that it would not happen to you?*
Respondent: *We can tell, we just know this. Because it has not happened to me before.*
Interviewer: *Can someone tell that they will have a mura or not?*
Respondent: *You can tell, if it happened before. My mother-in-law said, 'If it happens then it happens, don't take any method now'.*

Matlab before-menses, no. 29

Respondent: *T [CHW] asked me whether my menses had come or not and what method I would take. I said, 'Now?! What, will I take so soon?!' Then my mother-in-law and the others [female relatives] said, 'There is no blood in your body now, will you get pregnant now or what?!' Then I just carried on the way I was. But then, after that I began to think, what if by chance I do get pregnant even without menses. That's why I took a method.*

In the urban setting, where a woman is often surrounded by unrelated individuals and contacts with female relatives may be infrequent, friends and neighbours appear to be important sources of information and influence. Respondents talked about taking advice from neighbours and knew about the contraceptive behaviour of women living in their area. In three cases, respondents had been advised by neighbours to start

contraception before menses. However, in most cases the advice received was that it is better to wait until menses resumes before starting contraception.

Dhaka after-menses, no. 62

Interviewer: *So in the past you waited until menses to start the pill, why did you wait?*

Respondent: *Everyone here says that you cannot start until menses comes. You have to start within a certain number of days of menses.*

No consistent pattern could be found in terms of the methods that were promoted by relatives, friends or neighbours in the two study areas. Nevertheless, it was clear that previous experience of close friends or relatives may have an important influence over the method chosen. Local wisdom appears to develop, so that in certain families or areas a particular method is favoured and adopted by many of the women, while other methods are avoided.

Husbands

The fact that the benefits and costs of childbearing and rearing are not distributed equally between men and women, and that husbands may play an important role in decisions regarding the use of contraception, has been highlighted in a variety of settings (Kabir 1985; Koenig, Simmons and Misra 1984; Mitra and Kamal 1985; Piotrow, Kincaid, Hindin *et al.* 1992). It was therefore of interest to explore the influence of husbands in the area of postpartum use of contraception.

Though dissent from one's husband may be an important barrier to the use of contraception, among couples where the desirability of using contraception is agreed (or the woman acts covertly) husbands appear to have relatively little influence over the timing of adoption following the birth. Only two respondents reported that their husbands had had a strong influence over the timing of adoption. One urban respondent reported that her husband had started to use the condom very soon after the birth on his own initiative without any request from her. In another case, a respondent in Matlab explained that her husband had forced her to have the IUD inserted while she was still amenorrhoeic even though she herself wished to wait until menses resumed. Aside from these examples, in most cases, husbands appeared to play a secondary role, supporting the decisions of the wife. This was the case whether the woman identified the need for contraception soon after birth or wanted to wait until menses returned.

Though it appears that husbands rarely intervene in terms of decisions regarding the timing postpartum of adoption of contraception, they may have an important influence over the choice of method, which in turn may have implications for whether a method is adopted at all. It has already been noted that many women in both Dhaka and Matlab regard the condom as a suitable method to be used in the postpartum period. Indeed, many Dhaka respondents believed that this is the only method that can be used prior to the resumption of menses. However, whether the condom is used or not clearly depends on the cooperation of the husband. Cases were found where the husband's refusal to use the condom had led to the adoption of another method against the woman's will, as well as the use of no method at all, despite fears of pregnancy.

Matlab before-menses, no. 29

Respondent: *The husbands do not want to use it [the condom]. They say it is not pleasurable (mojar), that's why I took the pill. That was the problem. Then [after the earlier child] he was not in agreement, since my menses had come he did not agree, I could take the tablet then. This time he knew that when menses had not come I could not take the pill so what could he do?*

Matlab after-menses, no. 8

Respondent: *T [CHW] said to use them [condoms], but I could not finish the packet. My husband threw them away. He said he would not use them, that the sperm is too valuable a thing to waste. He said that we would manage, that he would not come near me at that time.*

Dhaka before-menses, no. 47

Respondent: *Well you know after my eldest daughter was born, and you know how many people get pregnant when the menses is stopped, so at that time I made my husband use it [condom]. We used that for one year and I was safe. This time he did not want to use it. He didn't agree to use it even once. He said, 'No, I won't use it'. He said 'If it happens then what will happen?' So then I had to take it [the pill] myself.*

Dhaka before-menses, no. 49

Respondent: *Well, people used to say to me not to take a child too soon, they used to say these things. So I said to their father to use [the condom], but he just told me to take the tablet. I told him that I cannot take the tablet, that I will forget and that there are so many kinds of illness that happen.*

Interviewer: *So aren't you using the condom now? What if you get pregnant?*

Respondent: *No, I'll take a method later. Their father does not want to use it. At that time, when menses comes back, then I'll start the pill again.*

As well as the condom, cases were found where husbands objected to certain other methods. This was usually because of concerns about effects on the wife's health and often her ability to carry out her work and care for the children.

Matlab before-menses, no. 37

Respondent: *I took one packet [of pills]. I took it, but then their father said, 'Your head will spin, don't take that'. He said that I should not take it.*

5.4 Summary

The preceding discussion has highlighted the key dimensions of women's understanding that influence the adoption of contraception in the period following childbirth. Firstly, ideas relating to the condition of mother and child in the period following birth were described. The mother herself is perceived to be weak and vulnerable at this time and the recovery of strength is of paramount importance for both her own sake and that of her child. Moreover, the mother's behaviour, in particular her diet and movement outside the home, may have serious consequences for the well-being of her child, and is therefore governed by strict rules.

Next, understandings related to conception and fertility in the postpartum period were described. No common understanding was found among women in Matlab or Dhaka, that breastfeeding patterns affect the chance of conception in the period following birth. Though the recognition that pregnancy is possible during postpartum amenorrhoea was almost universal, many women, particularly in the Dhaka slums, perceived no personal risk because they and their female relatives had no history of such a conception. However, evidence was found to suggest that motivational efforts by family planning staff had increased awareness of the possibility of *mura* conception among women in Matlab.

Findings presented next illustrated that the overwhelming perception of modern contraceptives is that they are strong and potentially very harmful. Many respondents felt that use of contraception in the postpartum period was particularly dangerous given the vulnerable state of the mother and child, and believed that the later contraceptive methods are used after birth the better. Adoption of contraception during postpartum amenorrhoea was believed by many women to carry additional problems. Whereas in Matlab most women were aware of the fact that methods can be adopted during amenorrhoea, many Dhaka women believed that methods aside from the condom cannot be used at this time

Having described the main dimensions of understanding, preferences for postpartum contraceptive behaviour were shown to be largely influenced by two broad considerations: on the one hand, the risk of conception and the negative implications of another pregnancy; and on the other hand, the risks associated with the use of contraception for mother and child.

Finally, findings were presented which showed that a range of individuals may play a role in determining the contraceptive behaviour of women in the period following a birth. It is apparent that of these, family planning workers are a key source of information and influence. The following chapter is devoted to exploring in more detail the knowledge, attitudes and practices of this important group of actors.

Chapter six: The providers

6.1 Introduction

In chapter five, detailed findings on the prevailing themes of understanding that guide women's contraceptive behaviour in the period following childbirth were presented. Though women are exposed to a variety of influences, including beliefs handed down over many generations, the fieldwork with community women clearly illustrated the importance of family planning providers as sources of information and influence over postpartum contraceptive behaviour. Previous research in Bangladesh and elsewhere has also highlighted the significance of interactions with family planning personnel in determining contraceptive use patterns (Phillips, Simmons, Koenig *et al.* 1993; Simmons, Baqee, Koenig *et al.* 1988). However, compared to the wealth of studies that have focused on family planning clients, relatively little attention has been given to the providers of family planning services (Simmons and Elias 1994). Recent years have seen an increased interest in the quality of care provided by family planning programmes (Bruce 1989; Faundes 1990), but there have still been very few in-depth investigations into the understandings and behaviours of family planning providers.¹⁵⁶ In relation to postpartum contraceptive service provision, the dearth of information on the knowledge, attitudes and practices of family planning personnel is particularly acute (Winikoff and Mensch 1991), and no published literature dealing with this issue could be found for Bangladesh. In addition, attention has recently been drawn to the fact that postpartum care, including contraceptive services, has been greatly neglected in Bangladesh in both government and NGO programmes (Mirza, Junker and Mita 1992; Goodburn, Chowdhury, Gazi *et al.* 1994; BIRPHERT 1993). Davies (1985) conducted a study into the use and provision of oral contraceptives in Dhaka in which he found that there was no uniform published policy or standard practices among providers relating to postpartum provision. Mirza, Junker and Mita (1992) carried out an evaluation of FWA performance in a rural area of Bangladesh and concluded that 'postnatal care seems to be one of the most neglected duties of the FWAs. Every aspect of postpartum care has been disregarded' (p28).

One of the aims of the present investigation was to remedy this neglect. It was of particular interest to explore, firstly, the awareness among providers of natural protection against pregnancy and the extent to which lactational amenorrhoea is currently incorporated into postpartum contraceptive service strategies, and secondly, the knowledge, attitudes and current practices of providers with regard to motivation and provision of contraceptive methods following birth. Together with the information presented in chapter five, the findings described below help to explain the existing patterns of contraceptive use following childbirth observed in the two study populations. They also have important implications for future programme approaches in this area, as discussed further in chapter seven.

6.2 Methodological comments¹⁵⁷

The data presented in the present chapter were gathered using a number of techniques. In Dhaka city, the findings of a health facilities survey conducted by the UHEP in 1992 (Fronczak, Amin and Nahar 1993) were

¹⁵⁶ Work by Schuler is a notable exception (Schuler, McIntosh, Goldstein *et al.* 1985; Schuler Choque and Rance 1994).

¹⁵⁷ Additional comments related to the qualitative approach used in the study can be found in chapter two.

used to identify the main family planning organisations serving the slum communities of the UHEP working area. Data collection from the urban providers was conducted in two phases. First, visits were made to seven non-government organisations (NGO) and six government service outlets (GoB) in Dhaka city, and 40 family planning providers were interviewed (the service points visited are listed in Appendix 6). Interviews were conducted by the author and three field assistants, and were semi-structured, following an interview guideline. Next, following fieldwork in Matlab, a second round of interviewing was undertaken in order to investigate new concepts that had come to light and to gain further detail on particular areas of importance. During this phase of fieldwork it was possible to revisit all the NGOs and one of the GoB outlets. Follow-up interviews were conducted with eight individuals who had been particularly useful informants in the first phase of fieldwork, and an additional ten new informants were interviewed. In the second phase, the interviews with urban providers were more detailed and were tape recorded and later transcribed and translated (see the interview guideline in Appendix 4). Though the initial intention had been to use focus group discussions as well as in-depth individual interviews, tight working schedules meant that it was not possible to take several fieldworkers away from their work at once.

In Matlab, in-depth interviews were conducted with fieldworkers and clinic-based paramedics. In addition, focus group discussions were held with fieldworkers. In-depth interviews followed a semi-structured guideline and were in the main conducted by one investigator (either the author or a research assistant). Focus group discussions were based around a series of vignettes followed by open-ended questions (see the question route in Appendix 4), and were conducted by a team of three investigators including a facilitator, a recorder and the author acting as an observer. The in-depth interviews and group discussions were all tape recorded and subsequently transcribed and translated in full.

Respondents were not selected randomly for interview, but rather were chosen by project managers, since it was important to ensure that our investigation did not seriously disrupt the normal work routines of the providers. This may have resulted in the 'best' workers being chosen. However, in the case of Matlab, this potential selection bias did not exist since the programme manager who selected the staff for interview was himself closely involved with the research and recognised the benefits of choosing a broad mix of staff. Though the number of workers interviewed was relatively small, all the important family planning organisations serving the UHEP working area were included, and, in Matlab, workers serving all four blocks participated. Since the aim of the investigation was to yield richer information that would complement the statistical analyses of the surveillance data presented in chapters two and three, the selection of a smaller sample and use of an open-ended structure was felt to be appropriate.

Analysis was carried out using the cut and paste facilities in a word processing package, as well as a simple database. In addition to identifying broad themes of understanding, it was of interest to draw comparisons between Dhaka and Matlab providers, as well as between different providers within these two groups. In Dhaka, differences between the GoB and NGO workers were examined, and in both Matlab and Dhaka,

findings for field level workers and more senior staff were contrasted. In presenting the findings an effort has been made both to retain the richness of the information and to describe the degree of variation in responses.¹⁵⁸

In addition to the interviews and focus group discussions with family planning personnel from the two study areas, GoB and NGO training curricula were reviewed and discussions were held with senior managers responsible for training and curriculum development.

6.3 Findings

6.3.1 Experience and training

All of the staff interviewed in both Matlab and Dhaka were female. In Dhaka, 50 family planning providers were interviewed, 13 of whom were GoB employees and 37 staff of NGOs.¹⁵⁹ The sample included 26 fieldworkers (5 GoB Family Welfare Assistants and 21 NGO fieldworkers), 12 NGO supervisors working at both field and clinic level, two non-medically trained NGO managers, eight GoB clinic-based paramedics (Family Welfare Visitors, FWVs) and two Medical Officers (physicians with managerial responsibilities, one GoB and one NGO). In Matlab, 12 fieldworkers (Community Health Workers, CHWs), three from each block, and all five clinic-based paramedics (Lady Family Planning Visitors, LFPVs) were interviewed individually, and 19 fieldworkers participated in the focus group discussions.

All the staff interviewed in Dhaka and Matlab had more than a year's working experience in the field of family planning, and as shown in Table 6.1, most had worked in this area for more than five years. In general, the Dhaka GoB and the Matlab staff had more working experience than the Dhaka NGO staff.

GoB workers are supposed to receive a standard package of training. In the case of FWAs, a basic training of 48 days, which includes 20 days of field training, should be received at the beginning of service. During this course, six full days are spent on family planning methods and family planning issues are also covered in other modules, including those that cover use of the service register, counselling of clients and follow-up. In addition, FWAs are supposed to receive in-service refresher training every one and a half years, which lasts for 12 days. However, since there is at present no national register of personnel, the frequency of refresher training is not uniform and some staff have not received training as frequently as planned (J. Teigeler, NIPORT: personal communication, 1996). Findings from the present study revealed that two out of the four FWAs had received only four weeks of training and the other two had received eight and 12 weeks of training respectively. Findings from another study in Dhaka city also suggest that many GoB fieldworkers have not received as much training as planned (Perry, Begum, Begum *et al.* 1996).

¹⁵⁸ As in chapter five, quotations from respondents have been used liberally to illustrate the points being made and where it was felt useful, counts have been included to show how common certain opinions or practices were.

¹⁵⁹ This bias towards NGO staff reflects the fact that the majority of family planning services in Dhaka city, particularly outreach services, are provided by NGOs. Findings from a needs assessment exercise conducted by the MCH-FP Extension Project (Urban) of ICDDRB show that 88% of all family planning fieldworkers in the Dhaka City Corporation area are NGO employees (unpublished data).

Table 6.1: Years of working experience of family planning providers in Dhaka and Matlab

	Years of working experience in family planning			Total number of respondents
	Less than 5 years	5-10 years	More than 10 years	
Dhaka providers				
<i>GoB workers</i>				
FWAs	1	0	3	4
FWVs	3	0	5	8
Medical Officer	0	1	0	1
<i>NGO workers</i>				
fieldworkers	5	15	2	22
supervisors	3	4	5	12
managers	0	1	1	2
Medical Officer	1	0	0	1
Dhaka total				50
Matlab providers				
CHWs	1	5	25	31 ¹⁶⁰
LFPVs	0	1	4	5
Matlab total				36

The basic package of training for GoB FWVs consists of a comprehensive 18 month course, which includes modules on family planning and postpartum care, as well as other aspects of maternal and child health. In addition, FWVs are supposed to receive in-service refresher training lasting 30 days, every one and a half years. All the FWVs interviewed in the present study had received the basic training of 18 months and all except one had received refresher training since they began working.

Among the Dhaka NGO workers there was large variation in the amount of training that had been received, though in general the duration of training was shorter than that received by GoB workers. Among the NGOs visited, the duration of basic training for fieldworkers ranged from just five days to 18 days. The average duration of training that had ever been received by the NGO fieldworkers in the present sample was just 3.5 weeks. Among supervisors, the minimum duration of training reported was one week and the average was 5.7 weeks.

Although GoB workers may not be receiving as much training as intended, it is clear that they nevertheless receive significantly more training than their Dhaka NGO counterparts. A review of the training curricula for GoB and NGO workers also suggested that a wider range of topics is covered during the GoB training. The findings presented below strongly suggest that the training currently provided to NGO workers fails to equip them with the knowledge required to perform their duties well.

¹⁶⁰ Includes focus group participants.

In Matlab, CHWs receive a basic training of one month which includes fieldwork. In addition, a fortnightly meeting is held for all the 20 CHWs in a block at which refresher training is given as needed. All the LFPVs in Matlab had received the basic GoB FWV training lasting for 18 months and had received additional training on joining the FPHSP.

6.3.2 Interactions between family planning providers and women

In order to understand the prevailing patterns of contraceptive use following childbirth and the potential that exists for improvement, it is important to consider the frequency and timing of interactions between providers and clients, as well as the information, advice and services that are provided during these interactions.

It has been argued that the contact between women and health providers at the time of delivery should be exploited for the provision of contraceptive advice and services, since it is not repeated in the months following birth (Zatuchni 1968, 1970). Such recommendations are largely irrelevant in the context of Bangladesh, where the majority of women deliver at home. The 1993-4 Demographic and Health Survey estimated that 96% of births in Bangladesh take place at home and that 89% of births are attended by TBAs, relatives or friends (Mitra, Nawab Ali, Islam *et al.* 1994). A recently completed study of maternity care in the slums of Dhaka city found that just 12% of women elected to deliver in a clinic or hospital and a further 6% delivered in such a facility following emergency referral (N. Fronczak: personal communication, 1996). It is also the case that contact with health personnel during pregnancy is rare in Bangladesh. The 1993-4 DHS found that 73% of women received no antenatal care at all during their pregnancy, though this figure was somewhat lower in urban areas, at 44%. Fronczak's study found that over 60% of slum women received no kind of antenatal care (personal communication, 1996).

Available evidence also suggests that postpartum care is extremely limited and that where it does exist, it rarely includes contraceptive advice and services (Mirza, Junker and Mita 1992). In the present investigation, staff from four out of seven of the Dhaka NGOs reported that women receive a special visit in the postpartum period. In three cases, this visit takes place at around one to two weeks postpartum and is essentially for the provision of vitamin A capsules for the child. In one case, two postpartum visits were reported, one at 14 days for vitamin A distribution and one at 40 days postpartum for family planning motivation as well as a mother and child health check-up. In the case of the other NGOs, staff reported that no special postpartum visits to women are carried out and that fieldworkers simply visit these women as part of their routine schedule of field visits, every two months. Similarly, GoB staff reported that they do not make any special postpartum visits to women, but rather maintain their usual schedule of visiting once every two months.

It is clear then, that for many women in Bangladesh, there is little or no additional contact with health or family planning personnel during pregnancy, at the time of delivery, or in the immediate postpartum period. The only contact that many women have is when they receive a routine visit from their family planning fieldworker (whether GoB or NGO). As national data from the 1993-4 DHS show, such visits may be few and far between, despite the fact that they are supposed to occur once every two months. In the DHS, only 38% of eligible women reported receiving a visit from a family planning worker in the preceding six months (Mitra, Nawab Ali, Islam *et al.* 1994). However, data from a needs assessment of zone three in Dhaka city suggest

that visits by fieldworkers may be more common in the urban context. In that survey, 74% of slum women reported that they had received a visit from a family planning worker in the preceding six months and 62% reported that they had received a visit within the past two months (MCH-FP Extension Project Urban 1995). Data from the USS analysed for the present study show that around 47% of women reported receiving a visit from a family planning fieldworker in the data collection round following the round in which their birth was reported.¹⁶¹

In Matlab, routine visits by CHWs are scheduled to take place fortnightly and are often even more frequent than this. In a survey conducted in 1990, 98% of women in the Matlab treatment area reported that they had been visited three or more times by a CHW in the preceding three months (Koenig, Rob, Khan *et al.* 1994). CHWs are trained to provide antenatal care, which includes contraceptive advice, and additional visits are made by LFPVs in the case of complications. Most deliveries in Matlab are attended by local TBAs who have been trained by the FPHSP but have no family planning responsibilities.¹⁶² However, following a birth, a visit is usually made within a week by the CHW, from which time contraceptive advice is provided. Findings from the current study clearly illustrate that family planning service provision is an ongoing process and that Matlab fieldworkers take advantage of their multiple contacts with women to inform and motivate them to adopt contraception.

Matlab CHW in-depth, no. 61¹⁶³

Respondent: *Now we give antenatal care and so when they are pregnant we motivate them to take a method after the child is born, after 45 days. We give the antenatal care and look for any problems and we tell them not to take another child, how difficult it is to have children and to take a method straightaway when the child comes. Then they become interested to take a method and we keep this interest alive by telling them about the methods every month.*

Matlab CHW group discussion, no. 2¹⁶⁴

Participant 3: *I would not sit and wait. For some reason she may not actually take the method until six months but I would continue to tell her about the methods from the time the child is born. We keep behind them and see when they take the method. We should not delay telling her about it.*

6.3.3 Knowledge and understanding of reproductive anatomy and physiology

Before presenting findings on the knowledge, attitudes and behaviours of family planning providers in relation to natural protection against pregnancy and the use of contraception in the period following childbirth, it is important to consider the prevailing understandings of the reproductive process. At the start of fieldwork it

¹⁶¹ This variable is not entirely satisfactory since it was not possible to state precisely the time period following the birth to which it refers. Depending on the timing of the birth in relation to the USS data collection cycle, the time period to which the information refers varies between zero and six months. In addition, since the information was only collected from round eight onwards (January to March 1993), no information was available for 250 women.

¹⁶² During the period 1987-91, 82% of all deliveries in the treatment area were conducted by this cadre of worker (A. Vanneste: personal communication, 1996).

¹⁶³ In-depth interview respondents have been numbered as follows:

Dhaka: NGO: fieldworkers 1-22, supervisors 23-34, coordinators 35-36, physician 37.
GoB: FWAs 38-41, FWVs 42-49, physician 50.

Matlab: CHWs 51-62, LFPVs 63-67.

¹⁶⁴ The CHW group discussions have been numbered 1 to 4. Where possible the participant number has also been given, though in some cases this information is missing due to difficulties at the time of transcription caused by poor recording quality.

was assumed that family planning workers would have a good basic knowledge of reproductive anatomy and physiology, including the process of conception, the menstrual cycle and the functioning of contraceptive methods. However, interviews soon revealed that misconceptions, incomplete knowledge and confusion are common, particularly among Dhaka NGO workers. Out of 16 Dhaka NGO workers who were questioned in detail on these topics, only five had a reasonable understanding of female reproductive anatomy, the process of conception and the menstrual cycle.¹⁶⁵

Among the Matlab CHWs and LFPVs, all respondents were aware of the existence of eggs or ova in the woman's body and that these must combine with the man's sperm in order for a pregnancy to result. Government FWAs and FWVs were also familiar with the process of conception. However, a number of NGO workers were uncertain about how conception occurs. Several respondents were unaware of the existence of eggs in the woman's body and expressed the traditional idea that the man contributes the main substance to the formation of the child. Other misconceptions expressed included: the eggs are made and ripen in the uterus; the uterus and stomach are connected directly; and the uterus and '*joraiyu*' (Bengali word for uterus) are two different things.

Interviews revealed that many family planning workers have a confused or incomplete understanding of the menstrual cycle and the variation in risk of pregnancy at different times. In both Dhaka and Matlab, some respondents expressed the belief that a child can be conceived immediately after birth because the woman is weak and because the uterus mouth is open. In both Matlab and Dhaka, some providers were unsure as to the time of greatest pregnancy risk during the menstrual cycle, while others believed the risk to be highest at the time of menses. Very few providers were able to explain how a conception can occur without the resumption of menses following birth. It was also apparent that many providers use western medical terminology without understanding its meaning. Thus, words like 'hormone' and 'ovulation' were commonly used by respondents in describing the process of conception or the menstrual cycle, though further questioning revealed uncertainty and confusion over their meaning.

Though these topics were not covered in detail in all interviews, it was apparent that many family planning providers have limited knowledge regarding reproductive physiology and anatomy. Areas of confusion and misinformation were revealed among all groups of providers interviewed, though, as the findings presented in the following sections illustrate, the Dhaka GoB and the Matlab staff were noticeably better informed than the Dhaka NGO workers. It should be stressed that supervisors and managers were included among those whose knowledge was very poor, not only the less well-trained fieldworkers. The discussion which follows suggests that the absence of solid background knowledge of reproductive anatomy and physiology inhibits the ability of family planning providers to understand more complex ideas, such as the contraceptive effect of breastfeeding, and the functioning of contraceptive methods.

¹⁶⁵ A reasonable understanding is taken to mean a basic knowledge of the structure of the female reproductive organs (that there is a place where the eggs are made and ripen and that this is connected to a separate place or bag where the child develops), an understanding that conception requires a ripe egg to be released inside the woman's body and that this must join with the man's sperm, and an understanding that the woman's eggs are not always ready for conception and that the chance of conception is highest 10-15 days after menstruation.

6.3.4 Breastfeeding, amenorrhoea and natural protection against pregnancy

Postpartum amenorrhoea

Family planning providers in both Matlab and Dhaka were familiar with the fact that a period of amenorrhoea commonly follows a birth. All Matlab providers were aware of a relationship between breastfeeding and postpartum amenorrhoea. Among the Dhaka providers, all GoB workers were aware of this relationship and 12 spontaneously mentioned breastfeeding as the main reason for amenorrhoea. Among the NGO workers, 27 believed there to be a relationship between breastfeeding and amenorrhoea, though only nine spontaneously mentioned lactation as the main reason for the absence of menstruation following a birth.

Aside from the role of breastfeeding, a number of other explanations for the period of postpartum amenorrhoea were offered by respondents. Among Dhaka NGO workers, the most common explanation offered was that the blood loss at the time of delivery means that the woman's body is short of blood (11),¹⁶⁶ an understanding commonly expressed by users interviewed in Matlab and Dhaka slums (see chapter five). This explanation was not given by either Matlab workers or the Dhaka GoB staff.

Dhaka NGO fieldworker, no. 22

Respondent: *For many after the birth of the child a lot of blood is lost and for many a little blood is lost. If the blood in the mother's body is less then often the menses will come later.*

Dhaka NGO fieldworker, no. 4

Respondent: *At the time of the birth a lot of blood is lost. After that the mother is weak, she has little blood and she also eats little. Menses comes after the blood that is lost at the time of the birth is replenished.*

An understanding expressed by Dhaka GoB and NGO workers, as well as workers in Matlab, was that weakness and poor nutrition of the recently delivered mother are associated with postpartum amenorrhoea. In some cases, respondents referred to more specific nutritional problems such as 'iron deficiency' and 'anaemia'.

Matlab CHW group discussion, no. 2

Participant 5: *Those who are healthy, who have blood in their bodies, who can eat well, those who have strength (shokti) in their body, their menses comes fast.*

Matlab LFPV, no. 63

Respondent: *I was very weak. If I am not healthy then how will my menses come?! If any mother is weak (durbol) then her menses will stop. Why? Because if her physical condition is bad, unwell, then where will her menses come from? The menses does not only depend on the hormones, it also depends on the physical condition...*

Most respondents regarded the period of postpartum amenorrhoea to be a natural phenomenon, the duration of which varies between women. However, it was interesting to note that a minority of Dhaka family planning providers considered postpartum amenorrhoea to be abnormal, and that the normal state of affairs is for menses to resume 40 days after delivery. In addition, women experiencing postpartum amenorrhoea were

¹⁶⁶ Numbers given in parentheses indicate the number of respondents giving particular answers or expressing particular opinions.

described by the staff of one organisation as 'waiters', suggesting that they are distinguished from other, more normal women.

Dhaka NGO supervisor, no. 31

Respondent: *No, this is not normal. I have heard many mothers say that their waist hurts, the body swells up, but I cannot say exactly why menses stays stopped like this. After my two children menses came back on the 40th day. I had a bit of bleeding on the 21st day, that might also have been menses, after that, from the 40th day my menses came back regularly as it had been before. After a child is born, then usually the menses stays stopped for 40 days, for all women, and after a child is born, if menses comes back after 40 days then it is good. If not, then the mother has problems... .. Many women don't have menses for one year, but of course this does not happen to everyone.*

Other urban providers noted that extended durations of postpartum amenorrhoea are common in rural areas but not among the urban population, or stated that, though long durations of postpartum amenorrhoea used to be the norm, women tend to experience a rapid resumption of menses nowadays. Attitudes towards postpartum amenorrhoea among urban providers no doubt reflect their personal experience as well as observations in the communities served. As breastfeeding patterns change and durations of amenorrhoea shorten, it is likely that more family planning providers will come to view the resumption of menses shortly after birth as the normal, natural pattern and extended amenorrhoea as an aberration.

Lactational protection against pregnancy

Respondents were questioned about the contraceptive effect of breastfeeding. In Matlab, only one respondent, a CHW, stated that there was no relationship between breastfeeding and conception. In Dhaka, eight of the thirteen GoB workers felt that a relationship between breastfeeding and conception exists, and among the NGO workers, 23 acknowledged such a relationship, with a further six expressing the opinion that such a relationship sometimes exists.

Among the Matlab respondents, a fairly consistent understanding of the relationships between breastfeeding, amenorrhoea and conception was expressed. However, among the Dhaka providers a variety of understandings regarding these relationships was apparent. In some cases, respondents acknowledged a relationship between breastfeeding and amenorrhoea, but did not recognise any relationship with conception (5 GoB, 4 NGO). In others, respondents felt that a relationship with risk of conception exists, but not with amenorrhoea (3 NGO). Others felt that no relation exists between these things at all (2 NGO).

Dhaka NGO fieldworker, no. 3

Respondent: *There is a relationship between breastfeeding and conception, but there is no relationship with menses. But we see that those who feed only breastmilk their menses comes after five or six months. Menses comes differently for different people, there is no relationship with breastfeeding. We know that if breastmilk is fed then a child will be conceived later, but there is no relationship with menses.*

As noted above, many Dhaka workers had an unclear or incomplete understanding of reproductive anatomy and physiology and this was also true of their understanding of the process of return to fertility following birth. Among respondents who recognised a link between breastfeeding and conception, many were unable to offer

any explanation for this relationship (6 GoB, 12 NGO), or could only explain it in terms of the fact that menses is stopped (1 GoB, 6 NGO).

Among respondents who offered an explanation for the relationship, the most common response was that the sucking causes the uterus to contract or to vibrate which in turn prevents pregnancy (6 GoB, 8 NGO). In some cases, respondents stated that this contraction and movement prevents the egg and sperm from meeting and sitting in the uterus, so the child cannot be formed. This explanation was offered by FWAs, NGO fieldworkers, FWVs and NGO supervisors.

Dhaka NGO supervisor, no. 32

Respondent: *If the woman feeds breastmilk time and again (barey barey) then inside there is contraction (shongkochon) in the uterus and so the egg and the sperm cannot sit there, and because of this the next child will come later. If a woman continues to feed the child regularly, with the normal amount of milk, then the next child will come later.*

Dhaka NGO supervisor, no. 26

Respondent: *It's normal [for menses] to be stopped after the birth, and the child takes the milk so it stays stopped. If the breastmilk is fed then the uterus contracts, it gets bigger and smaller. It's like when the copper-T is put in. The copper-T is always moving around in there. Because of this the menses cannot come. There is also the relation with the milk, the milk is thick and sticky, because of this there is a barrier. Since the breastmilk is fed the uterus vibrates, this is why it's like this. For many when breastmilk is fed the menses stops and a child does not come.*

Another mechanism that was suggested by two NGO respondents was that breastfeeding weakens the mother's health and nutrition so that she is unable to conceive.

Dhaka NGO fieldworker, no. 13

Respondent: *The uterus quickly dries up. The child gets all the mother's nutrition through sucking. The mother has little strength and this is why the next child comes later.*

Only six urban respondents (2 GoB, 4 NGO) stated that the relationship between breastfeeding and reduced chance of conception is explained by the fact that breastfeeding '*stops the eggs from ripening*' or '*means that ovulation cannot happen*'.

In contrast, all providers in Matlab explained the reduced risk of conception during breastfeeding first and foremost in terms of '*the inhibition of egg ripening*' (though a small number also referred to contraction of the uterus and the depletion of the woman's health and nutrition as factors explaining the relationship).

Matlab CHW group discussion, no. 1

Participant 2: *If breastmilk is fed fully (pura puri) then the ripening of the eggs is stopped. If the breastmilk is not fed then the eggs may ripen at any time and menses will come.*

Matlab CHW in-depth, no. 51

Respondent: *If the breastmilk is fed fully for six months then the chance is less. This is because if the breastmilk is fed then the uterus (joraiyu) remains weak and the egg ripening work cannot be done. That's why the eggs do not ripen.*

The resumption of menses is commonly recognised by both Dhaka and Matlab family planning providers as an indication that the woman's fertility has returned and any contraceptive protection afforded by breastfeeding has come to an end. In addition, the majority of providers in both Dhaka and Matlab felt that the duration of contraceptive protection is limited, even if a woman remains amenorrhoeic and all were aware of the fact that conception is possible prior to the resumption of menses.¹⁶⁷

— *Duration of protection*

Among the Matlab CHWs, the most common opinion expressed was that protection against pregnancy during amenorrhoea lasts for six months (5 in-depth cases, 2 group discussions). However, other respondents felt that the duration of protection is shorter than this, lasting just three or four months. Responses of the LFPVs were similarly split between six months and the shorter duration of three to four months. There appears to be some confusion over this issue stemming from the fact that, though family planning staff have been taught that breastfeeding affords protection up to six months postpartum, they have also been told that breastfeeding must be exclusive for this protection to exist. In recent years, staff have been told that children should be exclusively breastfed for between four and six months. Thus, family planning staff now seem uncertain as to whether protection is afforded for six months or somewhat less than this, that is until the time of supplementation.

Among the Dhaka respondents who acknowledged the contraceptive effect of breastfeeding (8 GoB, 29 NGO), there were mixed opinions as to the duration of such an effect. Some felt the protection lasts for the first five or six months postpartum (3 GoB, 7 NGO), whereas others felt the period of protection to be longer, stating that eight months (2 NGO), 12 months (2 NGO), 18 months (1 GoB), or as long as 24 months (3 GoB, 3 NGO) protection could be afforded. Three NGO workers suggested that protection against pregnancy lasts as long as menses does not return, a further eight respondents stated that the duration of protection is not fixed but varies from case to case (1 GoB, 7 NGO), and five NGO workers were unable to state how long protection lasts.

The majority of both GoB and NGO workers in Dhaka who recognised the contraceptive potential of breastfeeding, stated that this effect ceases to exist if the woman feeds foods other than breastmilk (6 GoB, 16 NGO). Some respondents, however, felt that as long as menses does not return, whether or not other foods are fed, a contraceptive effect remains (2 GoB, 7 NGO).

¹⁶⁷ Incomplete understanding of the menstrual cycle meant that most respondents were unable to explain how a *mura* conception is possible. In some cases, respondents stated that menses does actually happen, though the woman does not notice it because only a few drops of blood are lost and in other cases respondents suggested that 'ovulation' does not occur when a child is conceived as a *mura*. Most respondents, however, admitted their ignorance of how a *mura* conception takes place.

Dhaka NGO fieldworker, no. 3

Respondent: *Like I said, from four to six months it won't happen [conception]. But this is not for everyone, you find some like this who don't conceive. Only those who are feeding only breastmilk, only for them. We cannot give 100 percent guarantee, but we say that the chance of conception up to four to six months is low... .. If she feeds her child breastmilk regularly. It depends on how she feeds the breastmilk. If she feeds the breast five or more times then she will not conceive, and if she feeds the bottle one time in five then she will conceive. Up to four to six months you have to feed breastmilk continuously, all the time.*

Similarly, in Matlab almost all respondents felt that the contraceptive protection of breastfeeding is dependent upon the woman feeding breastmilk exclusively, without any other supplements to the child's diet. In only one case did a CHW state that protection depends more on whether the woman remains amenorrhoeic than on whether or not she feeds supplements.

Confidence in and promotion of breastfeeding as a contraceptive

Despite the fact that many of the family planning workers in Dhaka and Matlab acknowledged a relationship between breastfeeding and conception, many were uncertain about the extent of this protection and expressed reservations as to how much such protection should be relied upon. Many respondents stated that such protection does not exist for all women, citing examples of women who became pregnant while breastfeeding as the reason for their lack of confidence in the relationship.

Dhaka NGO coordinator, no. 3

Respondent: *People say that these are related, but I am not sure. I have seen that people get pregnant while they are breastfeeding.*

Matlab CHW group discussion, no. 2

Participant 5: *She cannot be completely sure. It's like 50% sure and 50% not. Since she is breastfeeding fully then she can be 50% sure. So long as she does not feed alga the hormone work will not start. But then there are 50% for whom you can't really say whether it will happen or not.*

Respondents in both Matlab and Dhaka stated that such a relationship depends greatly on the ability of the woman to produce large amounts of breastmilk and to breastfeed her child frequently and exclusively. In Dhaka, respondents noted that changing lifestyles and demands on women's time mean that such breastfeeding behaviour is impossible for many. In Matlab, respondents identified poor nutrition and weakness as important reasons why many women do not produce sufficient milk and cannot feed their child exclusively.

Dhaka NGO supervisor, no. 32

Respondent: *Nowadays people are very busy, especially the slum women. They do all kinds of work. That's why they cannot feed their children breastmilk in the normal way and that's why if they take a method the chance of pregnancy will be less. They work in houses, they break bricks, they make incense sticks or candles. They do all kinds of work. That's why they cannot manage to give the child breastmilk time and again. That's why if she takes a method then she can really be certain that another child will not be conceived.*

Matlab CHW in-depth, no. 54

Respondent: *The barrier does not exist for all mothers, just for some. Some mothers can manage to breastfeed fully for four months, but not everyone. In our country there is a lack of food. If the mother can eat then the child will also eat, if the mother does not get food properly then the child does not get milk. For this reason the barrier does not exist and the mother gets pregnant again quickly.*

Though all the family planning staff interviewed in Dhaka and Matlab said that they promoted breastfeeding as part of their services to clients, this was invariably explained in terms of child health. Among the urban providers, the active promotion of breastfeeding for its contraceptive effect was mentioned by only two respondents, and a number of workers stated that they actually conceal this information from women in case it should be a further reason for avoiding contraception. Only four respondents felt that lactational protection against pregnancy could be relied upon as a method of contraception (2 GoB, 2 NGO).

Dhaka NGO fieldworker, no. 3

Respondent: *No, they do not understand [the contraceptive effect of breastfeeding]. And we don't make them understand either. If we did then they would not take a method. We tell them, 'Whether your menses comes or not go to the clinic and have a check-up and take a method'.*

Dhaka NGO supervisor, no. 25

Interviewer: *And do you tell the mothers that if they feed the breastmilk then a child will not come?*

Respondent: *We do not say this, we cannot give that guarantee. But maybe we tell those mothers who are a bit conscious that the risk is a bit less, but it's not that they can rest completely assured. She can perhaps use the condom or she can take the injection.*

Dhaka family planning providers on the whole saw no advantage of a long duration of postpartum amenorrhoea following the birth. Most respondents felt that a short duration of postpartum amenorrhoea is best since the likelihood that the woman will take a method of contraception is higher once menses resumes, and the risk of pregnancy during the period of amenorrhoea lower if it does not extend for a long time.

Dhaka NGO fieldworker, no. 21

Interviewer: *So, do you think that it's good for the mother and small child if menses stays stopped?*

Respondent: *No, because if she doesn't take a method then a mura pregnancy may happen, so how can it be good? If it comes after 40 days then it's good. Then they don't mess around. Otherwise the mother is always worried whether she has conceived or not.*

Dhaka NGO fieldworker, no. 20

Respondent: *After the child is born then it's good if the menses comes, then there is no risk. I mean, the woman is then sure that her menses has come and she can take a method. We see that most of them do not want to take a method if the menses doesn't come. The mothers say that they're breastfeeding, that their menses is not coming and that a child will not come. They don't want to take a method.*

It is clear that active promotion of breastfeeding for the purposes of contraception is rare among Dhaka family planning workers. In addition, there is evidence to suggest that the advice and information provided by family planning workers may not always be supportive of breastfeeding patterns that are best for child health and lactational protection against pregnancy. Although some of the messages carried by family planning workers are beneficial, particularly the advice to put the child to the breast early after the delivery and to feed colostrum, others are potentially damaging. Several respondents reported that they advise women to feed

water alongside breastmilk from the time of the birth onwards to prevent constipation, and a number of respondents stated that they promote exclusive breastfeeding for just three months. In addition, among many workers (including those who stated that they promote exclusive breastfeeding for five months), there is a common understanding that breastmilk is often produced in insufficient quantity and that there is very little that can be done about this. Consequently, family planning workers are poorly equipped to provide support and advice to women who face any kind of problem breastfeeding and frequently encourage the introduction of supplements in the early months postpartum.¹⁶⁸

In Matlab, the active promotion of breastfeeding for its contraceptive potential also appears to be rare. Only one CHW who was interviewed mentioned this explicitly, and three of the LFPVs.

Matlab LFPV, no. 67

Respondent: *We tell them that if they feed breastmilk fully then menses does not come and if menses does not come then she will not conceive. Usually before six months they do not conceive like this.*

Some of the respondents reported that they used to promote breastfeeding in this way, but that this is no longer a reliable method.

Matlab LFPV, no. 65

Respondent: *When menses is stopped very few conceptions happen, and menses comes seven, eight months, one year later. In the past three years or four years was more common, now most people have their menses quickly.*

Interviewer: *And so what do you say to the women? That if breastmilk is fed then a child will not be conceived?*

Respondent: *No, I do not say this because it is not sure. For instance, what if the mother is breastfeeding but a mura pregnancy nevertheless happens?! That's why we do not say. We used to say this, now we do not say this.*

However, despite the fact that breastfeeding is not often actively promoted for its contraceptive effect in Matlab, at least some family planning providers do have confidence in the protection against pregnancy that is afforded by breastfeeding and take this into consideration when providing contraception following the birth. In in-depth interviews with CHWs, eight respondents reported delaying the provision of contraceptive methods to women who they feel are already protected by lactational amenorrhoea and this behaviour was also reported by participants in two of the group discussions.

Matlab CHW in-depth, no. 54

Respondent: *I say that a method should be taken after six months, not before this. If the child is taking full breastmilk then there is no need. If I see that the child is not taking full breastmilk then I will start to target the women. Then a method is needed, then a pregnancy may happen.*

¹⁶⁸ This issue is discussed in more detail by the author and colleagues elsewhere (Salway, Nahar and Ishaque 1996), and similar findings have been reported by Perry, Begum, Begum *et al.* (1996).

Matlab CHW group discussion, no. 2 [vignette one: Sumana's story]

Participant 3: *I would say, 'You have had a child just two months ago, you are breastfeeding fully and your menses still has not come, there is no chance of conception within six months. Before six months a method should not be given'.*

In Matlab, opinions of providers were divided as to whether an extended or a short period of amenorrhoea is advantageous. Respondents who felt that a longer duration of postpartum amenorrhoea is better pointed out various advantages including: the next child will be conceived later because of natural protection; there is more time to motivate the woman to accept contraception; when the method is taken after menses then the gap between pregnancies is ultimately longer; and it is less bother for the woman since she does not have to bathe and wash her clothes. Those who preferred a shorter duration of postpartum amenorrhoea explained that women whose menses returns are more willing to adopt contraception.

Clearly, there were important differences in the knowledge, attitudes and behaviours of Dhaka and Matlab providers regarding lactational protection against pregnancy. These are summarised in Table 6.2.

Table 6.2: Summary of reported knowledge, attitudes and behaviour regarding lactational protection against pregnancy among Dhaka and Matlab family planning providers

	Dhaka GoB	Dhaka NGO	Matlab
Breastfeeding affords protection against pregnancy			
yes	8	23	16
maybe/sometimes	0	6	0
no	5	8	1
Lactational amenorrhoea can be relied upon as a contraceptive			
yes	2	2	12
no	11	35	5
Breastfeeding promoted among community women for its contraceptive effect			
yes	1	1	4
no	12	36	13
Total	13	37	17

Note: 1. For Matlab, only the in-depth interview cases have been included.

6.3.5 Provision of contraceptive services in the period following childbirth

The nature of modern contraceptive methods

Before describing the prevailing understandings and behaviour relating to the provision of contraceptive services in the period after childbirth, it is of interest to examine the prevailing attitudes toward and knowledge of contraceptive methods *per se*.

It was perhaps not surprising, given the limited knowledge of reproductive anatomy and physiology shown by some respondents, to find misconceptions about the action of contraceptive methods. Though this topic was not discussed in detail with all respondents, the information generated leaves no doubt that confusion and

misunderstanding is common, particularly among the Dhaka NGO workers. Out of the 16 NGO respondents questioned in detail on this, only one, a supervisor with nurse training, gave satisfactory explanations for the functioning of the pill, injection, IUD and tubectomy. Common misconceptions expressed are shown in Table 6.3.

Table 6.3: Misconceptions regarding the functioning of contraceptive methods commonly expressed by Dhaka NGO family planning workers

<p>The IUD:</p> <ul style="list-style-type: none">– acts a barrier, sitting over the mouth of the uterus, preventing the man’s sperm from entering.– moves about constantly in the uterus, makes the uterus vibrate or ‘jerk’, so that the egg and sperm cannot meet.– makes the uterus remain open so that the fertilised egg (<i>bruno</i>) cannot sit inside and falls out. <p>The oral pill:</p> <ul style="list-style-type: none">– kills the woman’s eggs and the man’s sperm so that they cannot join together.– kills the man’s sperm so a child cannot be formed.– kills the fertilised egg after the egg and sperm have joined together.– after being swallowed, goes directly into the uterus and when an egg comes into the uterus it prevents the egg from ripening. <p>The injection:</p> <ul style="list-style-type: none">– kills the man’s sperm.
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It is interesting to note that many of the erroneous explanations regarding the functioning of contraceptive methods emphasise the killing or impeding of the man’s sperm -- a reflection of the common traditional understanding that it is the man who makes the child.

Though misconceptions were found in a few cases, Dhaka GoB workers and Matlab staff in general showed a better understanding of the functioning of contraceptive methods and were able to explain their relationship to the woman’s reproductive processes more clearly. In particular, they were aware of the fact that hormonal methods act primarily by preventing the ripening of the woman’s eggs.

Whereas understanding regarding the action of contraceptive methods appears to vary among family planning providers, ideas regarding the nature of contraceptive methods were found to be fairly uniform. Hormonal methods are perceived to be strong (*kora*) and are described as medicine (*oshud*). These methods mix with the blood and may cause weakness, side effects and general damage to the health. Family planning providers advise women to take good food that will increase their strength and to drink more water which will help to cool the body. Illustrations of how potent these methods are felt to be include the belief expressed by some providers that they have the potential to cause permanent infertility and that they should not be used for extended periods of time.¹⁶⁹

¹⁶⁹ General attitudes toward contraceptive methods were remarkably similar to those expressed by users, reported in detail in chapter five.

Dhaka NGO fieldworker, no. 17

Respondent: *We do not give the injection to mothers of one child because if we give it then she will not conceive any more children.*

Dhaka NGO supervisor, no. 31

Respondent: *Actually, it is not good to use any kind of method continuously. If it is used then there may be problems. If the condom is used continuously then there may be itching in the uterus, and if the pill is taken then [the woman] becomes fat. If any method is used for just a short time then there is no problem. Those who use the pill and condom, we say to change after six months or three months. If the injection is taken continuously then from our field experience we have seen that because of continuous use the woman becomes weak.*

Dhaka NGO fieldworker, no. 22

Respondent: *There are many women who work in the garments factories. They will take their child later. We tell them to use the condom for one month and to use the pill for one month.*

Interviewer: *Why like this?*

Respondent: *Alternately, because they do not have any children. If they take the pill continuously then the nari inside becomes very thin (chikon). I mean the power to have a child gets less. The nari becomes thin [laughing loudly].*

Matlab CHW group discussion, no. 2

Participant: *The pill is strong and mixes with the blood. This has side effects. It makes the mother weak and her head spins.*

Matlab CHW in-depth, no. 56

Respondent: *If I take the pill or the injection, these go into the whole body and then menses stays stopped, or in some cases menses comes more... .. sometimes the mother feels sick, she feels dizzy, the body feels different.*

In contrast to the hormonal methods, the IUD is commonly seen in a favourable light by family planning providers. Its advantages include the fact that it does not mix with the body's blood and therefore does not cause as many side effects as the hormonal methods and also that it has a long life.

Matlab CHW in-depth, no. 56

Respondent: *At that time we give the CT. The CT is good.*

Interviewer: *Why?*

Respondent: *Because it remains in the place where it is put, it does not go into any other part of the body... .. If the CT is given then the mother remains as normal. Like if I wear a bangle then it stays in the place, it does not harm any other part of the body.*

Dhaka GoB FWV, no. 47

Respondent: *The copper-T is best. This does not mix with the body. It stays where it is put.*

The condom is recognised by family planning providers as having certain advantages. It is sometimes referred to as a light method (*halka*), since its action is unrelated to the woman's body and it carries with it few side effects. However, it is perceived to be an ineffective method and one that husbands are frequently unwilling to use.

The need for contraception during postpartum amenorrhoea

As noted above, the return of menses after birth is a signal to family planning providers (and women themselves) that fertility has resumed and contraception must be adopted immediately if pregnancy is to be avoided.

Matlab CHW group discussion, no. 2

Participant: *Those whose menses comes they cannot delay at all.*

Participant: *If menses comes they must take a method immediately. We say to them that if menses comes then there is a chance [of conception].*

However, opinions regarding the need for contraception during postpartum amenorrhoea were varied in Dhaka and Matlab. Among the urban providers, all but four respondents stated that contraception is needed during postpartum amenorrhoea because pregnancy is possible even in the absence of menses. Even respondents who were well-informed about the contraceptive potential of breastfeeding felt that 'it is better to be safe'.

Dhaka NGO fieldworker, no. 3

Respondent: *When menses is stopped after childbirth all women need to take a method because you cannot say when a child will come.*

When questioned about the appropriate timing of adoption of contraception following birth, almost all urban respondents (46) stated that a method should be started soon after delivery. The most common response was at 40 days, though 35, 41, 42, 43 and 45 days postpartum were also stated as the time to initiate contraception. Only two respondents suggested that the initiation of contraception should be delayed until six months postpartum, and in two cases that the appropriate time was after the resumption of menses. All respondents who believed immediate postpartum adoption to be the appropriate strategy, explained this in terms of renewed risk of pregnancy beyond the immediate postpartum period.

Among the Matlab providers, responses were less uniform. Although all the Matlab providers agreed that a method of contraception should be adopted during postpartum amenorrhoea if a woman wishes to avoid another pregnancy, there was disagreement as to how soon after the birth use should be started. Among the CHWs interviewed, four stated that a method of contraception should be started within one and a half to two months postpartum. Other respondents felt that contraception should be delayed if the woman is fully breastfeeding, since she is naturally protected against pregnancy. Four respondents felt that adoption should be delayed until six months postpartum and four respondents stated that a delay of three or four months is appropriate. Focus group discussions with the CHWs and interviews with the LFPVs also revealed mixed opinions (see Table 6.4).¹⁷⁰

Matlab CHW in-depth, no. 60

Respondent: *All methods can be given during PPA, and if the mother is in PPA then it is easier for us. If menses comes quickly then the husband and wife may meet before we can give a method. Therefore it is better to give during PPA. We motivate them to start during PPA. For all mothers and for all methods.*

¹⁷⁰ Among the five LFPVs, responses were as follows: 45 days postpartum - one respondent, four months - two respondents, six months - two respondents.

Matlab CHW in-depth, no. 62

Respondent: *We usually give it a bit later, not straightaway, say after three months. Lots of mothers want to take it at 45 days, but we do not give it so early, we give after three months. If menses comes then we give it, then there is the chance of pregnancy. If menses does not come then we wait for three or four months. The mother is breastfeeding fully, the chance of conception is low. That is why we give it a bit later.*

Table 6.4: Appropriate timing postpartum of adoption of contraception for amenorrhoeic women reported by Dhaka and Matlab family planning providers

	Dhaka GoB	Dhaka NGO	Matlab
around 40 to 45 days	13	33	5
3-4 months	0	0	6
6 months	0	2	6
after resumption of menses	0	2	0
Total	13	37	17

Note: 1. For Matlab, only the in-depth interview cases have been included.

Initiating contraceptive use during amenorrhoea beyond 40 days

Although the promotion of contraception early in the postpartum is the norm among urban providers, methods are not provided at just any time after the birth. The majority of urban respondents stated that, in the event that a woman does not adopt contraception at 40-45 days postpartum, the provision of methods is then restricted, if not completely prohibited, until the resumption of menses. The prevailing understanding among Dhaka providers is that the provision of contraceptives to women who are amenorrhoeic beyond 40 days is problematic and potentially dangerous. In sharp contrast, the majority of Matlab providers perceive few problems and even some advantages in providing contraception at this time. Three main reasons for withholding contraceptive methods from amenorrhoeic women beyond the 40-45 day period could be identified:

- the possibility that the woman is already pregnant;
- risk of side effects and health concerns; and
- 'rules' regarding the provision of methods.

— Pregnancy

The possibility that the woman is already pregnant was commonly mentioned by Dhaka family planning providers as a reason for avoiding the provision of methods during postpartum amenorrhoea. This is motivated by two concerns. Firstly, that provision of a method to a pregnant women could harm the unborn child and possibly the mother, and secondly it would have negative implications for the provider's work record, being a 'dropped case'.

Dhaka NGO fieldworker, no. 6

Respondent: *If the woman is already pregnant then it may cause problems for the child. There may be bleeding. If the pill or injection are given then bleeding may start and the child may even be killed.*

The possibility of an existing pregnancy was also identified as a potential problem by a number of the Matlab providers.

Matlab CHW in-depth, no. 52

Respondent: *For instance, if I give the condom, then if she is already pregnant then there is no benefit in giving the condom, rather it has been wasted. If the injection is given then that has been wasted (thrown away). And also the child in the womb may be harmed.*

Matlab CHW in-depth, no. 61

Respondent: *If we gave the method when she is pregnant then people would lose trust in the methods -- they would think that even if you take the methods the children still come. And it also may be harmful for the mother.*

However, compared to Dhaka, in Matlab this is perceived to be a much less important concern. Though some of the strategies employed to deal with this problem are the same in Dhaka and Matlab, the approaches in the two settings are quite different. Unlike the urban context, concern over an existing pregnancy rarely appears to pose a barrier to the provision of a method of contraception to an amenorrhoeic woman in Matlab.

In both Matlab and Dhaka, some providers mentioned that an internal pelvic examination can be carried out to ascertain whether the woman is pregnant or not. This was mentioned more often in connection with the insertion of the IUD than in the case of other methods. For example, a GoB FWV mentioned routinely performing a pelvic examination before inserting an IUD, but said that since there is no such rule in the case of the injectable, this method cannot be given prior to the resumption of menses. Though one medical officer from an NGO clinic mentioned performing pelvic examinations before giving any method in the postpartum period, this procedure appears to be carried out relatively rarely. Several respondents pointed out that women are often reluctant to travel to a clinic to undergo such an examination since it incurs cost, inconvenience and embarrassment. It was also noted by some that the examination itself is of limited use since it can only detect pregnancy after three months or more have passed.

The use of urine pregnancy tests appears to be even less common. Among the Dhaka providers, only three respondents mentioned this. Further questioning revealed that the test is very expensive (80-120 taka),¹⁷¹ that it is available in few of the GoB and NGO clinics and that in reality very few women avail it. In Matlab, urine pregnancy tests are not provided routinely by the FPHSP and only in rare cases do women have this test performed at a private medical facility.

A further technique that appears to be in quite widespread use in both Matlab and Dhaka is the provision of oral contraceptive pills, or so-called '*testing pills*' in the postpartum amenorrhoeic period to initiate bleeding. Among the urban respondents, the use of pills in this manner was reported by several GoB and NGO family planning staff (12 respondents in total) and several other respondents were aware of this procedure, though they stated that they themselves do not use it. In Matlab, many of the CHWs mentioned using pills in this way, though they reported that this was a technique they had learnt on the job, rather than something that had been

¹⁷¹ At the time of writing, one US dollar was equivalent to 35 taka. The average rent for a house in a slum area of Dhaka city was around 300 taka per month and a kilogram of rice cost around 15 taka.

taught explicitly in their training. It is interesting to note that none of the LFPVs reported using this procedure, and though they were aware of women using pills in this way, regarded it as an undesirable practice.

Matlab CHW group discussion, no. 3

Participant 3: *Apa, the pill is a kind of check-up. If the pill is given then the menses will come.*

Facilitator: *Were you taught this in your training?*

Participant 3: *No, we did not have this in our training, but learnt this through our work.*

Participant 2: *If there has been a conception, then when the pill is taken the menses will not come. If there is no conception, then when the pill is taken the menses comes.*

The exact procedure reported for using pills in this manner differed between respondents, though the general principle was the same. A whole cycle of pills may be given or just a small number, say six or 10, with the woman being instructed to take two pills per day, one morning and one evening. If, having taken the pills, the woman's menses begins, then the woman can adopt another method of contraception or indeed continue with the pill, depending on her breastfeeding status.¹⁷² Resumption of menses is taken to indicate absence of conception (though a lack of menstruation does not necessarily confirm pregnancy). There was some inconsistency in reports of what should be done if bleeding does not follow the taking of the pills. Some respondents stated that they would then stop giving the pill and wait to see if menses came, others that they would carry on with another packet of pills and that the menses would come eventually. Some respondents reported that this procedure is carried out only rarely, others that it is done only when menses has been stopped for longer than a year, and others that it is common practice. It was also noted by some respondents that community women themselves are aware that oral pills have this effect and may themselves acquire the method from the pharmacy in order to induce menstruation.¹⁷³

Dhaka NGO fieldworker, no. 7

Respondent: *If the pill is given then menses will start. At first we give one packet and then 15 days or one month later we see if the menses has come or not. If menses comes then we give another method.*

In some cases, the pill is used to initiate bleeding even though there is no real doubt as to whether the woman may be pregnant. Women themselves may want menses to resume before they start a method of contraception, as discussed in chapter five. In addition, in Dhaka many providers believe that certain other methods of contraception cannot be started without menses, as discussed further below.

Dhaka NGO fieldworker, no. 16

Respondent: *If beyond 40 days the mother wants to take the injection then first she takes the pill for two or three months to make the menses regular. Often if the injection is given the menses stays stopped. So to avoid this, and because both the mother and we may be doubtful [about an existing pregnancy], we first make the menses come regular and then we give the injection.*

¹⁷² Prevailing attitudes and practices relating to contraceptive use during breastfeeding are discussed below.

¹⁷³ There is also evidence to suggest that some women believe that the oral pill will actually induce an abortion and that pills may be taken for this purpose when an existing pregnancy has been confirmed.

In addition to the use of the oral pill in this manner, one respondent mentioned that a woman can use special pills available in the pharmacy to bring about menses. Although the respondent was not explicit, it seems that she was referring to a high dose oestrogen preparation that is marketed as an abortifacient. These dangerous and supposedly banned drugs are still easily available in Dhaka city.

Matlab CHW in-depth, no. 56

Respondent: *We see this in the village. Women say that their menses has not come for one year and that a mura may happen. They want to take a method but they want the menses to come. 'If my menses came then I would feel better'. In that type of case, we see that women take the pill to make the menses come.*

Matlab LFPV, no. 66

Respondent: *Many take it out of their own wish, but we do not give it. We do not bring on menses in this way. If they want to take it, or if they are breastfeeding partially, then we do a check-up and give it. Without a check-up we do not give it.*

Interviewer: *But what do you think, do some mothers start like this?*

Respondent: *Yes, they intentionally start. I have heard that many do this to bring on menses.*

Although these pregnancy 'tests' of one sort or another are sometimes used for women in Dhaka slums, in many cases where a woman is amenorrhoeic and more than 40 days have passed since the delivery, the solution appears to be simply to withhold contraceptive methods and wait. Methods which could harm a pregnant mother and the unborn child are not given to the woman and she is told that such methods cannot be initiated until the resumption of her menses. Thus, in many cases the only contraceptive option offered under these circumstances is the condom.¹⁷⁴

Dhaka NGO fieldworker, no. 3

Respondent: *I have seen many women take a method when menses is stopped and not have any problem, but if you are a wise person then I would tell you to use the condom and to take a method when menses comes. Imagine that the child is six months and menses has not come but you are hoping that the menses will come after seven or eight months. Then without the check-up you can use the condom and when menses comes you can take a method (beboস্থা). And if you want to take a method without menses then you must have a [pregnancy] check-up. We do not give any method without a check-up.*

Dhaka GoB FWV, no. 47

Interviewer: *You have said that you give the methods at 35 days but also that many of the couples do not abstain...*

Respondent: *Then we tell the mothers to speak truthfully, to say whether they have had relations with their husband or not. Many of them tell us that their husband could not wait and that they have had relations. Then we tell them to use the condom and that when their menses starts they should come. Many of them use the condom, but then many men do not want to.*

In contrast, the most common procedure in Matlab appears to be to take the woman's history and to check for any signs or symptoms of pregnancy. Though inconsistent reports were given by CHWs and LFPVs, as shown in Table 6.5, the most common practice seems to be that methods are provided directly to women without a formal pregnancy check-up during postpartum amenorrhoea, unless there are signs of an existing pregnancy, such as nausea, vomiting or dizziness.

¹⁷⁴ This finding is consistent with the reports by users presented in chapter five.

Table 6.5: Conditions under which a pregnancy check-up should be performed for amenorrhoeic women wanting to start contraception, reported by Matlab CHWs and LFPVs

Conditions under which pregnancy check-up should be performed	CHWs	LFPVs
Only if signs of pregnancy	7	2
If signs of pregnancy <i>or</i> beyond 6-8 months postpartum	2	2
If signs of pregnancy <i>or</i> beyond 12 months postpartum	2	0
Always	1	1
Total	12	5

Note: 1. Only in-depth interview cases have been included.

Matlab CHW group discussion, no. 1 [vignette four: Rabeya's story]

- Participant 5: *The child is ten months old, so there is some doubt. Without a check-up a method cannot be given.*
- Participant 1: *If there are no symptoms then a method can be given.*
- Participant 2: *It can be given, but I would not give. Why?! In case she has conceived a mura child already.*
- Participant 4: *Up to six months there is no need for a check-up. After six months is passed then a check-up is needed.*
- Participant 2: *At ten months we give the pill, to see whether her menses comes or not. To tell [if she is pregnant].*
- Participant 4: *If menses has not come then the pill cannot be given.*
- Participant 5: *Now it cannot be given. Why not? Because her menses has not come.*
- Participant 4: *I would not give the pill in case she is already pregnant.*
- Participant 1: *The harm that may be caused if you don't do a check and give the pill, that harm could be caused by giving other methods as well.*
- Participant 3: *In a lot of cases I give the pill.*
- Participant 2: *Yes, in a lot of cases even after six months the pill is given without a check.*
- Participant 5: *Yes, and then not all mothers agree to have a check anyway.*
- Participant 1: *Even without a check it can be given. If she does not feel how she did when she was pregnant in the past then we give the methods without a check.*
- Participant 3: *If she does not have any symptoms then we do not do a check.*

In general then, the fear of an existing pregnancy poses a much less serious barrier to the provision of methods to amenorrhoeic women in Matlab than it does in Dhaka. There appear to be two main reasons for this difference. Firstly, there is greater confidence in Matlab than in Dhaka in the contraceptive potential of breastfeeding, so that a conception during amenorrhoea is felt to be less likely anyway, and secondly, Matlab workers appear to have greater trust in the reports given by the community women, so that the possibility of a conception is ruled out on the basis of a woman's own assessment of whether she is pregnant or not.

— Side effects and health concerns

Significant differences were found in the opinions of providers in Dhaka and Matlab regarding the side effects and health implications associated with the provision of contraceptives during amenorrhoea. Among the urban family planning workers, the prevailing attitude was that use of contraception during postpartum amenorrhoea may be problematic. In contrast, Matlab CHWs identified many advantages to starting contraception at this time.

In the urban sample, two GoB and 13 NGO providers, felt that the provision of contraceptive methods during postpartum amenorrhoea could cause potential harm by producing undesirable side effects. The most common concerns related to the hormonal methods, which were believed to cause disturbance to the menstrual cycle. The injection was felt to upset the return of regular menstrual cycling, producing spotting, or more commonly an extended period of amenorrhoea. Extended amenorrhoea is undesirable both because women feel unwell and uncomfortable and because it causes confusion as to whether the woman is pregnant again. The pill was also identified as potentially causing menstrual disturbances if given during amenorrhoea. Though, as mentioned above, some providers take advantage of the fact that the oral pill tends to produce withdrawal bleeding, others felt that this is not advisable and may even be dangerous. The IUD and condom, being unrelated to the menstrual cycle, are generally regarded as more suitable during amenorrhoea, than the hormonal methods. As well as concerns about disruption to the menstrual cycle, a number of respondents felt that there could be other potential problems, though were not explicit about what these might be.

Dhaka NGO fieldworker, no. 13

Respondent: *If the pill is taken then the mother may feel nausea and her menses may come back quickly and her hands and feet may burn. With the injection a lot of blood may be lost, or the menses may be stopped for a much longer time.*

Dhaka NGO supervisor, no. 31

Respondent: *No, the menses may be disturbed. It's better to take it after the menses. The pill has side effects, what is the need to ruin the body?*

Unlike the urban providers, the Matlab CHWs were in general agreement that it is good to give the methods during postpartum amenorrhoea, that the side effects are often less and that the body can stand the methods better.

Matlab CHW in-depth, no. 54

Respondent: *If the methods are taken during amenorrhoea then there are not very many side effects. All the methods can be given during amenorrhoea.*

Though CHWs acknowledged that the injection may produce an extended period of amenorrhoea, which may be cause for concern for the user, overall they felt that menstrual disturbances are less if methods are initiated during amenorrhoea.

Matlab CHW in-depth, no. 62

Respondent: *It is better to give during PPA. I have seen that if the method is given during amenorrhoea then there is less disturbance to the menstruation. If the woman's menses has come back and she takes the injection then we see that the menses is upset, but during amenorrhoea, since the menses has not started – in this situation the body slowly becomes OK, and it can stand the injection. It takes a while to get used to a new thing doesn't it? Well, if it is given in PPA then the body can get used to it better, the body can stand it.*

Matlab CHW group discussion, no. 2

Participant 2: *With the injection or the copper-T, it is good to give in PPA.*

Facilitator: *Why do you say it is good?*

Participant 2: *Well, the mother will not have her menses. If her menses were to come after six months, then the effects that happen in the body, the action of the medicine, if it is given at this time, during PPA, then the body slowly, slowly gets used to it. Before the menses starts, it comes to tolerate it. That's why it's easier.*

It is interesting to note, however, that the Matlab LFPVs had a more negative attitude toward the provision of hormonal methods during postpartum amenorrhoea than the CHWs. Four of the five LFPVs felt that disturbance to menstrual cycling caused by hormonal methods at this time is disadvantageous, not only because the women themselves complain about it, but also because it may be damaging to the health. The prolonged amenorrhoea induced by the injectable was seen as a serious drawback and LFPVs therefore felt that this method is better given after menses.

Matlab LFPV, no. 65

Respondent: *The head spins. There is burning. This happens if we give the injection during PPA. Even though we give it rarely. There is burning in the mother's stomach, the hands and feet may ache and the menses stops. The mothers say that if menses is stopped for a long time then the body aches (kamrae), they feel dizzy and sleepy (jhim jhim korey), they feel heavy. That's why I don't want to give the injection without menses coming. They always say these things and we have to listen. That's why.*

— Rules for the provision of methods

As well as worries about potential negative side effects, many of the Dhaka respondents referred to 'rules' that must be followed in the provision of the methods. Though in some cases explanations for these rules were offered (as described further below) many respondents could not give specific reasons as to why methods should not be started during postpartum amenorrhoea. Nevertheless, they were adamant that methods cannot be provided at this time. In some cases, the rules expressed were extremely rigid, for example that methods must be started on a particular day postpartum, such as the 35th day or the 40th day, otherwise they cannot be given until menses resumes, or that methods can only be started a fixed number of days after the resumption of menses.

Dhaka NGO supervisor, no. 25

Respondent: *The injection cannot be given. We have the rule that the injection is given on the 5th day of the menses. If there is some blood present then we give the IUD. There has to be some blood present. We cannot believe what they say, the slum mothers. We have to be sure that the menses has started and so there has to be some blood present.*

In Matlab, as already indicated above, the provision of methods during postpartum amenorrhoea is more flexible than in Dhaka. CHWs and LFPVs reported providing a range of methods, at a range of times postpartum. However, among the LFPVs, the idea that it is better to follow the rules and initiate methods after menses was expressed.

Matlab LFPV, no. 66

Interviewer: *So usually, what do you think, is it good to start before or after menses comes? Can there be any problem if the methods are started in PPA?*

Respondent: *It is good to take after menses.*

Interviewer: *Why?*

Respondent: *There is a rule for the methods. Like the pill should be started on the 5th day of menses, for the injection it's also good to give on the 5th day of menses, and the CT should be given within the 10th day of menses. If these rules are followed it's good.*

Overall, the provision of contraceptive methods to women during postpartum amenorrhoea poses much less of a problem for Matlab providers than their Dhaka counterparts, and CHWs in particular favour the provision of methods at this time.

6.3.6 Other factors affecting timing of provision of contraception

The above discussion has illustrated that, in Dhaka, the overriding concerns affecting the provision of contraception following birth are first that women should be motivated to initiate use at 40–45 days postpartum when risk of pregnancy returns, and second, that failing this, caution must be exercised in providing methods during the period of postpartum amenorrhoea. However, a number of other factors were also identified that may influence the provision of contraception in the period following childbirth in both Matlab and Dhaka.

Early discontinuation

In Matlab, almost all CHWs and LFPVs recognised the fact that the provision of contraception soon after birth to a woman who is amenorrhoeic may be counterproductive -- the woman may discontinue use before she regains fertility and become pregnant again just as quickly as if the method had never been used. One LFPV was even aware that the temporary use of the pill during postpartum amenorrhoea may actually increase fertility by inducing menstrual cycling earlier than if no method were used.

Matlab CHW in-depth, no. 51

Respondent: *The mothers will themselves say. For example, that they have had two children and that their menses came after, say, two months or two years. If I talk to them about methods then they will say, 'No, I'll not take now, my menses will come after two years'. If I give an injection within this time, then I see that she drops it after, say, one year and she then gets pregnant again. There are lots of mothers like this.*

Though this problem was widely recognised among the Matlab providers, respondents reported taking different approaches to tackling it. Several respondents reported that they delay providing methods to women they feel will be naturally protected for some months anyway and are unlikely to continue use of the method for an extended period of time (2 LFPVs, 8 CHWs in in-depth interview and participants in two group discussions).

Matlab CHW in-depth, no. 57

Respondent: *Well, a mother may have her menses after two years and then maybe she will conceive. So then her next child will be born after three years. If I give her a method at six months, then maybe this woman would not have had a conception for two years anyway, but for these two years I just continue giving her the method. Then we see that after two years there is some kind of problem. At exactly the time when she may conceive, she drops the method! So there has been no benefit in giving this method. She wouldn't have had a pregnancy anyway. That's why I wait. I do not want to give the methods quickly. She won't get pregnant anyway.*

Matlab CHW group discussion, no. 3

Participant 2: *It's good to take from four months. If she takes immediately after the birth then often we see that a few months later she stops again. Just at the time she stops, that may be the very moment she may get pregnant again. She may say, 'I've been taking it for so long, I don't want to take it anymore, I am not feeling well with it'.*

Other respondents stated that they do not delay provision of the methods, particularly if the woman herself wants to start use, but rather emphasise the importance of continuation to the women (3 LFPVs, 3 CHWs in in-depth interviews and participants in two group discussions).

Matlab LFPV, no. 65

Respondent: *If she says that she wants to take the injection then I would give it. But I would say that she cannot stop it again quickly. You may have difficulties and you may not. The menses may stop. You may have aching and burning. Your head may spin. These things may happen.*

Some CHWs reported providing a method of some sort as an interim measure with the intention of giving a longer-lasting method at a later time.

Matlab CHW group discussion, no. 1

Participant 1: *I can tell that she won't conceive but I still give her a method because of her interest. But I wouldn't myself give the copper-T. The reason is that this should last for four years, but maybe when her menses comes then she won't want to keep it. Whereas, if I give after the menses then she will be sure for four years. So I would give the condom and if her husband does not like it then I would give the injection. I am not really giving her the injection so that she won't conceive. It's for the woman's peace of mind. Then when menses comes back I would give the copper-T.*

A number of Dhaka providers also acknowledged that women who initiate contraception soon after birth may stop again after only a short period of use and subsequently conceive. However, this concern was mentioned much less frequently than among the Matlab providers and it was clear that in most cases contraceptives are nevertheless promoted in the immediate postpartum period. Delayed adoption is not recommended because of fear of another conception.

Dhaka NGO fieldworker, no. 3

- Interviewer: *Have you ever seen in your experience that a woman starts quickly and then stops again?*
Respondent: *They do stop like this. If they have a lot of side effects then they stop. For instance if menses has not come for six or seven months and the pill is taken and then after taking the pill my head spins, I feel bad then I might stop the pill. Then after stopping the pill, I get pregnant again. Within one year two [children] are born.*
Interviewer: *You have worked for a long time, do those who start quickly also stop quickly and those who take later use for longer?*
Respondent: *Those who take quickly, they stop because of side effects. If not, they do not give it up. And those who start later, they start later intending to use to for two years or so. But we do not tell anyone to take it later in case a child is conceived before.*

Dhaka GoB FWV, no. 47

- Interviewer: *Have you seen that any women start fast after birth but then again stop quickly?*
Respondent: *Yes, there are many like this. Like someone may start the pill after 40 days and then when her head starts to spin then she comes to us and we then say that with such a small child the pill should not be taken, instead of this take another method. Or you may see that after taking the injection she has irregular bleeding and then we tell them to change it and take another.*
Interviewer: *So, because of this do you tell them to take the method later?*
Respondent: *No, the methods should be started at 40 days in case of another pregnancy.*

Weakness of the mother and avoidance of strong methods

The timing of provision of contraceptive methods may also be affected by the woman's physical condition in the period following childbirth. Among both Dhaka and Matlab providers, there is a general understanding that prior to 40-45 days no temporary method other than the condom can be used. Before this time, the woman is still weak and fragile from the delivery and the methods are too strong for her to use.¹⁷⁵ Adoption of such methods in the *choti ghor* could lead to serious problems for the woman and perhaps even death. A few respondents mentioned that the tubectomy may be performed before the 40 day period is complete, though again stressed that this depends on the health and strength of the mother.

Dhaka NGO fieldworker, no. 22

- Interviewer: *If someone wants to take a method in the choti ghor, like the pill or the copper-T?*
Respondent: *No, we do not give any advice like that. If the husband does not observe then we give the condom. If these [other methods] are used at that time then the mother will be seriously harmed (onek khoti hoe). At that time the mother is very weak anyway. For these methods to be used the mother needs to be strong, she needs the strength that she had before. With the pill we see that many feel dizzy. The mother is weak anyway, if we give the pill then what?! We do not give it.*

Even beyond the 40 day period, concerns about the mother's health may lead providers to delay the provision of certain contraceptive methods. Both Matlab and Dhaka providers are acutely aware of the potential problems that methods can cause and are therefore cautious about giving methods to women who are unhealthy or weak following the birth. Initiating contraception in such a condition may have serious health consequences for the mother and therefore also for the child. In addition, providers are concerned that women should not discontinue use and are aware that side effects may be worse and continuation less likely, if the woman is weak even before she starts the method. Hormonal methods in particular are often felt to be inappropriate in the period following childbirth, unless the woman has recovered her full strength.

¹⁷⁵ Shortage of space means that providers' descriptions of the postpartum condition of the mother cannot be described in detail here. They were, however, very similar to those described for users in chapter five.

Dhaka NGO supervisor, no. 26

Respondent: *At 40 days, whether or not the menses comes, heavy (bhari) methods should not be given. A light (halka) method should be given. Before menses the condom should be given, no other method can be given with the kacha nari.*

Matlab CHW in-depth, no. 52

Respondent: *When a child is in the womb for ten months then it takes most of the vitamins from the mother. The child becomes a person by taking the mother's blood. And how much can our Bengali mothers eat?! They cannot take as much as is needed. After the child is born the mother's body is weak...*

Interviewer: *So, for this reason do you give the method later?*

Respondent: *I have done. There are some women who have had a child and I have thought that they were weak and that I would give the method a while later, say six, seven or eight months later, after the body has recovered a bit. Because of the weakness I do not give.*

The woman's past reproductive experience

Another factor that appears to play a role in determining when some providers motivate women to accept contraception following the birth, is the woman's previous reproductive history. In Matlab, four CHWs mentioned this spontaneously during interview and the group discussions suggested that this is common. Previous experience of quick successive pregnancies and particularly a *mura* conception, is taken as an indication that the woman is at risk of another pregnancy soon after birth and that contraception should be started promptly. On the other hand, previous long durations of amenorrhoea and long birth intervals are a sign that the woman does not need to adopt contraception until several months postpartum, or can even wait until her menses resumes.

Matlab CHW in-depth, no. 57

Respondent: *We can look at how long a gap she had between her children in the past. For example, if we see that in the past she had her menses after two years then we can tell that her menses will come later, or if we see that after a child another one came straightaway then we can tell that it may happen quickly. We see that most women are like this, that is they have similar durations after each child.*

Matlab CHW group discussion, no. 3

Participant 4: *For those who have children every year do we wait for four months, or do we give the method after 40 days?!*

Participant 3: *We wait for the right moment. It's different to motivate each person. For those who have children very closely spaced (ghono ghono), or have a mura, we give the method at 40 days.*

Matlab LFPV, no. 66

Respondent: *In PPA there is some doubt. Say five percent may conceive. Those who have a history, they may take, and those who do not have any history, they do not need to. Not so long as they are breastfeeding fully.*

Interviewer: *And in the past if my PPA was one or two years then would you not give me a method? Say after two months if I want the injection, would you give it or wait and give it a bit later?*

Respondent: *I would say to take later, to come a bit later and I would tell her the 'due time'.*

In Dhaka too, though respondents stated that it is not certain that a woman's reproductive experience will repeat itself, it was apparent that consideration to past history is often given in the provision of methods. Workers reported keeping a note of this and giving more motivation to women who have had short birth intervals in the past.

Dhaka NGO coordinator, no. 36

Respondent: *If a woman confirms that her menses did not return within two or three months after the previous delivery then we do not suggest that she uses any method [before menses returns].*

Not all providers in Matlab and Dhaka, however, felt that a woman's previous experience should influence the timing of adoption of contraception. Several respondents stressed the fact that the duration of amenorrhoea and risk of pregnancy may be different after each birth and that all women should adopt contraception promptly in order to be sure of avoiding unwanted pregnancy.

Matlab CHW group discussion, no. 2

Participant 2: *If you do not take a method then can you be sure?! A child can come at any time. You cannot predict when a child will come and so you must take some method or other. Like when the typhoon comes then we put sticks in the house to be sure that it won't fall down. If a method is taken then you can also be sure that a child will not come.*

Dhaka NGO fieldworker, no. 5

Respondent: *No, we see many women for whom after one child the menses comes after one year and then after that you see that even before two months the menses has come.*

Interviewer: *So then do you ask mothers what happened after their earlier children, how long after the birth menses came?*

Respondent: *Yes, we ask, because the mothers say, 'After my last child my menses did not come for two years and now it will also come after two years.' Then we tell them that the fingers on the hand are not all equal (hater angool shob shoman na, i.e. you never can tell what may happen). It happened to you like that but maybe it won't be like that this time. Maybe this time you will get pregnant even without your menses coming. But the mothers think like this.*

Dhaka NGO fieldworker, no. 20

Interviewer: *When a woman comes for a method then do you ask her how long her menses was stopped in the past?*

Respondent: *Yes, but we don't actually need to look to see how long it was stopped in the past. We just need to give the method from 40 days. Maybe the mother will say that in the past it was stopped for two or three years. We explain to the mother that it may not always be like that, and often even when it is stopped a child may be conceived.*

Age and parity of the mother

There was evidence to suggest that the age and parity of the mother may be taken into consideration by some providers in their timing of provision of motivation and methods in the postpartum period, though this was mentioned less often by respondents. Some providers in both Matlab and Dhaka appear to give more importance to adoption of contraception soon after birth in the case of women who have already had several children and do not want any more, than to mothers of only one child.

Dhaka NGO supervisor, no. 25

Respondent: *Those who have had a mura pregnancy in the past then of course they need to start before menses, but we do not give much importance to this after the first child.*

Variation in risk of pregnancy among subgroups of women was mentioned rarely. Only one respondent, a Matlab LFPV, mentioned that the risk of conception during postpartum amenorrhoea is higher for younger women than older women.

Breastfeeding

Breastfeeding itself is not regarded as a contra-indication to use of contraception *per se* by providers in Matlab or Dhaka. However, as noted above, the contraceptive protection afforded by breastfeeding may play a role in determining when modern methods of contraception are promoted, at least in the case of Matlab providers. In addition, the potential impact of contraceptive use on breastfeeding is a factor that influences contraceptive provision in the period following childbirth. All respondents felt that a breastfeeding woman can use contraception if she wants to, but not all methods were perceived to be equally suitable for the breastfeeding mother.

In Matlab, all CHWs and LFPVs interviewed regarded the IUD as the most suitable method of contraception for breastfeeding mothers because it does not harm breastmilk production. Similarly, the majority of urban providers (10 GoB, 23 NGO) felt that the IUD was appropriate for breastfeeders and could be started even during exclusive breastfeeding. In addition to the IUD, urban providers commonly regard the condom as an appropriate method for use during breastfeeding. All respondents in the present study felt that this method is suitable for exclusively or partially breastfeeding women and does not cause any harm to breastmilk production. Twelve of the urban providers (3 GoB, 9 NGO) regarded the condom as the most appropriate method for breastfeeding women. In Matlab, family planning providers also recognise that the condom does not have negative effects on breastfeeding. Therefore, the timing of provision of the IUD and condom does not depend on the breastfeeding status of the woman.

In contrast, the hormonal methods are often regarded as detrimental to breastfeeding and consequently the timing of their provision may be influenced by the breastfeeding status of the woman. All respondents in Matlab and the great majority in Dhaka (11 GoB, 34 NGO), reported that the oral pill may cause a reduction in breastmilk production. The reason for this negative effect could not be explained by many of the family planning providers. However, it was commonly understood that the pill is strong and difficult for the body to tolerate in the period following the birth, leading to a general deterioration in health and therefore a reduction in breastmilk production. In only two cases did the respondent express concern that hormonal contraceptives could harm the child by entering the blood stream of the woman and from there the breastmilk itself and thus be transmitted to the child.

Dhaka NGO supervisor, no. 31

Respondent: *If the child is small then we advise that she use the condom. Like I said, the milk will dry up, the head spins and she feels weak. You see the mother is weak after a child is born anyway, if she also takes the pill then she will become even weaker, her head will spin. That's why we do not give the pill, and we give the injection less often anyway. We give the copper-T more often. The pill has side effects, everything has side effects. A complication of the pill is that the head will spin and she will feel weak and so for this reason after a child is born, we do not give the pill without consulting the doctor.*

Matlab CHW in-depth, no. 54

Respondent: *The pill makes the woman weak. Her head spins, she has nausea. Because of these problems the milk dries up.*

Though the understanding regarding the oral pill's effect on breastfeeding was fairly uniform, there were mixed opinions regarding the injection. While some providers regarded the injectable as a suitable method

during breastfeeding,¹⁷⁶ a number of respondents in both Matlab (4 CHWs and 2 LFPVs in in-depth interviews and three CHWs in group discussions), and Dhaka (6 GoB, 9 NGO) felt that the injection could have a negative effect on the quantity of breastmilk. Respondents referred to their own field observations and often explained the negative impact of the injection in terms of a general weakening of the mother's body.¹⁷⁷

Matlab LFPV, no. 66

Respondent: *[With the injection] the mother's head spins, she feels sick, she is ill. The mother cannot feed the child properly because of her ill-health and so this may cause problems for the child... .. If the pill is taken, or if the injection is taken the women say that the milk gets less.*

Matlab CHW group discussion, no. 4

Participant 2: *Often you see that with the injection the milk gets less. Mothers who take the injection say that their milk has dried up and those who know nearby they may say, 'So, you are going to take the injection, your milk will get less you know'. The mothers worry that the milk will get less with the injection and so I say to take the copper-T.*

Participant 4: *No, this is not right, this is not the case. But if the mother thinks in that way, then her milk will dry up when she takes the injection.*

Strategies for the provision of hormonal methods of contraception to breastfeeding women are varied. Among the Dhaka providers, it was common for respondents to state that the pill should not be started before six months postpartum (2 GoB, 11 NGO), or that it should be delayed until supplementation of the child's diet with other foods (4 GoB, 9 NGO). However, some respondents felt that it should be delayed even longer, or not be used at all during breastfeeding.

In Matlab, varying opinions were also expressed regarding the provision of the oral pill to breastfeeding women. A number of CHWs and LFPVs stated that this method should not be provided to women before six months postpartum and others stated that the method should not be provided as long as the woman feeds breastmilk exclusively. However, though all providers in Matlab acknowledged potential negative effects of the pill on breastfeeding, reports from several CHWs suggest that, in practice, this method may be provided to women early in the postpartum period. Some CHWs felt that the effect on breastmilk production is not serious and that the method can be provided to some women, provided they have not experienced problems with it in the past. Others stated that the method is given to women who want it and they are told '*to teach the child to take other foods*'. It was also apparent that some respondents who said that the pill should be given after six months, also stated that if menses resumes before this time then the method can be given. Thus, it seems that if the risk of pregnancy is perceived to be high enough, concerns about breastfeeding take second place. Also, as noted above, the provision of so-called 'testing pills' during amenorrhoea is common practice even for women who are breastfeeding

¹⁷⁶ A small number of respondents were aware of the fact that the hormonal composition of the oral pill and the injectable are different and stated that this explains their differing effects on breastfeeding. Only two respondents stated that the injection increases the amount of breastmilk that is produced.

¹⁷⁷ It seems that, contrary to accepted medical wisdom, in practice some women do experience a reduction in breastmilk production when they use the injection. This was also mentioned by users, as reported in chapter five. This issue deserves further investigation in field situations.

Matlab CHW group discussion, no. 1

Participant 3: *We tell the women, 'Teach your child to take other foods so that you can take the pill'.*

Matlab CHW in-depth, no. 52

Respondent: *The pill can be given after six months because it may make the breastmilk come less.*

Interviewer: *And if the menses comes before six months...?*

Respondent: *When menses comes then we give the pill and we tell the mothers to give other foods [as well as breastmilk].*

Interviewer: *So if the menses comes at 45 days?*

Respondent: *Then we give a method. Then the injection, the pill, all methods can be given, the copper-T can be given.*

Interviewer: *And then if she takes the pill won't it be a problem for her breastmilk?*

Respondent: *We tell them to feed the child other things alongside the breastmilk.*

In the case of the injection, the majority of providers in Matlab felt that this method poses no problem for breastfeeding women and can be provided at any time postpartum. However, one LFPV and one set of focus group participants felt that it is best to delay this method until the child is fed supplements alongside the breastmilk. In Dhaka, several respondents felt that the injectable should not be used before six months postpartum (2 GoB, 8 NGO), some until the end of exclusive breastfeeding (1 GoB, 1 NGO), and some even longer (2 GoB, 1 NGO).

The above discussion illustrates that breastfeeding patterns do have some influence over the timing of promotion and provision of contraceptive methods in the period following birth, particularly with respect to hormonal methods. In both Dhaka and Matlab, supplementation of the child's diet is seen by many providers as the sign that certain methods of contraception can be introduced. In addition, for providers in Matlab, supplementation is a trigger for promotion of contraception since it signifies increased risk of conception.

6.3.7 Promotion and provision of particular methods in the period following birth

Having identified the main themes of understanding that influence the provision of contraception in the period following childbirth in general, I turn now to consider how these relate to particular methods of contraception. It should first be pointed out that in Dhaka, when respondents were questioned in detail about the suitability and timing of adoption of different methods, discrepancies were common and many workers expressed confusion over these issues. In Matlab, though some inconsistency was found, providers were, on the whole, more confident in their responses.

IUD

Among both the Matlab and the Dhaka family planning workers, the IUD was, in general, regarded as the most suitable method for women in the postpartum period, followed by the condom. Since it is separate from the body (*alga jinish*) and does not mix with the body's blood, it causes few side effects and does not adversely affect breastmilk production. The IUD also has the advantage of long-term action -- once it is inserted it can provide contraceptive protection for four years or longer.

However, there was disagreement as to when this method can be given. Among the Dhaka providers, some stated that the IUD must be inserted on the 40th day postpartum, others on the 45th day, others within 40-45 days after the birth. Most respondents stated that if the method is not inserted at this time shortly after birth, it

cannot then be fitted until the woman's menses returns. Respondents commonly referred to the risk that the woman is already pregnant as the reason for not inserting the IUD at this time. However, further questioning revealed that only five respondents (2 GoB, 3 NGO) believed that, once it was confirmed that a woman was not pregnant, an IUD could be inserted at any time during postpartum amenorrhoea. Others felt that absence of menses was a complete contra-indication to adoption of the method, so that it could not be taken at any time before the resumption of menses. Many respondents could offer no reason as to why the absence of menses prevents the adoption of the IUD and instead referred only to their organisation's rules. Those who did offer an explanation stated that without menses *'the uterus is not ready'* or *'the uterus is not open to accept the IUD'*.

In contrast, the IUD is provided at any time in the postpartum period in Matlab. IUDs are inserted by LFPVs at the sub-centres following a pelvic examination, regardless of whether menses has resumed following the birth. All CHWs were aware that the IUD can be inserted during postpartum amenorrhoea and many felt it is best to insert it at this time.¹⁷⁸

Condom

Attitudes towards the condom were found to differ somewhat between Dhaka and Matlab providers. Among the urban family planning staff, the condom was frequently mentioned as a method that is promoted in the postpartum period. The condom is unrelated to the menstrual cycle and is commonly regarded as a light method, in the sense that does not adversely affect the woman's health. Four GoB and 11 NGO workers, stated that the condom is the first choice of method for amenorrhoeic women, while three GoB and eight NGO staff felt that it is the second choice, after the IUD. For Dhaka workers, a major advantage of the condom is that, unlike other methods, it can be used when there is uncertainty as to whether the woman may have already conceived. All respondents except two stated that the condom could be initiated at any time beyond the 40 day period, regardless of menstrual status and without a pregnancy test. The condom is also widely regarded as a suitable method for breastfeeding women. In addition, a number of respondents stated that women who resume sexual relations prior to 40 days can use the condom for contraceptive protection.

Despite these advantages, many Dhaka family planning workers identified drawbacks of the condom. In particular, its use requires cooperation from the husband, something that is often not forthcoming. Also, the condom is regarded as having limited effectiveness and many workers felt that women should switch to more secure methods once their menses resumes. The preference for the condom among urban family planning workers therefore appears to be as much a result of limited alternatives, as its own merits.

In Matlab, the promotion of the condom appears to be much less common. Neither CHWs nor LFPVs identified this as the most appropriate method for amenorrhoeic or breastfeeding women. Though Matlab providers recognise that the condom can be used at any time, has few detrimental effects on the woman's health and does not affect breastfeeding, the limited effectiveness of the method is usually perceived to

¹⁷⁸ If there are signs of pregnancy and the pelvic examination cannot confirm whether or not a conception has already occurred, the woman may be referred for a urine pregnancy test, or more commonly, given the condom to use for a couple of months until the existence of a pregnancy can be confirmed or ruled out.

outweigh these advantages.¹⁷⁹ The condom is only recommended on the rare occasion that no other method can be used. For example, if a couple resumes sexual relations prior to the 40 day period the condom may be recommended since at this time the woman is too weak to use the other temporary methods of contraception. Similarly, some women may remain very weak even beyond the 40 day period, or may have experienced serious side effects with other methods, meaning that the condom is the only method that can be tolerated. Finally, if the woman herself refuses any other method then the worker may resort to giving her the condom to use.

Matlab CHW group discussion, no. 2

Participant: *The copper-T is the first choice and second the injection and third, the last choice, would be condom. The condom is actually not safe but it is still some protection.*

Matlab LFPV, no. 66

Respondent: *We do not mention the condom much.*

Interviewer: *Why?*

Respondent: *Because the educated mothers can use the condom, but here there are too few.*

Interviewer: *Can't uneducated mothers use it?*

Respondent: *It's a problem for them to use it. We do mention it. If they do not want to take any other method then we mention it.*

Interviewer: *But wouldn't you say it first?*

Respondent: *No, this is only if there is no other alternative.*

Pill

In both Matlab and Dhaka, there are a number of reasons why the pill is commonly felt to be an inappropriate method for women who have recently given birth. Concerns about a reduction in the production of breastmilk were commonly mentioned. In addition, the pill is perceived to be a strong method with damaging side effects. For these reasons, many providers regard the pill as better avoided soon after birth if at all possible.

Matlab CHW group discussion, no. 2 [vignette three: Anowara's story]

Participant: *No this is not good for you, it's not good for the child. If you take the pill there is the relation between the pill and the milk, the milk may get less, the child may become ill. Then will you feel good? Then you won't want to take the method. 'My child is ill, who can say when it may die, will I take a method?'*

Dhaka GoB FWV, no. 48

Respondent: *If the pill is taken then it is especially necessary to take vegetables and water. Water is needed a lot and also vegetables because the mother's body becomes very weak. The slum women who take the pill, they cannot take food properly and they also do not take enough water. This method cannot be given soon after the birth, it cannot be tolerated when the woman is weak.*

However, despite these similarities, it was apparent that Matlab providers show greater flexibility than their Dhaka counterparts in the provision of the pill in the period following birth. Whereas in Dhaka many providers believe that the pill cannot be started during postpartum amenorrhoea (9 GoB, 20 NGO), this understanding is uncommon in Matlab. Though some Dhaka providers expressed concerns about adverse side effects, many respondents could not explain why the pill should not be started before menses. Many referred

¹⁷⁹ None of the providers in Matlab or Dhaka mentioned disease-prevention as an advantage of the condom, reflecting the fact that STD prevention has to date received little attention in family planning activities in Bangladesh.

to the rules that they had been taught, namely that the pill must be started on the 1st, 3rd or 5th day of menses. A manager expressed her surprise at the suggestion that the pill could be started prior to menses:

Dhaka NGO coordinator, no. 35

Respondent: *If menses has not resumed then how will the woman know when to start to take the pill?!*

Injection

Promotion and provision of the injectable contraceptive in the period following childbirth varies significantly between the Matlab and Dhaka providers. Whereas the Dhaka providers commonly felt that the injectable was unsuitable in the postpartum period, the majority of Matlab providers regarded the injectable as an appropriate method to be used at this time.

In Dhaka, the majority of respondents believed that the injection could not be initiated before the resumption of menses following a birth. In some cases, respondents felt that the injectable could be started at 40-45 days, or beyond this time only after the resumption of menses (2 GoB, 10 NGO). In other cases, the resumption of menses was believed to be a prerequisite for starting this method (9 GoB, 19 NGO). Among those who stated that menses must resume before initiating use, many said that this is the rule they had been taught, but could offer no further explanation. A number of respondents also felt that this method should be delayed because of potential negative effects on breastfeeding (4 GoB), or because of potential damage to the mother's or child's health (1 GoB, 5 NGO). In most cases, however, respondents were not explicit about the type of harm that could ensue. Only six Dhaka family planning workers stated that this method can be provided at any time in the postpartum period provided the woman is confirmed not to be pregnant (1 GoB, 5 NGO).

Dhaka NGO fieldworker, no. 22

Respondent: *We have a rule that up to six months we do not give the pill or the injection.*

Interviewer: *Why?*

Respondent: *The child will be harmed.*

Interviewer: *What kind of harm?*

Respondent: *There may be harm. The child may in future get some kind of problem. The problem won't come immediately, but in future maybe there will be a problem because of taking the method.*

Interviewer: *Have you any idea what kind of problem there may be in future?*

Respondent: *[No answer]*

Interviewer: *Imagine I am a mother with a child of two months and I want to take the pill or the injection.*

Respondent: *No, it cannot be taken.*

Interviewer: *Why? What problem may there be?*

Respondent: *In the future, what if another child does not come?! These are methods for stopping the child from coming. It won't come. This is happening, even if it's not the case for everyone. That's why. It might cause some kind of harm for the next child. There are lots of possible ways it may cause harm. There may be problems for the next child. I don't have any idea of what may happen. It may be a problem, I just know that.*

In contrast, most providers in Matlab reported providing this method at any time in the period following childbirth, whether or not the woman's menses has resumed. In most cases, the injectable was regarded as the second most suitable method for women wanting to have more children, after the IUD.

Sterilisation

Among the Dhaka family planning providers, female sterilisation was mentioned rarely and male sterilisation not at all, as a suitable method for couples to adopt in the period following childbirth. Among those that did mention tubectomy as an option for the recently delivered mother, there were mixed opinions as to when and under what circumstances it can be performed. Some respondents stated that the operation cannot be performed before 40 days postpartum because the mother is too weak, others stated that it can be done immediately after the birth. Some felt that the operation cannot be performed until the woman's menses resumes, others that it can be performed at any time provided the woman is confirmed not to be pregnant. One respondent stated that a tubectomy should not be done until the youngest child is five years old and others stated that at least two surviving children should be present before a woman is sterilised. Only two respondents mentioned that they promote female sterilisation as a suitable method in the postpartum period (1 GoB, 1 NGO).

In Matlab, there was general consensus among the providers that women with three or more children should be motivated to have a tubectomy as soon after the birth as possible. Unless the woman is very weak after birth, she can have the operation within the 40 day period without problems and several respondents expressed the opinion that it is easier to perform the operation soon after the birth than to wait until later.

Matlab CHW group discussion, no. 1 [vignette three: Anowara's story]

Participant 1: *She should take a method. I would tell her that it is good to have the operation and it should be done within 40 days of the birth, while the nari is still kacha.*

Matlab LFPV, no. 64

Respondent: *When menses is stopped after birth, then for mothers with a few children the copper-T is good and for those who have many children then tubectomy is good.*

However, Matlab providers commonly reported that very few women want to have a sterilisation soon after the birth, if at all. CHWs recognise that women do not take the decision to have a tubectomy quickly, rather it takes time and persuasion. In this situation, they often encourage use of another method initially, with a long-term aim of persuading the woman to have a tubectomy.

6.3.8 Providers' views on demand and preferences for contraception following childbirth

As well as exploring the knowledge and understanding of the family planning providers themselves, interviews included discussion on the prevailing preferences and demand for contraception among the communities being served.

Timing of adoption of contraception

In Matlab, there were mixed opinions as to the currently prevailing patterns of timing of adoption postpartum. Seven of the CHW in-depth interview cases stated that the number of women who adopt methods after menses remains more than those who adopt before and the remainder expressed the view that the before-menses adopters are now the majority. The group discussions and LFPV interviews also revealed inconsistency. These differing opinions may reflect differing patterns of adoption in different sub-areas of the Matlab FPHSP. Nevertheless, all CHWs felt that there had been an increase over time in the proportion of women adopting

contraception prior to the return of menses. CHWs stated that there had been an increase in awareness of the risk of *mura* pregnancy and several pointed to their own motivational efforts as being instrumental in bringing about this change.

Matlab CHW in-depth, no. 55

Respondent: *The mothers are frightened in case a mura is conceived. Now lots of women have this fear, before it used not to be so common.*

Interviewer: *So why are they now frightened of this?*

Respondent: *Because we tell them that there is a chance of a mura. They used to say that if the mura is in the family line (bongsho) then it will happen and so they did not do anything.*

Matlab CHW group discussion, no. 2

Facilitator: *Why do the mothers want to start before the menses comes?*

Participant: *Because we explain to them.*

Participant: *We explain to them and they hear it on the radio. We are surprised to see that sometimes women take the methods themselves.*

Participant: *I think that when a mother takes a method, first she thinks about it and then we explain to her. When her thought and our explanation, when these two come together then she definitely takes a method.*

Among the Dhaka providers, the majority felt that few women adopt contraception prior to the resumption of menses (8 GoB, 23 NGO).¹⁸⁰ Only one GoB worker and three NGO workers felt that the adoption of contraception during postpartum amenorrhoea is common, stating that many women opt to initiate contraception at 40-45 days after the birth.

Reluctance to use contraception prior to the return of menses

Dhaka family planning providers on the whole felt that women are reluctant to use contraception prior to the resumption of menses. Similarly, though Matlab staff recognised an increase in early adoption, they all noted that continued reluctance to start before menses exists among some women. When questioned about the reasons for this reluctance, providers identified the same key themes of understanding as emerged from the interviews with users. Firstly, many women do not acknowledge a personal risk of *mura* pregnancy, believing this to be a familial trait and that their next child will come later, after menses resumes.

Matlab CHW in-depth, no. 56

Respondent: *They say, 'My menses has not come, there is no chance of conception'... They say, 'This is not in my family line (bongsho). It did not happen to my mother-in-law, or to my mother, will it happen to me?!'.*

Matlab LFPV, no. 67

Respondent: *They say, 'My insides are not clean, and the mouth is closed, so where will a child come from?!' After menses then they think that the mouth of the uterus opens and it is cleaned so that then a child may be conceived.*

Dhaka NGO supervisor, no. 34

Respondent: *Before menses they are not very interested to take it and when menses comes they go mad because then they know that a child may come and they have to take a method. Before the menses comes they do not want to take the method. The number who take it is very few and it takes a lot to make them understand.*

¹⁸⁰ These responses are consistent with the patterns of contraceptive use described in chapter four.

Dhaka NGO fieldworker, no. 21

Respondent: *They take after menses, so if menses comes at 40 days then only they take it. They say, 'This is my second child, after the first it was like this, I know that it will be like that this time. Let my menses come and then I'll take it'.*

In addition, providers noted that many women have concerns about the health implications of using contraception in the period following birth when the body is weakened anyway, and particularly during postpartum amenorrhoea, since it may lead to menstrual complications and other problems.

Matlab CHW in-depth, no. 58

Respondent: *It is easier after the menses. The women say, 'My menses has not come and yet I have taken a method and still the menses stays stopped. How bad I feel!' If the menses comes clear then there is no confusion. At that time if a method is taken they don't feel so bad.*

Interviewer: *So how do they feel?*

Respondent: *The women say that if the menses comes then the body feels light (halka). If menses does not come then they feel bad. And if the injection is given before the menses then you do not know how long the menses will stay stopped. If the menses comes first then they feel a bit better. Then if they take the injection and the menses stops they just say, 'Let it be stopped, it doesn't matter'.*

Matlab LFPV, no. 65

Respondent: *The most common method is the injection and they take the injection after menses. They feel less trouble in their body. That's why they take it.*

Interviewer: *Do they think this, that it's good to take after menses?*

Respondent: *Yes, they say this, 'If menses comes once then I will be able to last for one year'. After menses comes, if a method is taken then even if menses does not come for one year they will be able to stand it. If it stays stopped for two years many mothers worry about this.*

Interviewer: *And if they take it in PPA?*

Respondent: *Menses will stay stopped, they will have burning and all kinds of problems. They also feel scared in case heavy bleeding starts.*

Dhaka NGO supervisor, no. 25

Respondent: *Most do not want to take it before the menses. They think that it will cause problems and that they cannot eat well enough to take these methods. They do not want to take because of the weakness. After the child is born they feel weak.*

Dhaka NGO fieldworker, no. 19

Respondent: *When a method is taken there are many different kinds of problems and side effects. They think that the later they take it the less problems they will have. That's why they want to take the method later. But then again some do take it in fear.*

Providers were also asked about why certain women choose to start contraception soon after birth, before menses returns and what the characteristics of these women are. Previous experience of a *mura* pregnancy, or other relatives having a *mura* pregnancy were identified by both Matlab and Dhaka providers as factors that make women more worried and therefore more likely to adopt a method prior to menses. Some providers in both settings also noted that women who do not want to have any more children are more motivated to start early than those who want to have another child. In Dhaka, some providers noted that educated women are more likely than uneducated women to initiate contraception soon after birth and to adopt the condom in the postpartum period.

Adopting methods on resumption of menses

Both Dhaka and Matlab providers felt that, on the whole, women recognise menses as a signal of renewed risk of conception and that those who intend to use contraception respond to this by adopting a method of contraception promptly. However, examples were given of situations where adoption of contraception is delayed further, often resulting in an unwanted conception.

Providers noted that women who feel weak after the delivery may be unwilling to start a method of contraception even when menses returns because of fear of further weakness and ill-health. Providers also noted that some women do not respond immediately, thinking that they are unlikely to conceive after just one menses. In particular, providers noted that if menses returns very soon after birth, it may in some cases be mistaken for blood loss after childbirth. Matlab providers described the traditional understanding that blood loss at around 40 days postpartum is due to blood that has been stored up inside the woman's waist.

Matlab CHW group discussion, no. 3

Participant 5: *If the menses comes at 40 days then the older women say that this is the blood stored in the waist/hip (maja) [i.e. not real menses].*

Matlab LFPV, no. 67

Respondent: *They say that this blood was stored in the waist (komor) and that's why it has come after 45 days and that after this the menses does not come again. If it was real menses then it would continue again the next month. They call it 'mashik' but they think of this as stored up blood [not actual menses].*

Preferences for methods

In Matlab, CHWs and LFPVs recognise the popularity of the injection and the unpopularity of the IUD, despite their efforts to promote it.

Matlab LFPV, no. 67

Respondent: *The women are not taking it [IUD] because some people have had serious side effects. Perhaps she knows someone who had heavy bleeding or pain in the abdomen. This could be something that happened a long time ago, but still they think that they will have bleeding like she did. They think that the copper-T is a foreign body, it may disturb their husband, and perhaps they may have excess bleeding or a lot of pain. They think in this way, but when we motivate them strongly they do take a method. If we motivate them then they take something but they do not all take this. They are also embarrassed to lie down and take the copper-T.*

Interviewer: *Is this the most important reason, the shame (lojja)?*

Respondent: *The most important reason? They want to avoid the copper-T in every way. You have to lie down, your husband may have a problem, and then a neighbour lost lots of blood, and also another woman who took it she always has pain in the abdomen, and one woman who took it, her stomach burst open and it came out! I mean, they give lots of examples like this in order to avoid it.*

Dhaka providers also noted that the methods they most try to promote in the postpartum period are not generally preferred by their clients. As in Matlab, Dhaka providers felt that women avoid the IUD primarily because of fear of serious health problems and because of the invasive nature of provision. In addition, many providers drew attention to the fact that, though they recommend the condom to women in the postpartum period, husbands are often unwilling to cooperate. Urban providers highlighted the popularity of the pill

among the women they serve and noted that though they themselves may try to delay provision of this method, women can obtain it themselves from pharmacies.

6.4 Summary

6.4.1 Themes of understanding

The findings presented above have highlighted the main factors that influence family planning providers' understanding and behaviour regarding the provision of contraception in the period following birth. Table 6.6 summarises these factors and highlights important differences found between providers in Matlab and Dhaka.

The first factor that is of importance in both Matlab and Dhaka is the risk of a renewed pregnancy and need for contraception. For both sets of providers the time postpartum is an important consideration in assessing the risk of renewed pregnancy. In addition, all providers are aware of the fact that the risk of pregnancy is lower during postpartum amenorrhoea than once menses has resumed. However, whereas in Matlab most providers (though not all) recognise that fertility may not return immediately after the birth if the woman is amenorrhoeic, in Dhaka, the majority of providers consider the end of the 40-45 day period as the time when risk returns and contraception is needed. In Matlab, the likely degree of natural protection against pregnancy is assessed by considering the breastfeeding and amenorrhoeic status of the woman. In contrast, though many providers in Dhaka acknowledge a link between breastfeeding and conception, they often have an incomplete understanding of the relationship and little confidence in the potential of breastfeeding to prevent pregnancy. Consequently, for the majority of Dhaka providers, breastfeeding status does not enter into their assessment of a woman's risk of pregnancy. Having noted these differences, it appears to be the case that in both Matlab and Dhaka at least some providers take the woman's past reproductive history into consideration when assessing her risk of pregnancy.

Table 6.6: Summary of factors influencing providers' understanding and behaviour regarding provision of contraception following birth in Matlab and Dhaka

	Dhaka	Matlab
Risk of pregnancy & need for contraception	<ul style="list-style-type: none"> • time postpartum: 40-45 days • past history 	<ul style="list-style-type: none"> • time postpartum: 40-45 days / 3 months / 6 months • lactational protection • past history
General implications of providing the method postpartum	<ul style="list-style-type: none"> • side effects ⇒ damage to health / discontinuation • damage to breastfeeding 	<ul style="list-style-type: none"> • side effects ⇒ damage to health / discontinuation • damage to breastfeeding
Implications of providing the method during PPA	<ul style="list-style-type: none"> • danger of existing pregnancy • dangers of use / side effects 	<ul style="list-style-type: none"> • fewer side effects
Rules regarding the provision of methods	<ul style="list-style-type: none"> • certain methods cannot be started without menses • precise rules for timing of adoption 	(no rigid rules)
Likely duration of use	(not taken into consideration)	<ul style="list-style-type: none"> • woman's motivation to avoid pregnancy / past contraceptive history • method type

The second major theme of understanding that was identified is that the adoption of contraception during the postpartum period may have negative implications for the health of the woman and her child. Here, there were both similarities and important differences between the Matlab and Dhaka providers.

Concern about an existing pregnancy is a major barrier to the provision of contraception to amenorrhoeic women in Dhaka. In contrast, though providers in Matlab are aware of this issue, they have developed strategies for coping with it and methods are provided freely during postpartum amenorrhoea.

In both Matlab and Dhaka, providers are aware that contraceptives may have negative effects on the health of the user and that this in turn may have an impact on her child. For this reason, certain methods may be avoided, in particular hormonal methods, or initiation of use delayed until the woman is healthy and strong. However, as well as this general concern, many providers in Dhaka believe that the initiation of certain contraceptive methods during postpartum amenorrhoea may carry with it additional negative health implications and side effects. In Matlab, the majority of providers do not perceive any added problems associated with adopting methods during postpartum amenorrhoea. In fact, many CHWs feel that side effects are often less if methods are initiated during postpartum amenorrhoea.

Understandings regarding the negative impact on breastfeeding may also affect the timing of provision of some methods of contraception in the period following birth. Whereas the IUD and condom tend to be provided irrespective of breastfeeding status, hormonal methods are more likely to be provided after

supplementation of the child's diet (though attitudes and opinions were somewhat inconsistent, particularly in relation to the injectable).

A further factor that was apparent during fieldwork in Dhaka was that providers' opinions and behaviours are strongly determined by fixed rules, the rationale for which is often not understood. For example, it was common for urban providers to report rules that prohibit certain methods of contraception being initiated during postpartum amenorrhoea, without being able to explain why.

In Matlab, recognition of the fact that early adoption of contraception may have little or no impact on the birth interval unless use is prolonged, is another factor that affects providers' provision of methods in the period following birth. Though not all Matlab providers reported behaving in the same way, it is clear that the timing and type of method promoted may be influenced by a concern to ensure the woman remains protected against pregnancy beyond the period of lactational amenorrhoea. In Dhaka, there was no evidence that such concerns are taken into consideration.

6.4.2 Flexibility and choice

The findings from fieldwork in the two settings highlight a number of ways in which the provision of contraceptive services to women in Matlab is more flexible and offers women a wider range of choices than in Dhaka.

Firstly, as noted above, most providers in Matlab have greater confidence in the contraceptive potential of breastfeeding and take this into consideration in their promotion and provision of family planning methods following birth. Whereas in Dhaka, most providers adhere to the strict rule of promoting methods at 40-45 days, in Matlab, many providers are willing to wait several months if the woman remains amenorrhoeic, knowing that her risk of conception is low.

Secondly, all types of contraceptive methods are provided freely in Matlab during postpartum amenorrhoea. Unlike many Dhaka NGOs, there are no rigid rules against the provision of the pill, injectable, or IUD to women who are in a state of postpartum amenorrhoea.¹⁸¹ This means that women have a greater choice of method than in the urban setting, where often only the condom is on offer beyond the 40-45 day period.

Thirdly, interactions between providers and clients are more frequent in Matlab. This means that there are more opportunities for motivation and education and that women have more choice about timing of adoption. A woman knows that she will receive a visit every month, if not more often and can therefore choose to accept a method as and when she pleases. Family planning workers in Matlab emphasised the importance of repeated motivation of mothers and of providing women with the method of their choice if the aim is to achieve an extended duration of use.

¹⁸¹ Such rules are inconsistent with accepted medical guidelines for the provision of these contraceptive methods. Hatcher, Stewart, Trussel *et al.* (1990) suggest that the IUD, pill and injectable can all be given to women during postpartum amenorrhoea, provided the woman is confirmed not to be pregnant.

Matlab CHW group discussion, no. 3

Participant 3: *I'd tell her about the copper-T, but I'd also show her all the methods. It depends on her choice. It's better to give the method that the mother likes, because if she takes a method she likes then it will last for longer. And you know if we mention it once then they don't take it immediately, we have to carry on motivating them for four or six months.*

6.4.3 Misinformation, confusion and inconsistency

Although the approach to provision of contraception following birth is in many ways more flexible in Matlab than in Dhaka, it is important to highlight the fact that inconsistency and misinformation were found in both settings.

Misinformation and confusion about reproductive anatomy, the menstrual cycle, return to fertility following a birth and the action of contraceptive methods, was found among providers in both Matlab and Dhaka, though this was more common among urban providers, particularly NGO workers. The knowledge level of some urban providers was so poor as to raise serious doubts as to the adequacy of the training they receive, and suggests that they are ill-equipped to provide clients with the information they need to make informed choices regarding contraceptive use.

As well as training courses often being of very short duration, the curricula give inadequate attention to basic reproductive anatomy and physiology.¹⁸² An important point should be highlighted here. Family planning staff, particularly fieldworkers and supervisors, who have both limited general education and limited training, share much of the same understanding as the community women they seek to serve. Other researchers have noted that health and family workers do not operate in isolation of the prevailing systems of belief and local knowledge (Goodburn, Gazi and Chowdhury 1995; Good 1980). In the present study, many of the ideas and opinions expressed by the family planning workers mirrored those of the users who were interviewed. This is not necessarily a bad thing and could have the potential to result in empathy and good communication between provider and client. However, it seems that this traditional understanding is ignored during training. Instead of acknowledging the providers' existing belief system and working with it to support its useful elements and correct harmful misconceptions, the current approach to training provides a completely separate, western-dominated set of explanations. This means that providers themselves are left to try to reconcile divergent explanatory models, often resulting in confusion and misunderstanding.

In both Matlab and Dhaka, inconsistencies were found in the timing of promotion and provision of methods postpartum and the reasons reported for various practices. In Dhaka, discrepancies were found both within and between different organisations. In Matlab, there were significant differences between CHWs and LFPVs, as well as variation between CHWs on a number of important issues.

A review of training curricula used for GoB and Dhaka NGO fieldworkers revealed that they do not contain a separate section or module devoted to postpartum contraception. Instead, information and instructions that

¹⁸² The training materials reviewed are listed in Appendix 7.

have a bearing on this issue are found in a number of different places. The GoB FWV module on postpartum care includes a section on postpartum contraception, but it is not exhaustive and fails to provide clear guidelines. In most cases, it seems that staff are left to piece together diverse pieces of information in order to arrive at a guideline for the provision of methods in the period following birth. It is not therefore surprising that inconsistencies are common.

In addition, a number of inconsistencies and areas of ambiguity were found in the training materials themselves. Information relating to the contraceptive effect of breastfeeding was found to differ in the various GoB training materials reviewed. In the FWA guide (NIPORT 1988), it states that the contraceptive effect of breastfeeding usually lasts for three or four months at which time the child starts to take supplements. In the FWV basic training module 14, five months protection is mentioned (NIPORT 1993), whereas in another GoB manual, six months protection is mentioned (NIPORT 1995). In the FWV module, it states that women should be encouraged to breastfeed exclusively, to feed the breast frequently and to feed at night in order to achieve the contraceptive effect. In contrast, the FWA guide stresses the fact that breastfeeding cannot be regarded as a very effective method and women should be informed of the fact that they can get pregnant even when they are breastfeeding. No clear recommendation is given in any of the materials as to whether lactational amenorrhoea should be relied upon as a method of contraception, or when other methods should be promoted and provided. The contraceptive potential of breastfeeding was not discussed at all in the NGO training materials reviewed.

Information regarding the provision of contraceptive methods during postpartum amenorrhoea and breastfeeding was also found to be inconsistent and incomplete in the GoB training documents. Both the FWV and the FWA training materials state that as long as a woman is confirmed not to be pregnant, the IUD can be given at any time in the menstrual cycle. However, in the FWA materials it is stated that women may lie about their pregnancy status and workers should therefore be very careful that women opting for the IUD are not pregnant. It also states that it is better to insert the IUD during menses than during amenorrhoea. With respect to the pill, the FWV training materials do not explicitly state whether this method can be initiated during postpartum amenorrhoea, whereas the FWA guide states that it cannot be started without menses. In the FWV materials, it states that the pill should not be given to breastfeeders, whereas in the FWA guide it states that the pill can be used from six months onwards. In the case of the injectable, there is no explicit guideline for use during postpartum amenorrhoea in the FWA guide, but the FWV materials state that this method can be started during postpartum amenorrhoea provided the woman is confirmed not to be pregnant. FWAs are advised in their materials that the injectable should not be given until four months postpartum and only then if the child is taking other foods besides breastmilk. In contrast, FWVs are told that the injectable is suitable at any time for breastfeeding women. The NGO materials reviewed also fail to provide clear and complete guidelines regarding the provision of contraceptive methods during postpartum amenorrhoea and breastfeeding. For example, in one set of training materials it is stated that the IUD can be provided immediately after birth, at 40 days postpartum, or after the return of menses. However, in the sections relating to the pill and the injectable there is no mention of when following a birth these methods can or cannot be provided.

No clear procedures for pregnancy checking were found in either the GoB or NGO training materials, though pregnancy or suspicion of pregnancy is given as a contra-indication to the provision of the pill, IUD and injectable in all.

In Matlab, no written training materials were reviewed, but instead discussions were held with senior management staff to ascertain the current programme policies and the content of the training received by field and clinic level workers. Staff are taught that all methods can be provided during postpartum amenorrhoea, and that, aside from the oral pill (which should only be given after supplementation) all methods can be started during full or partial breastfeeding. Despite these apparently clear guidelines, inconsistencies were found, as illustrated above. Discrepancies between the reports of CHWs and LFPVs regarding the provision of methods during amenorrhoea are of particular interest. The more favourable attitude of CHWs toward the initiation of contraception at this time may reflect both differences in training (since the LFPVs first received GoB FWV training) as well as differences in field experience. CHWs may have a wider experience of giving methods during postpartum amenorrhoea, whereas LFPVs may tend to see mainly women with complaints who have been referred by CHWs. In relation to other issues, such as when postpartum methods should be provided, whether methods should be delayed during lactational amenorrhoea, and under what circumstances pregnancy checking should be carried out and how, clear guidelines appear to be lacking, as reflected in the inconsistent reports received from the family planning providers.

The review of training curricula was not exhaustive and observations of training courses as well as in-service training would be necessary to comprehensively evaluate the quality of the training being received by family planning workers in the different settings. Nevertheless, the present investigation has highlighted a number of important areas where improvements can be made. It is clear then, that as well as noticeable differences between the understandings and behaviours of providers in Matlab and Dhaka, there are also important inconsistencies within these two groups. In the following chapter, I discuss how these findings help to explain the existing patterns of contraceptive use following birth in the two study populations and the implications they have for future improvements to programme approaches.

Chapter seven: Discussion and conclusions (integrating qualitative and quantitative findings)

7.1 Introduction

The preceding chapters have largely dealt with the quantitative and qualitative data separately, and have described the patterns and trends in natural protection against pregnancy and contraceptive use following childbirth, as well as the knowledge and understanding of users and providers that shape behaviour at this time. The aim of the present chapter is to bring these different bodies of information together in order to:

- increase our understanding of the current patterns and recent trends in contraceptive use following childbirth in the study populations;
- explore the potential implications of these patterns and trends for birth intervals and fertility; and
- highlight important issues for future improvements in postpartum family planning programme approaches in Bangladesh.

Following this, the limitations of the present study are discussed and areas for future research are identified.

7.2 Understanding current patterns and recent trends in use of contraception following childbirth

7.2.1 Adoption of contraception in the period following childbirth

Findings presented in chapter four show clearly that women in Matlab were more likely to adopt contraception in the months following childbirth than their urban counterparts. This in part reflects the fact that contraceptive use is higher in general in the Matlab treatment area than in the rest of the country. In comparison to programmes in other parts of the country, the Matlab MCH-FP project provides intensive family planning services, with frequent home visits and a wide range of contraceptive methods. Evidence suggests that both the quantity of contacts between women and family planning providers, and the quality of these interactions, are significantly higher than in rural areas served by government services (Koenig, Rob, Khan *et al.* 1994).¹⁸³ These services are believed to have been largely responsible for the increased uptake of contraception over the past 10-15 years, since changes in fertility preferences have, in general, been similar to those in other areas (Koenig, Rob, Khan *et al.* 1994). In addition to these general characteristics, as described in chapter six, a number of factors mean that the contraceptive services provided to women who have recently had a birth in Matlab are more flexible and more accessible than in Dhaka slums and, it appears, in the majority of the country. In particular, contacts with family planning staff are more frequent both before and after delivery, and a range of methods is freely available in the postpartum period.

7.2.2 Menses as a trigger for the adoption of contraception

In both study populations, the quantitative surveillance data showed a sharp peak in the probability of adopting contraception, immediately after the resumption of menses. Studies elsewhere have shown a similar

¹⁸³ 'Quality' was measured by a series of questions to women including: the length of time spent by fieldworkers during home visits; whether they found the visit useful; whether sufficient information was provided; the number of methods mentioned.

concentration of adoption around the time of first menses (Knodel, Kamnuansilpa and Chamratrithirong 1985; Laukaran and Winikoff 1985; Gomez de Leon and Potter 1989; Thapa, Kumar, Cushing, *et al.* 1992; Mavalankar, Gray and Trivedi 1993; Becker and Ahmed 1994). Qualitative work confirmed that, among both urban and rural women in Bangladesh, the resumption of menses following birth is seen as an indicator of renewed risk of pregnancy. In addition, it indicates that the body is returning to normal following the birth, and that the accumulated 'bad blood' is being expelled from the body. Like users, the providers of family planning in both settings recognise increased risk of conception once menses returns, and encourage women to adopt contraception promptly. Women are commonly advised to begin the pill or injectable on the 3rd or the 5th day of menses, and there is a preference among family planning providers for insertion of the IUD at the time of menses.

Many women in both settings do respond quickly to the resumption of menses. However, in Matlab, results from multivariate analyses suggested that, compared to earlier cohorts, women in the 1990-1 cohort tended to respond more swiftly to the resumption of menses. Also, a large differential was seen in the probability of adopting contraception in the first five months after birth, between Matlab and urban women who had resumed menstruation. Reports by both users and providers suggest that two factors may lead to delayed adoption once menses has resumed, particularly if menses returns soon after the birth. Firstly, women may not recognise the risk of pregnancy, mistaking the bleeding for that of childbirth. Secondly, despite recognising the danger of conception, some women may delay adoption since they feel weakened after childbirth and unable to tolerate the use of a modern method of contraception. In addition, lack of access to services at the time when menses returns may prevent some urban slum women from initiating use immediately. Though information was limited in the present study, results from the multivariate analyses suggested that contact with family planning fieldworkers increases the probability that a woman will adopt contraception following a birth. However, there is abundant evidence from national surveys that contacts with family planning providers are less frequent than dictated by current policy.

7.2.3 Differential use of contraception during postpartum amenorrhoea

Matlab-urban differentials

Findings from qualitative work with users and providers revealed a common reluctance among women in both Matlab and Dhaka slums to use contraception soon after birth, and particularly during postpartum amenorrhoea. Two themes of understanding are influential in this regard. Firstly, it is commonly understood that, although conception prior to menses is possible, there is little or no personal risk of such a pregnancy. Previous personal reproductive experience, as well as the reproductive history of one's female relatives, are taken to be important indicators of risk of *mura* conception, or absence thereof. Secondly, women perceive modern contraceptive methods to be strong and potentially damaging to the health of the mother, who is already weakened following the pregnancy and birth. Therefore, the later methods are started, the better.

Despite evidence of a general preference to avoid use of contraception soon after birth in both study populations, quantitative data showed that women in Matlab were much more likely to initiate contraception during postpartum amenorrhoea than their urban counterparts, and that there has been a large increase in use

during amenorrhoea in Matlab in recent years. National data also show that women rarely use contraception during amenorrhoea (Weis 1993), suggesting that the pattern of adoption in Matlab is unusual for Bangladesh.

The qualitative work highlighted important differences in the knowledge and practices of family planning providers in Matlab and Dhaka, which have played an important role in bringing about the observed patterns of adoption during amenorrhoea. Current postpartum family planning service provision in Dhaka acts as a barrier to the adoption of contraception during amenorrhoea for many women. In contrast, the provision of services in Matlab facilitates adoption of contraception at this time.

Interviews with urban providers revealed that, in most cases, contraceptive methods are promoted at around 40-45 days postpartum, but that beyond this time amenorrhoeic women are usually offered only the condom until menses resumes. Concern about an existing pregnancy is a major barrier to the provision of contraception to amenorrhoeic women in the urban setting. In addition, many providers in the urban context believe that the initiation of certain contraceptive methods during postpartum amenorrhoea may carry with it negative health implications and side effects. A further factor that was apparent during fieldwork in Dhaka was that fixed rules often prevent providers from giving methods to women who are amenorrhoeic, though the rationale for these rules is often not understood.

In contrast, all modern methods of contraception are freely provided to amenorrhoeic women in Matlab. Though providers are aware of the issue of an existing pregnancy, they have developed strategies for coping with it, largely by relying on women's own reports of suspected pregnancy. Similarly, though Matlab staff recognise that contraceptives may have negative health effects, most do not perceive any additional problems associated with use during postpartum amenorrhoea. In fact, many CHWs expressed the opinion that side effects are often less if methods are initiated during amenorrhoea and the great majority felt that all methods can be initiated at this time. The finding that contraceptive continuation was higher among women initiating the injectable during postpartum amenorrhoea than among those waiting for menses lends some support to this view.

As well as policies and practices that facilitate the adoption of contraception postpartum, interview findings suggested that Matlab family planning staff strongly motivate women to start contraception prior to the resumption of menses. Inconsistency was found in opinions among Matlab providers as to when during postpartum amenorrhoea contraception should be started. Though some workers felt that adoption should be delayed until three or four, or even six months postpartum, others stated that a method should be started within one and a half to two months postpartum. This suggests that attitudes and behaviours may have changed over time, and quantitative data presented in chapter four also suggested that, in recent years, Matlab providers have encouraged earlier adoption than in the past.

As well as important differences in the provision of family planning services in the two study areas, evidence of differential perceptions among women was found. Though the women in Matlab and the urban slums shared much of the same understanding, perceptions regarding personal risk of *mura* conception were somewhat different. In Matlab, women appeared more likely to perceive a personal risk despite no personal or

familial history. Interviews with both users and providers in Matlab strongly suggested that persistent motivational and educational efforts by CHWs have brought about this change in perception.

Differentials between population subgroups

In addition to the large differential in adoption during amenorrhoea between women in Matlab and Dhaka slums, analyses presented in chapter four showed significant differences between subgroups of users within the study populations.

In both Matlab and Dhaka, women with larger numbers of living children were more likely to initiate contraception during amenorrhoea than women with fewer living children. Also, in Matlab, women who did not want to have any more children or wanted to have their next child later, were found to be more likely to start use of contraception prior to menses, than those who wanted to have another child soon anyway.¹⁸⁴ In addition, Matlab women who had conceived their last child during amenorrhoea were more likely to initiate contraception prior to the resumption of menses, than those who had not had such a conception. The qualitative data presented in the chapter five illustrated that, for most women, the adoption of contraception before menses carries with it potential problems. Therefore, it is only when the risk of *mura* pregnancy and/or its associated negative implications are perceived to be great, that the preference is to adopt a method prior to menses. Some women perceive themselves to be at high risk of a *mura* pregnancy (often because of previous personal experience, familial history, or interactions with other women who have experienced such a conception). Other women do not acknowledge such a high risk of a *mura* conception, but perceive large negative implications of another pregnancy. This group includes women who wish to have no more children at all, as well as those who have experienced two or more births in quick succession and feel another birth would be highly problematic for health, social or economic reasons. Both the qualitative and quantitative findings support the hypothesis that, when the negative consequences of another pregnancy are perceived by women to be large, the potential hazards of starting contraception during postpartum amenorrhoea are outweighed. Interviews with family planning workers added further evidence to support this claim. Moreover, there was evidence to suggest that family planning providers in both Matlab and Dhaka take a woman's past reproductive history into consideration, as well as the number of children she already has, in providing motivation to initiate contraception prior to menses.¹⁸⁵

In Matlab, uneducated users were found to be more likely to adopt contraception before menses than educated women. This may reflect differential treatment by family planning workers and a differential ability among clients to withstand advice and motivation. Unfortunately, the qualitative data collected in the present study was unable to throw light on this issue, and it deserves further investigation. Over the period covered by the study, Hindu users in Matlab became more inclined to use contraception while amenorrhoeic than Muslims,

¹⁸⁴ This information was not available for the urban population.

¹⁸⁵ Research elsewhere has also found that past reproductive experience is associated with uptake of contraception in the postpartum period. In India (Mavalankar, Gray and Trivedi 1993), and the Gambia (Bledsoe, Hill, D'Alessandro *et al.* 1993) women who had had a previous short birth interval were found to be more likely to adopt contraception following birth.

and qualitative fieldwork suggested a stronger desire to avoid a *mura* conception among this group, due to traditional beliefs concerning potential negative implications of such a pregnancy for the family.

Another important difference found was that, whereas among Matlab users a longer duration of postpartum amenorrhoea was associated with a higher probability of starting use during amenorrhoea, in Dhaka there was no significant association. Qualitative findings suggested that this is in large part explained by the prevailing policies and activities of family planning organisations in Dhaka. Rigid rules restricting adoption during postpartum amenorrhoea mean that, for the majority of urban women, a longer duration of postpartum amenorrhoea does not represent a longer time in which to initiate contraception. Interviews revealed cases where women had been refused methods during amenorrhoea, indicating that, in at least some cases, the current patterns of urban service provision are hampering use of contraception.

7.2.4 Contraceptive use during breastfeeding

Despite limited quantitative data, it was possible to draw some conclusions about the adoption of contraception in relation to breastfeeding. Breastfeeding durations are long in Bangladesh and almost all women who initiate contraceptive use do so while still breastfeeding their child, at least partially. Breastfeeding is not therefore itself a barrier to the adoption of contraception. However, analyses using data from the 1986-7 Matlab cohort showed that breastfeeding status was significantly associated with the adoption of contraception and supplementation appeared to be an important trigger for the adoption of hormonal methods.

In-depth interviews revealed that both women and providers have concerns about use of hormonal contraceptives during breastfeeding. Women in both Matlab and Dhaka slums commonly believe that the pill has negative effects on breastmilk production and these concerns may lead to complete avoidance of the pill, discontinued use, and introduction of breastmilk supplements. In addition, a significant minority of women believe the injection to cause reduced breastmilk production. The potential impact of contraceptive use on breastfeeding was also found to influence contraceptive provision by family planning workers in the period following childbirth. Whereas the IUD and condom are generally regarded by providers as good methods for breastfeeding women, hormonal methods are often thought inappropriate.

Though most Matlab and Dhaka providers reported reluctance to provide the pill in the early postpartum, reports from several Matlab CHWs suggested that, rather than withholding the method, some women are encouraged to initiate supplementation of the child's diet. In the case of the injection, though the majority of Matlab providers felt that this method poses no problem for breastfeeding women, a number felt that it is best to delay adoption until supplementation. In Dhaka, several providers felt that the injection should not be used before six months postpartum, and some not before supplementation.

Supplementation is thus seen by many providers as the sign that certain methods of contraception can be safely introduced. Moreover, for providers in Matlab, supplementation is an additional trigger for promotion of contraception, since it signifies increased risk of conception. Overall, the qualitative findings clearly indicate that both local understanding and family planning programme activities strongly encourage the adoption of hormonal methods, particularly the pill, after the introduction of supplements to the child's diet. The observed

pattern of adoption in the 1986-7 Matlab cohort is therefore not surprising and one would expect to find a similar pattern in the urban slums where data available.

7.2.5 Method mix in the period following childbirth

The mix of methods adopted by women in the months following childbirth was found to differ quite considerably between the recent Matlab and USS cohorts. The injectable was the most common method used by women in Matlab and a much higher proportion of women adopted this method than in Dhaka slums. Women in Dhaka slums most commonly started to use the pill. Condom use was more common in the Dhaka slum population than in Matlab, as was female sterilisation. The IUD was more common in Matlab, though it made up a small proportion of all the adopters in both populations.

The high prevalence of injectable use has been a salient feature of Matlab for many years, distinguishing it from the national population. In 1990, 50% of all users in Matlab were using the injectable (Koenig, Rob, Khan *et al.* 1994), compared to 1.9% nationally in 1989 (Islam and Islam 1993). This difference seems to be largely explained by the routine provision of the injectable to women in their homes in Matlab, in contrast to the fixed site provision which has characterised both the GoB, and most NGO programmes, until recently. A recent study found that injectable contraceptives were not provided door-to-door in any of the USS areas and that only two NGOs provided them at satellite clinics (Fronczak, Amin and Nahar 1993). In rural areas where the injectable has been introduced door-to-door, a marked increase in adoption of this method, as well as overall contraceptive prevalence, has been observed (Smith, Huque, Koblinsky *et al.* 1986; Salway and Hossain 1991).¹⁸⁶

As well as limited access to injectables in general, a number of other factors, already highlighted above, make this method less accessible to urban women in the postpartum period, compared to those in Matlab. In in-depth interviews in Dhaka, only six urban family planning workers out of 50 stated that the injectable can be provided at any time in the postpartum period provided the woman is confirmed not to be pregnant.

The difference in condom use between Dhaka slums and Matlab is consistent with reports from family planning workers in the two areas. Though Matlab providers recognise that the condom can be used at any time, has few detrimental effects on the woman's health and does not affect breastfeeding, the limited effectiveness of the method is usually perceived to outweigh these advantages. The condom is therefore only recommended on the rare occasion that no alternative can be found. In Dhaka, however, strict rules regarding the provision of other methods to amenorrhoeic women mean that the condom is frequently the only option available. Nevertheless, evidence from interviews with clients and providers suggests that there are significant barriers to the adoption of the condom in both areas. Though many women regard the condom as a suitable method to be used in the postpartum period, its actual use depends on the cooperation of the husband. Moreover, the lack of alternatives for amenorrhoeic women in the urban context implies that women whose

¹⁸⁶ Following a pilot project in selected areas, the GoB is currently in the process of expanding door-to-door provision of injectables in the rural programme throughout the country. Findings from the national DHS 1993-4, show that the percentage of users adopting the injectable has increased in recent years, with 10% of rural users and 8% of urban users using this method (Mitra, Nawab Ali, Islam *et al.* 1994).

husbands will not use the condom may often be forced to continue without contraception until menses resumes.

Despite widespread concerns about negative effects of the pill on breastfeeding among both clients and providers, it was found to be an important postpartum method in both settings. The fact that the pill induces withdrawal bleeding if started during amenorrhoea is well known and is exploited by providers, as well as independently by women themselves. Since pills are provided by fieldworkers, and can also be obtained from pharmacies in both urban and rural areas, they are relatively easily accessible. These factors, plus widespread advertising, mean that the pill is familiar to the vast majority of women in Bangladesh, and remains the most common method in use in both urban and rural areas, accounting for around 40% of all users (Mitra, Nawab Ali, Islam *et al.* 1994).

The low use of the IUD in both the urban slums and Matlab in the period following childbirth deserves comment, particularly since it is in direct contradiction to the stated policies and activities of family planning providers in the two settings. Among both Matlab and Dhaka family planning workers, the IUD was, in general, identified as the most suitable method for women in the postpartum period. Since it is a separate entity and does not mix with the body's blood, it is believed to cause fewer side effects, and to have no adverse effects on breastmilk production. It also has the advantage of long-term action. Many providers in both areas reported that during the postpartum period, they first try to motivate women to accept the IUD but, if unsuccessful, then mention alternative methods. In Dhaka, restrictions regarding the insertion of the IUD during amenorrhoea were common, but even in Matlab, where there was greater flexibility regarding timing of insertion, the proportion of users opting for this method was found to be very low. This pattern is not peculiar to the postpartum period, or to our study populations. Data from the national DHS in 1993-4 show that only 5% of all users were using the IUD. Qualitative data collected in the present study suggest that there are two main factors contributing to the low popularity of the IUD: fear of serious and potentially life-threatening health problems; and the invasive nature of insertion. These findings are consistent with those from national studies (Kamal, Rahman and Nasrin *et al.* 1992), and it seems that current policies and practices, though potentially restrictive, are not the major determinant of low use of the IUD in the postpartum period.

7.2.6 Explaining the negative association between use of contraception and duration of postpartum amenorrhoea

A strong negative association between the duration of postpartum amenorrhoea and the use of contraception in the period following childbirth was illustrated in chapter three using quantitative data from the two study populations. Also, it was noted that the declining duration of postpartum amenorrhoea over time in Matlab has been accompanied by a significant rise in contraceptive use following birth. A number of alternative mechanisms were put forward as possible explanations for the association, and the question raised as to whether contraceptive use during amenorrhoea could itself contribute to shorter durations of postpartum amenorrhoea. Findings presented in chapters four, five and six throw some light on the possible role of each of these mechanisms, as discussed below.

1a) **Adoption of contraception causing an earlier resumption of menses via a direct physiological effect**

Initiation of contraceptive use during amenorrhoea could result directly in a shorter reported duration of amenorrhoea, either because menstrual cycling is triggered, or simply because bleeding is induced, which is reported as menses by the woman.

Findings presented in chapter four show that use of contraception during amenorrhoea was common in Matlab, and increased significantly over the period covered by the study. Moreover, a large percentage of pill and injectable users were found to adopt contraception in the month immediately preceding first menses. This pattern strongly suggests that the initiation of the contraceptive method precipitated withdrawal bleeding. Qualitative data showed that the pill is widely recognised by women and family planning providers alike as a way to restart menses during extended periods of amenorrhoea. This effect is also recognised by some women and providers for the injectable.

In order to ascertain what impact this mechanism may have had on estimates of the duration of postpartum amenorrhoea, analyses were redone excluding cases where menses was reported in the month immediately following the adoption of the pill or the injectable. Table 7.1 shows that, having excluded cases where there was the possibility of contraceptive-induced withdrawal bleeding, the decline in the duration of postpartum amenorrhoea is less steep.

Table 7.1: Life table median durations of postpartum amenorrhoea for all women and excluding cases where withdrawal bleeding may have been induced, Matlab 1978-9 to 1990-1

	All women	Excluding cases where possibility of withdrawal bleeding
1978-9	13.7 (0.2)	14.1 (0.2)
1980-1	12.8 (0.2)	13.1 (0.2)
1982-3	13.6 (0.2)	13.9 (0.2)
1984-5	12.5 (0.2)	12.9 (0.2)
1986-7	11.2 (0.2)	11.8 (0.2)
1988-9	10.1 (0.2)	10.8 (0.2)
1990-1	8.8 (0.2)	10.2 (0.2)

Notes: 1. The second set of estimates is based on datasets where women whose menses returned in the month immediately following the adoption of the pill or the injectable, were excluded.
2. Standard errors of medians given in parentheses.

Table 7.2 compares the median duration of amenorrhoea for nonusers and users of various methods of contraception in the Matlab 1990-1 cohort. Though the durations are shortest for the pill and injectable users, condom and IUD users also have significantly shorter durations of amenorrhoea than nonusers. These findings suggest that, though the precipitation of withdrawal bleeding may account for part of the negative association between contraceptive use and amenorrhoea (as well as the decline in reported durations of amenorrhoea in Matlab over time) other factors are also at work.¹⁸⁷

¹⁸⁷ As well as affecting reported durations of postpartum amenorrhoea and conclusions drawn from these, the effect of hormonal methods on menstrual cycling could have implications for birth intervals and fertility. Women who adopt the pill during amenorrhoea have been

Table 7.2: Life table median durations of postpartum amenorrhoea for nonusers and women adopting various methods of contraception following birth, Matlab 1990-1

	Median duration of postpartum amenorrhoea	
Nonusers	13.4	(0.3)
Users	8.0	(0.2)
Pill	7.4	(0.3)
Injectable	7.9	(0.2)
Condom	8.5	(1.8)
IUD	8.5	(1.0)

Note: 1. Standard errors of medians given in parentheses.

Since adoption of contraception during amenorrhoea was extremely rare among the urban slum women, mechanism 1a cannot be a plausible explanation for the strong negative association between contraceptive use and duration of amenorrhoea observed in that population.

1b) Adoption of contraception causing an earlier resumption of menses via an impact on breastfeeding patterns

As well as direct physiological effects on menstrual cycling (or withdrawal bleeding), the use of contraception could lead to changes in breastfeeding patterns, which in turn result in a shorter duration of postpartum amenorrhoea. Research has shown that the combined oral pill may act to reduce the quantity of breastmilk produced and the duration of breastfeeding (Laukaran 1987). In addition, any effect on breastfeeding is likely to depend not only on the physiological processes acting within the woman's body, but also on her own perceptions of the method and its likely effect on herself and her child. Therefore, methods that are regarded within the medical profession as having no adverse effects on breastfeeding, could, in practice, reduce breastmilk production or duration.

For this mechanism to operate, contraception would have to be initiated during postpartum amenorrhoea and one would expect the time between adoption and resumption of menses to be somewhat longer than in the case of withdrawal bleeding described above. It might also be assumed that contraceptive adoption would have to occur during breastfeeding, or more specifically before the changes in breastfeeding that produce early resumption of menses. However, since breastfeeding is within the control of the woman, it is possible that changes in breastfeeding could happen first, in anticipation or preparation for the adoption of contraception. Therefore, the temporal sequence of the events cannot firmly establish the direction of causality. As noted above, the qualitative data provided evidence that the pill is widely perceived to have negative effects on breastfeeding, and the injectable is perceived to act in a similar way among a significant minority of both users and providers. Moreover, in at least some cases, women are encouraged to initiate supplementation of the

found to return to fecundity quicker, and, when use of the method is short-lived, to conceive their next child sooner, than women who do not adopt contraception during the birth interval (Bhatia and Kim 1982, 1984; Adnan and Bakr 1983). Whether a similar effect would be expected with the injectable is unclear and is an important issue for further investigation.

child's diet before they start to use hormonal methods. These findings suggest that the use of hormonal methods may be a cause of less intensive breastfeeding and shorter durations of full breastfeeding, even if adoption takes place *after* the introduction of supplements to the child's diet. Therefore, data presented in chapter four, showing little use of hormonal methods during full breastfeeding in Matlab, cannot be taken as confirmation that contraceptive use does not have an impact on the duration of full breastfeeding, or indeed other dimensions of breastfeeding behaviour.

An analysis of durations of breastfeeding by method use was carried out to see if further light could be thrown on this issue. Table 7.3 shows the proportions of women still fully breastfeeding by time postpartum among women who adopted different methods of contraception, and those who adopted no method of contraception, within the period of follow-up in the Matlab 1986-7 cohort. The median duration of full breastfeeding was shortest among pill users, suggesting that pill use (or intention to use the pill) may reduce the duration of full breastfeeding. However, the duration of full breastfeeding was also found to be significantly shorter among users of other methods of contraception, including the condom, than among nonusers. This suggests that there are other reasons, not directly associated with the use of the contraceptive method, why women who adopt modern methods of contraception are likely to fully breastfeed for shorter durations than women who do not adopt contraception.

Table 7.3: Life table proportions of women still fully breastfeeding by time postpartum, and median duration of full breastfeeding, by contraceptive method adopted in the interval, Matlab 1986-7

	Pill	Injectable	IUD	Condom	Nonuser
Proportion of women still fully breastfeeding by:					
2 months	0.84	0.87	0.88	0.84	0.86
4 months	0.54	0.61	0.62	0.55	0.65
6 months	0.30	0.37	0.36	0.34	0.47
8 months	0.15	0.16	0.19	0.18	0.25
Median months full breastfeeding (standard error)	4.34 (0.15)	4.96 (0.10)	4.96 (0.20)	4.43 (0.41)	5.65 (0.10)

2a) A conscious substitution of contraception for breastfeeding

One possible explanation for the negative association between family planning use and breastfeeding is that women recognise the pregnancy-inhibiting effect of both and choose between the two. The conscious rejection of breastfeeding then results in shorter postpartum amenorrhoea.

However, qualitative data presented in chapter five, reveal that among Bangladeshi women, there is no widespread understanding that the way a woman feeds her newborn child will affect her risk of conceiving again. Understandings related to breastfeeding, absence of menses and renewed pregnancy, are varied and in many cases incomplete. No evidence was found to suggest that women who adopt contraception abandon breastfeeding because they no longer require its contraceptive effect. Indeed, as shown in chapter three, durations of all breastfeeding remain long, and show little sign of change either in Matlab or nationally.

2b) **An unconscious or passive substitution of contraception for breastfeeding**

Despite the fact that there was no evidence to suggest conscious choices between contraception and breastfeeding as alternative ways to avoid pregnancy, both the quantitative and qualitative data strongly indicate that an unconscious substitution mechanism operated in both study populations. As described above, the return of menses postpartum is recognised by women and providers as an indicator of increased risk of pregnancy and acts as an important stimulus for the adoption of contraception. It seems likely that the association between duration of amenorrhoea and use of contraception, seen in both Dhaka and Matlab, is largely explained by the fact that women who breastfeed less intensively resume menstruation earlier, and, recognising their risk of pregnancy, respond by adopting contraception. Data presented in chapter three showed a decline over time in the duration of full breastfeeding in Matlab. It therefore seems reasonable to conclude that the declining durations of postpartum amenorrhoea observed over time in Matlab are largely explained by changing patterns of breastfeeding, and that women have responded to the earlier resumption of menses by adopting contraception.

In this scenario, the changes in breastfeeding patterns are unconnected to the adoption of contraception by the woman. However, they may nevertheless be influenced by the promotion and use of contraception more generally in the population. Family planning is just one element in a modern, western-oriented health programme, which, as well as producing favourable changes in the health status of the population, may act to undermine traditional values and behaviours. Findings from the present study showed that family planning providers are often poorly equipped to provide sound advice and motivation for breastfeeding, as discussed further below.

In summary then, it appears that the negative association between duration of postpartum amenorrhoea and use of contraception in both study populations is largely explained by differentials in breastfeeding patterns between users and nonusers of contraception. Moreover, it seems likely that the promotion and use of contraception has contributed to these changes in some part, though further analysis of patterns of breastfeeding, and reasons for changes in behaviour would enable a better understanding of the relationship between these factors. In addition, in Matlab, hormone-induced withdrawal bleeding appears to account for part of the decline in the duration of reported postpartum amenorrhoea over time, and part of the differential between Matlab and the national population. It is clear that recent trends in natural protection against pregnancy and adoption of contraception have been opposite directions, in Matlab as well as nationally, and this raises the issue of the overall impact on birth intervals and fertility.

7.3 Implications of current patterns and recent trends in use of contraception following childbirth for birth intervals and fertility

Many discussions regarding the appropriateness of alternative postpartum family planning adoption strategies have been focused around their potential impact on birth intervals and fertility.¹⁸⁸ Advocates of the immediate

¹⁸⁸ Other factors that are important in assessing the suitability of alternative approaches to adoption of contraception following birth are discussed in the sections below.

postpartum contraception strategy argue that delayed initiation puts women at risk of unwanted pregnancy, and that early adoption will therefore have a greater impact on fertility. On the other hand, use of contraception soon after childbirth often implies 'double protection', since the amenorrhoeic woman is naturally protected against pregnancy by lactation. This is seen by some as not only a waste of resources, but as counterproductive since it may result in a quicker subsequent pregnancy than if the durations of natural and artificial protection came one after another, rather than simultaneously. This is of particular concern where contraceptive continuation rates are low, as is the case in Bangladesh. Use of contraception may last no longer than the period of natural protection and thus have no impact on the birth interval at all. These issues were explored for the study populations.

7.3.1 Double protection

Findings presented in chapter three suggest that lactational amenorrhoea provides good protection against pregnancy up to around one year postpartum. Among women whose child survived to at least two months, the estimated proportion of amenorrhoeic women who conceive by six months postpartum was around 1% in both the Matlab 1978-9 and the USS 1992-3 cohort. By one year postpartum, these figures were 4% and 6% respectively. These cumulative 12-month failure rates compare well with those that have been reported in developing countries for the pill and condom, though are higher than those for the IUD and injectable (Moreno and Goldman 1991; Ali and Cleland 1995).¹⁸⁹

The analyses presented in chapter four suggest that the level of 'double protection' was very low among the USS population, where the great majority of women waited until the resumption of menses to initiate contraceptive use. However, 'double protection' was common among the Matlab population, especially in recent cohorts. Table 7.4 presents the cumulative percentage of amenorrhoeic and all women, who adopted contraception while amenorrhoeic in the Matlab 1978-9, 1986-7 and 1990-1 cohorts, as well as the USS 1992-3 cohort.¹⁹⁰ If we consider that amenorrhoeic women are adequately protected against pregnancy up to six months postpartum, then in Matlab in 1978-9 around 6% of all women started a temporary method of contraception when there was no need. By 1986-7 this had risen to 8%, and by 1990-1 to 23%. In the USS population, just 5% of women started contraception during this time. If we consider women to be adequately protected against pregnancy during amenorrhoea up to 10 months postpartum, then in Matlab in 1990-1 as many as 33% of all women (or 43% of all users)¹⁹¹ started contraception unnecessarily, compared to just 6% of all women (or 13% of all users) in Dhaka slums in 1992-3.

¹⁸⁹ Estimates of failure rates for the pill in Bangladesh are suspiciously low. The DHS 1993-4 estimated a 12-month failure rate of just 1.7% (Mitra, Nawab Ali, and Islam 1994), far lower than reported in studies elsewhere.

¹⁹⁰ These percentages were calculated from a life table where women whose child died before two months of age were excluded. This was done to make comparisons between the estimates and the estimates of degree of natural protection against pregnancy more meaningful.

The proportion of women who are 'doubly protected' at any point in time depends on not only the proportion of women initiating contraceptive use while amenorrhoeic, but also the pattern of return to menses following the start of contraceptive use, and the pattern of contraceptive continuation. Since the adoption of hormonal contraception may affect reported durations of amenorrhoea and the great majority of users in Matlab adopt the injection or the pill, it is not possible to calculate meaningful estimates of the months of double protection experienced.

¹⁹¹ To make this figure comparable to the USS figure, only users who adopted a method within 24 months of the birth were considered.

Table 7.4: Cumulative percentage of amenorrhoeic women, and all women, who initiated contraception while amenorrhoeic in Matlab, 1978-9 to 1990-1 and Dhaka slums, 1992-3

Months postpartum	Matlab			Dhaka
	1978-9	1986-7	1990-1	1992-3
Out of amenorrhoeic women				
2	0.5	1.9	3.3	2.7
4	2.6	3.8	15.9	3.7
6	6.5	9.4	26.8	5.7
8	10.3	15.4	35.4	6.5
10	13.6	21.7	42.0	8.0
12	16.2	26.5	48.7	8.4
Out of all women				
2	0.5	1.9	3.3	2.6
4	2.6	3.6	14.8	3.3
6	5.9	8.0	23.1	4.6
8	8.9	12.3	29.0	5.0
10	11.3	16.2	33.0	5.6
12	13.0	18.8	36.7	5.8

Notes: 1. Women whose child died before two months of age excluded.
2. Temporary methods of contraception only.
3. Life table estimates. Cases were censored if pregnant, lost to follow-up, menses resumed, or sterilisation accepted.

7.3.2 Exposure to risk of pregnancy and *mura* conception

Table 7.5 shows that, over the period covered by the study, the percentage of all women who conceived during postpartum amenorrhoea in Matlab gradually declined. A year after the birth, around 5% of women in 1978-9 had conceived during postpartum amenorrhoea, compared to 2% in 1990-1. After three years, these figures were 15% and 5% respectively. The percentage of women who conceived during postpartum amenorrhoea was relatively low in the USS population in 1992-3, at just 2% by twelve months postpartum. As shown above, this was not due to high levels of contraceptive use during postpartum amenorrhoea. Rather, it is explained by the fact that exposure to risk of conception during postpartum amenorrhoea was shorter in this population since menses resumed earlier on average than in Matlab.

Table 7.5: Cumulative percentage of all women conceiving during amenorrhoea by time postpartum in Matlab, 1978-9 to 1990-1 and Dhaka slums, 1992-3

Months postpartum	Matlab			USS
	1978-9	1986-7	1990-1	1992-3
6	3.2	2.0	1.4	0.8
12	5.0 (0.3)	3.3 (0.2)	2.2 (0.2)	2.1 (0.5)
18	9.3	5.5	3.6	-
24	13.2 (0.5)	7.6 (0.4)	4.5 (0.3)	-
30	15.0	8.3	4.7	-
36	15.3	8.4	4.8	-

Notes: 1. All women, no cases excluded. Datasets adjusted for delayed pregnancy reporting.
 2. Life table estimates, cases censored if lost to follow-up, or menses resumed. No censoring for adoption of contraception.
 3. Standard errors in parentheses.
 4. Numbers too small to produce estimates beyond 12 months for the USS population.

7.3.3 Birth intervals

As well as exposure to risk of conception during postpartum amenorrhoea, delay in the uptake of contraception following the resumption of menses may result in unwanted pregnancies. Data from both Matlab and Dhaka slums showed a large concentration of adoption immediately after the return of menses. However, it was also noted that large numbers of women initiated contraception in the month following the resumption of menses, and even after two months, suggesting that not all women who intend to delay their next pregnancy respond immediately. In addition, there was evidence to suggest that delayed response to the resumption of menses may be currently more common in Dhaka slums than in Matlab. To what extent such delays lead to unwanted conception cannot be ascertained without information on desire for pregnancy. However, qualitative interviews revealed cases where women had conceived again soon after the resumption of menses despite intentions to adopt a method of contraception.

Table 7.6 presents the cumulative percentage of all women conceiving by time postpartum in the Matlab cohorts of 1978-9, 1986-7 and 1990-1, and also the USS cohort of 1992-3. Despite the decline in duration of natural protection against pregnancy and the apparent large degree of overlap between use of contraception and lactational amenorrhoea, the time between birth and subsequent conception gradually extended over time in Matlab. The median duration of time to next conception increased from 28 months in 1978-9 to over 40 months in 1986-7, and even longer in 1990-1.¹⁹² Moreover, the percentage of women conceiving after a very short time also fell. In 1978-9, 4% of women conceived within six months of their last birth, compared to 3% in 1986-7, and 2% in 1990-1.¹⁹³ The figures for the USS population indicate that time to next conception was substantially shorter than in even the Matlab 1978-9 cohort. By six months after the birth, 7% of women had conceived again and by one year, 15%. Since qualitative data revealed the universal desire for spacing between children of at least two to three years, this suggests that substantial numbers of women are conceiving

¹⁹² The median could not be calculated exactly for the 1990-1 cohort since there was only 36 months of follow-up information available.

¹⁹³ A recent analysis of DSS data confirms that birth intervals have lengthened substantially in recent years in Matlab. In 1986, the mean birth interval was around 40 months and by 1992 this figure had increased to 48 months (unpublished findings, DSS 1996).

again earlier than they would wish. The short intervals between birth and conception are explained by the combination of relatively short durations of postpartum amenorrhoea and low levels of contraceptive uptake.

Table 7.6: Cumulative percentage of all women conceiving by time postpartum in Matlab, 1978-9 to 1990-1 and Dhaka slums, 1992-3

Months postpartum	Matlab			Dhaka
	1978-9	1986-7	1990-1	1992-3
3	1.5	0.9	0.7	3.4
6	4.3	3.0	2.0	7.2
9	6.7	5.2	3.3	9.9
12	9.7 (0.4)	7.8 (0.4)	5.0 (0.3)	15.2 (1.3)
15	15.1	11.5	7.9	-
18	23.2	16.0	11.0	-
21	31.3	21.4	13.4	-
24	39.5 (0.7)	26.8 (0.6)	16.2 (0.5)	-
30	54.3	37.3	21.0	-
36	62.8 (0.7)	44.6 (0.7)	24.5 (0.6)	-

Notes: 1. All women, no cases excluded. Datasets adjusted for delayed pregnancy reporting.
 2. Life table estimates, cases censored if lost to follow-up. No censoring for adoption of contraception.
 3. Standard errors in parentheses.
 4. Numbers too small to produce estimates beyond 12 months for the USS population.

7.3.4 Further analysis of fertility implications of alternative adoption patterns

It is clear that the time to subsequent pregnancy has increased substantially in recent years in Matlab and that intervals between births are longer than in the Dhaka slum setting. It might therefore be concluded that the pattern of adoption of contraception in Matlab is more appropriate for Bangladesh than that found in the Dhaka slum population. However, a number of factors need to be taken into consideration, and further analysis is warranted before such conclusions can be drawn.

Firstly, it is of interest to consider whether increases in birth intervals in Matlab would have been even greater had the pattern of adoption of contraception following birth been different, that is, had there been less overlap between contraceptive use and natural protection against pregnancy. Cross-national comparisons suggest that fertility declines in Matlab have not been as great as in other settings with similar levels of contraceptive use (Akbar, Phillips and Koenig 1988). This discrepancy may in part be explained by redundant use of contraception during the period of natural protection against pregnancy.

It is also important to consider whether the patterns of postpartum adoption shown in Matlab would produce similar outcomes if reproduced nationally. A number of factors suggest that outcomes might not necessarily be the same. Firstly, the mix of methods in use nationally is different, with much lower use of the injectable. Secondly, continuation rates are much lower nationally than in Matlab. Finally, the pattern of natural protection against pregnancy differs somewhat in the national population. Large differentials between the urban and the rural population, and evidence for a downward trend in the duration of postpartum amenorrhoea also need to be taken into consideration.

Simulation modelling would be useful for exploring these issues. Though this is beyond the scope of the present thesis, the results produced will be useful for future analyses of this type. In addition, findings suggest a number of ways in which improvements could be made to simulation models previously employed by other researchers.

Firstly, results presented in chapter three suggest that the duration of postpartum amenorrhoea is longer, and the protection against pregnancy during amenorrhoea higher, for Bangladeshi women than in other populations of intensively breastfeeding women. It is therefore suggested that conclusions based on data from western populations are unlikely to be applicable to the Bangladeshi context. In addition, evidence was found for important differences between age groups of women, with younger women being at greater risk of pregnancy during amenorrhoea than older women. Again this suggests that caution is needed in extrapolating results from one population to another.¹⁹⁴

Secondly, results presented in chapter four suggest that continuation rates may vary by timing of adoption. Women who adopted contraception earlier in the postpartum period tended to use contraception longer than those who adopted it later. Also, women who adopted the injectable during amenorrhoea were found to continue use of the method longer than those who waited until after menses. This may be explained by the experience of fewer side effects during amenorrhoea, something that was reported by many CHWs in Matlab. This deserves further investigation, and is clearly an important variable to be considered in simulation models.

Thirdly, findings from the present study suggest that use of contraception may itself affect the duration of natural protection against pregnancy. Previous research has found that pill use during amenorrhoea stimulates menstrual cycling, and that fecundity returns more quickly than in the absence of contraception (Bhatia and Kim 1984; Bhatia, Becker and Kim 1987; Adnan and Bakr 1983). Though this issue could not be explored in detail the present study, findings indicate that use of both the pill and the injectable may trigger withdrawal bleeding.

Moreover, there was some evidence to suggest that use of hormonal contraception may lead to earlier supplementation of the child's diet, than if contraception were not used. There are therefore two mechanisms by which the adoption of a hormonal method may lead to a shorter period of natural protection than if contraception were not initiated. Women who adopt a hormonal method but discontinue use shortly afterwards may not have the same degree of natural protection against pregnancy to fall back on, as if they have never used a method of contraception. Simulation models should incorporate this potentially important factor.

Finally, simulation studies that have been carried out to date have failed to consider the likelihood that women will comply with any particular adoption schedule. Clearly, the overall demographic impact of any strategy

¹⁹⁴ A further factor which deserves attention is the extent to which a woman's reproductive experience repeats itself, and whether this can be used to target women who are at particular risk of pregnancy soon after birth.

will depend not only on the resulting birth intervals among those who comply, but also the percentage of all women who opt to follow the strategy. The percentage of women who follow any particular strategy will in turn depend on both client preferences and patterns of service delivery. An understanding of the current patterns and likely future changes in these dimensions, is important background information to simulation work of this type.

Furthermore, in assessing the appropriateness of a specific strategy for a particular setting, comparisons should be drawn with the current, and possible future, patterns of use, rather than hypothetical patterns of use which are irrelevant to the context. For example, many discussions of LAM suggest that it involves encouraging women to delay the adoption of contraception following a birth. In fact, as illustrated in chapter four, for the majority of Bangladeshi women it would entail initiating contraception earlier than at present. The following section considers how findings from the present study suggest ways in which the provision of contraceptive services following birth can be improved in the context of Bangladesh.

7.4 Improving the provision of family planning services in the period following childbirth

Findings from both the quantitative and qualitative work provide strong evidence to suggest that family planning programme policies and activities are a key influence on the contraceptive behaviour of women following childbirth in Bangladesh. In addition, they highlight several important issues, some of which have relevance to family planning programmes in general, while others are more specifically related to the provision of services in the period after birth. In the discussion that follows, recommendations are made where possible. However, in other cases, issues are merely identified, with the intention of stimulating further discussion.

7.4.1 Timing of contraceptive adoption and incorporation of lactational amenorrhoea

Is an immediate postpartum strategy appropriate to Bangladesh?

Despite some inconsistency, findings from the present study indicate that a strategy of immediate postpartum contraceptive provision is common among GoB and NGO providers in Dhaka city. In addition, a number of providers in Matlab were found to favour such an approach. Since government workers in the rural areas of Bangladesh receive the same training as those who were interviewed in the present study in Dhaka, it seems likely that an immediate postpartum strategy of adoption may also be currently promoted in the rural GoB programme.

Qualitative and quantitative findings from the present study, as well as previous research, suggest that such an approach is inappropriate in a number of important ways. Firstly, the majority of women in Bangladesh breastfeed and are naturally protected against pregnancy for an extended period of time. Analyses presented in chapter three suggest that the average duration of postpartum amenorrhoea is longer and the protection against pregnancy higher during amenorrhoea, for Bangladeshi women than in many other populations. Secondly, qualitative data clearly showed that most women are reluctant to initiate contraception soon after birth. Women are aware of the diminished risk of pregnancy during postpartum amenorrhoea, and are also unwilling to use strong, modern methods of contraception at a time when they feel weak and vulnerable, and have concerns about their child's breastfeeding and health. Moreover, USS data clearly illustrated that the strategy

of promoting contraception immediately after birth has been largely unsuccessful, with very few women opting for such early adoption. Thirdly, since the majority of women deliver at home with the assistance of traditional birth attendants or relatives, contact between women and family planning services is no more likely at the time of delivery or within the 40-45 day postpartum period, than at other times. Finally, continuation rates remain low, so that early adoption will have a limited impact on birth intervals since use is unlikely to extend beyond the period of natural protection against pregnancy.¹⁹⁵

How long can postpartum amenorrhoea be relied upon for protection against pregnancy?

As already emphasised, decisions regarding the appropriate timing of contraceptive promotion and provision must be based on a number of considerations, not merely the contraceptive potential of breastfeeding. However, the present study has confirmed that lactational amenorrhoea provides a high degree of protection against pregnancy for Bangladeshi women. Analysis of data from Matlab and the USS, revealed that less than 2% of amenorrhoeic women conceived by six months postpartum,¹⁹⁶ a finding that is consistent with previous research elsewhere. Further analysis of Matlab data showed that the risks of pregnancy were lower among women who fully breastfed, but even among women who partially breastfed from birth onwards, the cumulative risk of conception during amenorrhoea by six months postpartum was estimated to be less than 2%. The Matlab data also suggested that the monthly probability of conception during amenorrhoea remained roughly constant for the first ten months postpartum, and then began to rise steadily. The cumulative probability of conception during amenorrhoea by twelve months postpartum was around 4% in Matlab and around 6% in the USS population, figures that are similar to failure rates for the pill and condom in developing countries, but higher than those for the IUD and injectable (Moreno and Goldman 1991; Ali and Cleland 1995). It would seem appropriate to conclude that breastfeeding Bangladeshi women can rely on the contraceptive protection afforded by lactational amenorrhoea for around nine to ten months postpartum, but that thereafter they should be encouraged to adopt another method of contraception.

How should lactational amenorrhoea be incorporated into postpartum family planning strategies?

Lactational protection against pregnancy continues to account for a large proportion of total fertility limitation in Bangladesh. However, evidence from the present study strongly suggests that, at present in Bangladesh, family planning programme activities do not promote breastfeeding for its contraceptive qualities, and in many cases actually undermine breastfeeding practices that are beneficial to birth spacing (as well as child health). Many family planning workers have poor knowledge of the contraceptive potential of breastfeeding, and others see lactational amenorrhoea as a barrier to their task of providing contraceptives, rather than an extra tool that can be employed by women against unwanted pregnancy. In addition, evidence from Matlab suggests that contraceptive methods are being promoted earlier in the postpartum period than in the past, and in Dhaka, despite their limited success, most family planning workers attempt to provide methods immediately after birth. It is therefore clear that the exploitation of the contraceptive effect of breastfeeding currently

¹⁹⁵ It should be pointed out that, in cases where women do not breastfeed at all, or where menses resumes at 40-45 days, contraception is needed immediately if another pregnancy is to be avoided.

¹⁹⁶ This figure was calculated having excluded women whose child died within two months of birth.

comes about in spite of, rather than because of, family planning programme activities.¹⁹⁷ This is in sharp contrast to the vision of the 'Lactational Amenorrhoea Method' (LAM) promoted by some. The approach that is being field tested in various parts of the world consists of an intensive strategy where LAM is offered alongside other contraceptive methods in the postpartum period, with clear guidelines and screening for eligibility, counselling in the use of the method, and provision of educational materials (Beck Wade, Sevilla, and Labbok 1994; Perez, Labbok and Queenan 1992).

Though such intensive efforts may not be possible in the Bangladeshi context, there are a number of reasons why it would seem appropriate that family planning providers take a more active role in promoting breastfeeding for its contraceptive effect. Firstly, although women commonly understand the chance of pregnancy to be low during postpartum amenorrhoea, few recognise a connection between breastfeeding patterns and risk of conception.¹⁹⁸ Moreover, there is evidence to suggest that breastfeeding patterns are changing in both urban and rural Bangladesh and lactational protection against pregnancy is on the decline. Therefore, though at present Bangladeshi women benefit from the contraceptive protection of breastfeeding, without appropriate support this natural barrier to conception may gradually wane. Coupled with a reluctance to adopt modern methods of contraception soon after birth, this is likely to lead to an increase in unwanted births and to shorter birth intervals.

In order for lactational amenorrhoea to be explicitly incorporated into the range of methods promoted to women in the postpartum period, the knowledge of, and trust in, the contraceptive potential of breastfeeding among family planning workers needs to be increased. In Dhaka, many providers were poorly informed about the contraceptive effect of breastfeeding, and in both Matlab and Dhaka, even among those who were aware of the relationship, confusion and uncertainty were common. Providers also questioned the ability of women to breastfeed intensively enough to gain protection against pregnancy. These concerns are important and must be addressed through training and clear guidelines, if workers are to provide sound and consistent advice to breastfeeding women. In addition to training, incentive structures that focus purely on the prevalence of modern method use, need to be reviewed.

As well as being poorly informed and lacking trust in the contraceptive potential of breastfeeding, evidence from the present study and earlier research in urban and rural Bangladesh indicates that family planning workers are often poorly equipped to provide support and advice to women who face any kind of problem breastfeeding, and frequently encourage the introduction of supplements in the early postpartum period (Munro, Akhtar, Begum *et al.* 1990; Zeitlyn and Rowshan 1994; Salway, Nahar and Ishaque 1996b; Perry, Begum, Begum *et al.* 1996).¹⁹⁹

¹⁹⁷ This is particularly true in the Dhaka slum setting where there is very little overlap between contraceptive use and amenorrhoea, but virtually no active promotion of breastfeeding for its contraceptive effect.

¹⁹⁸ Findings in other settings have also shown that awareness of low risk of pregnancy during amenorrhoea does not necessarily imply an appreciation of the association between breastfeeding, amenorrhoea and conception (Van de Walle and Van de Walle 1991).

¹⁹⁹ Similar patterns have been found elsewhere. DaVanzo and Starbird (1991) found that having a family planning clinic nearby was associated with less breastfeeding in Peninsular Malaysia. They found that over the period 1961 to 1975, despite an increase in use of contraception, there was no change in the percentage of births occurring after very short birth intervals, because of changes in breastfeeding patterns that lead to reduced natural protection against pregnancy.

Though the wisdom of directing scarce resources to promoting breastfeeding as a contraceptive has been questioned (Bracher 1993), such steps are likely to have positive effects on both child health and fertility.²⁰⁰ In the context of Bangladesh, where many women currently prefer to delay the adoption of modern contraception until menses, such an approach would appear to be sensitive to the needs of those the family planning programme is seeking to serve.

Should methods be withheld during amenorrhoea if a woman wants to start use?

It has been suggested above that the early promotion of contraception is, in general, inappropriate to the Bangladeshi context. However, whether contraception should be provided to women who are naturally protected against pregnancy if they themselves wish to initiate use, is an issue that is rarely addressed. In some discussions, it is suggested that LAM is a suitable option for those who do not want to use a modern method of contraception (Millman 1993), and in others that it should be offered as one choice among many, to all mothers (Kennedy, Visness, Bathija *et al.* 1993). However, in a population with long durations of postpartum amenorrhoea and poor continuation rates, it could be argued that LAM should be actively promoted, and contraception withheld, for all women.

The present study found that many providers in Matlab were aware that early adoption may have little or no impact if the woman discontinues use soon after initiation, and had developed a variety of strategies for dealing with this dilemma. Though some providers stated that methods must be given to women who request them, others reported delaying provision when they felt women were naturally protected anyway. In contrast, in Dhaka, the majority of providers reported promoting contraceptives immediately postpartum despite the possibility of discontinuation. It is not advocated here that methods should necessarily be withheld from women who wish to start contraception, but that programme policies regarding the incorporation of lactational amenorrhoea need to consider this issue and to provide clear guidelines for family planning staff.

Should guidelines be different for different women and different methods?

It is often argued that immediate postpartum adoption of contraception is favourable since the risk of pregnancy is not zero, and it is impossible to predict which women will conceive. Findings from the present study suggest that certain characteristics may be associated with higher risks of pregnancy, and therefore that these factors could be used to guide the provision of contraception postpartum.

Younger women were shown to have significantly higher risks of pregnancy during postpartum amenorrhoea than older women. Another factor that deserves attention is the previous reproductive history of the woman. An analysis by Ford (1992) has shown that the durations of successive periods of postpartum amenorrhoea are correlated. In the present study, both clients and providers were found to take previous reproductive experience into consideration in decisions regarding the adoption of contraception following birth. However,

²⁰⁰ Findings from studies where women were actively using breastfeeding as a method of child spacing (rather than purely for child feeding) suggest that breastfeeding practices may be enhanced, with women being more likely to breastfeed fully (Perez, Labbok and Queenan 1992, Kocturk 1988).

inconsistency was found between providers, and there were no clear guidelines as to whether and how such factors as a previous conception prior to menses, or a previous very short or very long birth interval, should affect the timing of promotion and provision of methods. Further research is needed to ascertain whether clear and effective guidelines could be developed.

In addition to a woman's risk of pregnancy, her likely duration of use should perhaps be taken into consideration when contraception is promoted. Continuation rates were found to vary between methods, and also between subgroups of women. It also seems likely that certain women will tend to consistently use methods longer than others, perhaps because of fewer side effects. Matlab family planning staff reported taking factors like these into consideration when giving advice and motivation to women, though there appeared to be no fixed rules.

7.4.2 Removal of barriers to the adoption of contraception during amenorrhoea

Though postpartum amenorrhoea provides good protection against pregnancy for the first six to ten months postpartum, thereafter the risk of conception increases sharply. Nevertheless, the majority of women in Bangladesh wait until menses resumes before initiating contraception and may therefore put themselves at risk of unwanted pregnancy. The study findings suggest ways of overcoming the main barriers to the adoption of contraception during postpartum amenorrhoea.

Encouraging women to adopt contraception while still amenorrhoeic

A reluctance to adopt contraception during postpartum amenorrhoea was found among women in both study populations. Nevertheless, findings from Matlab suggest that women will adopt contraception during amenorrhoea, given the right kind of motivation. The high prevalence of use before menses in Matlab seems to have come about primarily due to changes in perceptions of personal risk of pregnancy, which in turn have resulted from strong educational and motivational efforts by the Matlab providers. In addition, though women in Matlab retain concerns about use of contraception during amenorrhoea, they are largely familiar with the fact that methods can be started at this time. In contrast, many Dhaka slum women are poorly informed about the use of contraception during amenorrhoea, as are many urban providers. This suggests that, in order to encourage adoption of contraception before the end of menses, family planning programmes need to focus their efforts on increasing awareness of the increasing risk of *mura* pregnancy as time passes following the birth. In addition, efforts should be made to allay concerns regarding the initiation of contraceptive use while amenorrhoeic.

Use of the oral pill to induce withdrawal bleeding

Many women want their menses to come 'clear' before starting a method of contraception, in particular the injectable, which may cause an extended period of amenorrhoea. Oral pills were found to be employed by family planning workers and women themselves in Matlab and Dhaka to induce bleeding prior to the adoption of other forms of contraception. This procedure appears to be a good solution. However, providers are not explicitly instructed to do this, and inconsistency and confusion were apparent. Again, there is a need for consistent guidelines so that family planning providers can use this technique with confidence and clients receive uniform information.

Correcting misinformation and inappropriate policy

As well as reluctance among clients, findings from Dhaka indicate that family planning programme policy and providers' behaviour create barriers to the uptake of contraception during amenorrhoea. Despite the fact that postpartum amenorrhoea is not a recognised contraindication to the adoption of any modern method of contraception (Hatcher, Stewart, Trussel *et al.* 1990), many urban providers in the present study believed that certain methods of contraception cannot be started during amenorrhoea, even if the woman is confirmed not to be pregnant. In some cases, this appeared to be because individual providers were misinformed. However, it was clear that many family planning organisations have strict rules prohibiting the provision of certain methods at this time. Family planning programme policy regarding the provision of the IUD, pill and injectable during postpartum amenorrhoea requires careful review, and standardised training is needed for all providers.

Pregnancy testing in the postpartum period

Recommendations that amenorrhoeic women should delay adoption of contraception for several months after birth must consider the need for pregnancy testing for women requesting contraception at this time. Findings from the present study indicate that this is an important barrier to method provision during the postpartum period in Dhaka. Many family planning staff were frightened to provide contraceptives to amenorrhoeic women in case of an existing pregnancy, and strict organisational rules restricting this practice were found. Knodel and Chayovan (1989) found a similar picture in Thailand. Currently in Dhaka, pelvic examinations may be performed prior to an IUD insertion. However, this procedure cannot detect very early pregnancy and is not commonly performed for women choosing other methods. Urine pregnancy tests are not routinely provided by NGO or GoB family planning outlets and are very expensive at private medical clinics. The provision of so-called 'testing pills' appears to be in quite widespread use, though inconsistency is common and careful review of this procedure is needed. In many cases, the lack of an affordable way to test for pregnancy means that only the condom is offered to amenorrhoeic women beyond the 40–45 day period.

In Matlab, concern about an existing pregnancy was found to be a much less significant barrier to the provision of contraception to amenorrhoeic women. Though testing pills are sometimes used, and women may be referred for a pelvic examination, by far the most common approach seems to be to question the woman about signs of pregnancy. Two themes of understanding appear to give providers confidence in this approach. Firstly, they believe the risk of pregnancy during amenorrhoea to be low anyway, and secondly they appear to trust the reports of the women they serve; something that several Dhaka providers explicitly denied. To what extent this approach is sound public health policy and could be replicated elsewhere, deserves careful consideration.

7.4.3 Increasing method choice

While in theory a range of contraceptive methods is available in Bangladesh, the present findings suggested that, for many women in the postpartum period, there is little choice. As discussed above, this is in part due to concerns regarding existing pregnancy, as well as misinformed policies regarding the provision of methods

during postpartum amenorrhoea. In addition, a number of other factors appear to reduce the options open to women in the period following birth.

Negative attitudes towards the use of the injectable during breastfeeding were found among both women and providers in Matlab and Dhaka. Evidence was found to suggest that some providers delay the provision of this method, and that some clients avoid this method, because of potential negative effects on breastfeeding. Efforts are clearly needed to correct the sources of misinformation and support use of the injectable as well as successful breastfeeding.

In addition to correcting misconceptions among staff about when different methods can be initiated, explicit attention must be given to ways of improving the acceptability of the IUD and condom. These methods are particularly important in the period following childbirth since they have no adverse effects on breastfeeding. Many family planning workers interviewed in Matlab and Dhaka reported difficulty in encouraging use of these methods and this was borne out by the quantitative data which showed low levels of use. Providers in Matlab and Dhaka reported promoting the IUD in favour of other methods. However, important barriers to the adoption of the IUD remain to be addressed, including fear of serious health effects, and embarrassment regarding the method of insertion.

In the case of the condom, negative attitudes among some family planning staff, particularly in Matlab, appear to contribute to low levels of use. Some providers were found to regard the condom as ineffective and to rarely promote it. Though the failure rate for the condom is higher than other modern methods, it is often an appropriate method in the period following childbirth; for example when a woman is breastfeeding, or for women who do not wish to use other methods prior to menses. Moreover, qualitative data from the present study suggest that many women perceive this method to be preferable during the period following birth. The continued neglect of men in family planning service provision in Bangladesh is another factor contributing to low condom use that deserves attention.

Increased emphasis should also be given to postpartum sterilisation options for both men and women, methods that were rarely mentioned by staff during the interviews, and which make up a small percentage of adopters in the period following birth.

7.4.4 Facilitating prompt uptake of contraception when menses resumes

Appropriate messages and motivation

Women commonly recognise that risk of pregnancy increases when menses resumes after birth. However, some women may mistake menses very soon after birth for the bleeding accompanying childbirth, and therefore not believe it necessary to adopt a method immediately. In addition, some women may be reluctant to initiate a method of contraception as soon as menses resumes if they feel weak or unhealthy after the birth. Family planning providers should be aware of these potential barriers to swift adoption and seek ways to overcome them. In both situations, temporary use of the condom could be promoted; in the first case until the woman menstruates again and is convinced of the risk of conception, and in the second case until the woman feels strong enough to use another method. Also, educational messages should reinforce the traditional

understanding that menses does indicate risk of pregnancy, even if it comes soon after birth, and that conception is possible even after the very first menses

Increasing accessibility of family planning methods

Adoption of contraception may be delayed beyond the resumption of menses because of inaccessibility of methods. As illustrated in chapter six, very few women in urban or rural areas of Bangladesh deliver in a clinic or hospital and postpartum care is extremely rare. Moreover, visits by family planning fieldworkers, though supposed to occur every two months, may be irregular. Goodburn, Chowdhury, Gazi *et al.* (1994) found that at 12 weeks postpartum few of the women who had resumed menstruation in their rural population had initiated contraception, and suggest that 'there is considerable scope for community education to improve awareness of the choices available at this time as well as increased provision of services' (p64). Various approaches to increasing accessibility of contraceptive services and reducing dependency on home visits, are being tried in Bangladesh. In addition, a number of strategies might help to improve accessibility of methods to women following childbirth.

Fieldworker schedules could be adjusted to ensure that women receive a visit within the first few months of birth. During this visit, a range of services could be provided for the mother and child, including comprehensive advice regarding the use of contraception following childbirth. Fieldworkers could also provide methods, such as pills or condoms, to women in advance, so that they can be started as soon as menses resumes. The provision of family planning services to women who attend health facilities for other reasons, such as EPI, also deserves attention. As well as NGO and GoB health and family planning services, pharmacies may be an important source of information and supply of contraceptives, especially in urban areas (Jamil, Baqui and Paljor 1993). Efforts should be made to ensure that these providers are also well-informed, and that the messages they give complement, rather than contradict, those provided by family planning workers.

7.4.5 Improving continuation rates

As discussed in chapter four, contraceptive continuation rates remain low in Bangladesh, and therefore complicate decisions regarding the appropriate timing of adoption of contraception following childbirth.

Studies in Bangladesh indicate that by far the most important reasons for discontinuation are side effects and health concerns (Mitra, Larson, Foo *et al.* 1990).²⁰¹ Recent studies in Bangladesh suggest that appropriate counselling regarding possible side effects prior to use, and treatment of problems as they arise, are rarely provided by family planning workers (Perry, Begum, Begum *et al.* 1996; MCH-FP Extension Project, Urban 1995). Moreover, an increasing body of literature suggests that improvements to these dimensions of service quality does not lead to significant improvements in contraceptive continuation in developing country settings (Huezo, Malhotra, Sloggett *et al.* 1993; Mari Bhat and Halli 1995; Cleland and Ali 1994).

²⁰¹ USS data analysed in the present study showed that of women who adopted a method following birth and discontinued use of the method within the period of follow-up, 56% reported side effects or health concerns as their reason for stopping use.

However, experience from Matlab shows that continuation rates can be improved,²⁰² and that the ready availability of alternative methods for switching is an important factor in encouraging longer use of contraception (Salway and Hossain 1991). The need to switch methods may be particularly common in the postpartum period, since women's menstrual status, as well as their breastfeeding behaviour and sexual activity, are likely to alter over time. In addition, women's health concerns, for both themselves and their child, are significant in the postpartum period, and the side effects experienced may be more serious than at other times. Family planning programmes must seek ways of ensuring that alternatives are readily available to women who experience problems with the method of contraception initially chosen.

7.4.6 Development of a consistent and comprehensive policy for family planning service provision to women following childbirth in Bangladesh

The present study has identified both inconsistency and confusion among family planning providers in the way contraceptive services are provided to women following childbirth in Bangladesh. Significant differences in approach were highlighted between providers in Matlab and Dhaka, as well as inconsistencies within these two groups. Review of both GoB and NGO training materials and guidelines, revealed inconsistent information and significant gaps in coverage of important issues. Consistent and comprehensive policy must be developed in this area so that providers have clear guidelines to follow, and clients receive uniform information and services.

As the preceding discussion has illustrated, such a policy should cover, not only the issue of when postpartum women should be encouraged to adopt contraception, but a broader range of pertinent issues including: the location, timing and frequency of contacts with women during pregnancy and after delivery; education, motivation and counselling prior to adoption of contraception; promotion and protection of breastfeeding; and strategies for improving continuation rates. In developing such a policy, a number of general principles to be borne in mind are suggested by the findings of the present study.

Flexibility

Not all clients are the same and different individuals will have different needs. Any policy of postpartum contraceptive provision will need a certain degree of flexibility to ensure that the needs of certain groups of women are not overlooked (Winikoff and Mensch 1991). For example, the current immediate postpartum strategies are inadequate for women who do not adopt a method at 40-45 days, but nevertheless feel a need for contraception before their menses returns. However, the issue of flexibility is a complex one, especially in the current climate of confusion and inconsistency. In practice, clients may rely heavily on service providers for advice and family planning workers need to have clear guidelines, which they both understand and trust, and which can be implemented in practice with ease.

²⁰² In the present study, 20% of women who started contraception following birth had discontinued use by 12 months after adoption in Matlab, compared to 40% in the USS population.

Integration

More so than at any other time, provision of family planning services to women following childbirth should be integrated with maternal and child health care. Findings from the present study clearly demonstrate that women are primarily concerned with their own health and that of their newly delivered infant in the months following childbirth. These concerns have an important influence over women's priorities and behaviour in the postpartum period, and must be recognised if family planning services are to effectively meet the needs of this group. The promotion and protection of breastfeeding for its positive effects on child health and birth spacing should be a central role of family planning providers. In addition, greater attention should be given to the health and well-being of the recently delivered mother. Weakness and illness of a woman has far-reaching implications for herself, her child and the rest of her family. It also acts a serious barrier to the adoption of modern methods of contraception. Studies in other settings have also found that women are interested in infant care, breastfeeding, and their own health in the period following birth, and that the provision of family planning information and services alone will not satisfy the needs of most women (Winikoff, Mensch and Measham 1990; Bulut and Turan 1995).

As well as family planning providers playing a stronger role in the promotion of maternal and child health, there may be opportunities for other health workers to provide family planning advice and services in the period after birth. The Expanded Programme of Immunisation would seem to offer the opportunity of contact with large numbers of women who have recently given birth. Ways of incorporating family planning into the services currently provided by EPI workers, as well as other health workers, deserves more attention. Experience in other settings has shown that integrating postpartum health services can increase the impact of programmes (Townsend and Tolbert 1991).

Upgrading the basic knowledge and competence of family planning providers

The development of a consistent and comprehensive policy will not in itself be sufficient to ensure high quality postpartum family planning services. Findings from the present study revealed the need to improve the basic knowledge and competence of the family planning providers in this area. In this regard, a number of recommendations can be made regarding the training of family planning staff.

Findings from the present study strongly suggest that training is insufficient, and that consequently, many staff are poorly equipped to provide clients with accurate information and sound advice. The length of time devoted to training of NGO staff, particularly fieldworkers, should be reviewed.

Regarding training curricula, the apparent poor understanding of basic reproductive anatomy and physiology deserves attention. In addition, new training modules should be designed that deal specifically with the topic of family planning services for women following childbirth. In these modules, issues of breastfeeding, postpartum health of the mother and child, risk of renewed pregnancy and use of contraceptive methods, should all be dealt with together and their interrelationships made explicit.

Attention should be given to ensuring that different cadres of staff receive consistent information and guidelines during training. A review of training materials revealed many inconsistencies as well as incomplete

information. Particular attention should be given to ensuring that managers and supervisors who are often concerned primarily with record keeping, nevertheless have the same basic level of knowledge as fieldworkers.

7.5 Limitations of the study and topics for future research

In conclusion, a number of limitations of the present investigation should be highlighted and areas for future research identified.

The study populations provided the opportunity to explore contraception following childbirth in two diverse settings. Comparisons between the two aided our understanding of the issues of interest and enabled recommendations to be made regarding the provision of family planning services in Bangladesh. However, there are a number of reasons why caution is warranted in extrapolating some of the findings. Firstly, no information was available for rural GoB family planning workers. Though these staff receive the same training as the urban GoB workers, their working environment may mean differences in knowledge, attitudes and behaviour. It would therefore be useful to replicate interviews and group discussions of the type used in Matlab, with GoB workers in other rural areas.

The USS data provided information on slum women resident in five *thana* of Dhaka city. As discussed in chapter two, high rates of loss to follow-up are likely to have biased the results to some extent. Evidence suggests that the more mobile households tend to have lower socio-economic status than those which are more stable, and the results may not therefore be representative of all slum dwellers. It should also be remembered that the USS was restricted to slum settlements, meaning that the non-slum poor, as well as the better-off sections of the urban population, were not considered in the current study. This means that the study population cannot be considered to represent either the urban population of Dhaka as a whole, or the urban poor population. Poor households living outside slums, or moving frequently between slum settlements, are likely to have different needs and require unique approaches to health and family planning service provision. They therefore deserve special attention by researchers and programme planners. It would also be of value to explore the study issues related to service provision in other cities throughout the country, since Dhaka may not be representative of smaller urban centres.

As the study findings have clearly illustrated, the Matlab population has unique features, and the patterns of contraceptive use cannot be extrapolated to the rest of the rural population. Nevertheless, the findings give an insight into possible future trends for the national population, and indicate how family planning programme activities can influence behaviour. Comparisons with the USS population, as well as national level data, have allowed certain conclusions to be drawn. However, information on postpartum contraceptive use gathered through the national DHS 1993-4 will provide a useful complement to the findings presented here.

Limitations of the data available, as well as of time, meant that some of the relationships of interest could not be explored in detail, and the conclusions drawn were therefore somewhat tentative. In particular, the small sample size restricted the investigation of some of the issues in the USS population. Given their growing

numbers and unique needs, the urban poor deserve to be considered in any future investigations into postpartum family planning.

Breastfeeding data were not available for the most recent Matlab cohorts, or for the USS cohort. Moreover, the data that were available were insufficiently detailed to address key questions adequately. In particular, it would be of great interest to describe in detail how breastfeeding patterns have changed in Matlab over the past 10 years, and what role the promotion and uptake of contraception has played in these changes. Similarly, the relationships between use of contraception and breastfeeding deserve further investigation elsewhere in Bangladesh.

In order to further investigate the fertility implications of alternative postpartum adoption strategies in the Bangladeshi context, simulation analysis should be carried out. The present investigation has generated a great deal of information that provides important background to this type of analysis, and it is an important priority for future work. An exploration of the nature and severity of side effects experienced by amenorrhoeic and menstruating adopters of contraception would also be useful, since it would help to explain the observed differentials in continuation rates.

In addition, a number of related issues that could not be covered in the present study deserve investigation, including: the cost effectiveness of alternative strategies of service provision; the effectiveness of changes to training and service guidelines; the role of menstrual regulation in postpartum family planning strategies; and the appropriate timing of postpartum sterilisation. Furthermore, since there is evidence to suggest that natural protection against pregnancy is declining and patterns of contraceptive use are changing, there is a need for ongoing monitoring of key variables of interest. As the parameters change, so too will the relative appropriateness of alternative approaches to postpartum family planning service provision in Bangladesh.

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Appendix one: Background characteristics of the RKS and USS study cohorts

	RKS	1978-9		1980-1		1982-3		1984-5	
		N	%	N	%	N	%	N	%
Living children									
1-2		2264	40.7	2973	48.3	3017	48.3	2732	48.8
3-4		1511	27.2	1689	27.5	1845	29.6	1707	30.5
5+		1212	21.8	1229	20.0	1196	19.2	1063	19.0
missing		571	10.3	261	4.2	182	2.9	91	1.6
Age (years)									
<20		1267	22.8	1125	18.3	937	15.0	576	10.3
20-24		1605	28.9	2023	32.9	2182	35.0	2060	36.8
25-29		1149	20.7	1311	21.3	1434	23.0	1417	25.3
30+		1536	27.6	1693	27.5	1687	27.0	1540	27.5
missing		1	0.0	0	0.0	0	0.0	0	0.0
Religion									
Muslim		4518	81.3	5029	81.7	5118	82.0	4594	82.1
Hindu		1035	18.6	1117	18.2	1117	17.9	994	17.8
other		0	0.0	0	0.0	0	0.0	0	0.0
missing		5	0.1	6	0.1	5	0.1	5	0.1
Education									
none		3665	65.9	3952	64.2	3982	63.8	3503	62.6
some		1730	31.1	2038	33.1	2123	34.0	1939	34.7
missing		163	2.9	162	2.6	135	2.2	151	2.7
Household area (sq feet)									
<300		3547	63.8	3822	62.1	3833	61.4	3384	60.5
300+		1889	34.0	2204	35.8	2312	37.1	2068	37.0
missing		122	2.2	126	2.1	95	1.5	141	2.5
Total		5558		6152		6240		5593	

	RKS		1986-7		1988-9		1990-1		USS		1992-3	
	N	%	N	%	N	%	N	%	N	%	N	%
Living children												
1-2	3305	55.3	3568	58.1	3078	56.1			625	54.3		
3-4	1736	29.0	1722	28.1	1708	31.2			354	30.8		
5+	816	13.7	817	13.3	694	12.7			172	14.9		
missing	118	2.0	29	0.5	3	0.0			0	0.0		
Age (years)												
<20	588	9.8	588	9.6	566	10.3			250	21.7		
20-24	2137	35.8	2167	35.3	1834	33.4			389	33.8		
25-29	1696	28.4	1880	30.6	1693	30.9			263	22.8		
30+	1554	26.0	1501	24.5	1390	25.4			249	21.6		
missing	0	0.0	0	0.0	0	0.0			0	0.0		
Religion												
Muslim	4943	82.7	5180	84.4	4587	83.7			1096	95.2		
Hindu	1002	16.8	934	15.2	864	15.8			55	4.8		
other	1	0.0	0	0.0	1	0.0			0	0.0		
missing	29	0.5	22	0.4	31	0.6			0	0.0		
Education												
none	3523	59.0	3416	55.7	2929	53.4			921	80.0		
some	2063	34.5	2385	38.9	2225	40.6			230	20.0		
missing	389	6.5	335	5.5	329	6.0			0	0.0		
Household area (sq feet)												
<300	4245	71.0	4589	74.8	4393	80.1			-			
300+	1155	19.3	1129	18.4	1017	18.5			-			
missing	575	9.6	418	6.8	73	1.3			-			
Asset score												
0	-		-		-				290	25.2		
1	-		-		-				424	36.8		
2	-		-		-				252	21.9		
3	-		-		-				184	16.0		
missing	-		-		-				1	0.1		
Total			5975		6136		5483				1151	

Appendix two: Urban Surveillance System postpartum questionnaire

URBAN HEALTH EXTENSION PROJECT URBAN SURVEILLANCE SYSTEM

POSTPARTUM QUESTIONNAIRE

Interviewer #: _____

Date: _____

Stratum #: _____

Cluster #: _____

Struct #: _____

Household #: _____

HHH_Name: _____

Resp Name: _____ Resp S_No: _____ Resp P_No: _____

Eligible:

Women reporting live births in Round 6,7,8 or 9 for whom updated information is needed

Respondent: The woman herself.

Note:

We want to know the timing of return of menses, and the timing of starting contraception after the last live birth.

Remember that menses cannot be reported less than 42 days after a birth, but that some women may start to use contraception before this time. If a woman reports menses soon after birth probe to make sure this was menses and not just spotting.

Initials _____

Before going to the field: check the photocopy of the first page of the questionnaire used in the last round. This will tell you the respondent's ID and the number of the question you should begin from this time.

QUESTIONS	CODING CATEGORIES	SKIP TO
Questions 1 to 8 for women absent last time, and women who had neither started menses nor contraception.		
1. Has your menses returned after the last birth?	Yes.....1 No.....2	Q3
2. How long after your last birth did your menses return? *(or ask how long ago she had her first menses and convert to time after birth)	_____ months + _____ days	
3. Since your last birth have you used any method of contraception <u>at any time</u> ?	Yes.....1 No.....2	END
4. Check above answer Q1: Has the woman's menses returned?	Yes.....1 No.....2	Q6
5. You said that since your last birth you used contraception. Did you start to use it before or after your first menses?	Before 1st menses.....1 After 1st menses.....2	Q7
6. How long after your last birth did you <u>first</u> start to use contraception? *(or ask when or how long ago she started to use and convert to time after birth)	_____ months + _____ days	Q8
7. How long after your <u>first menses</u> did you <u>first</u> start to use contraception? *(or ask when or how long ago she started to use and convert to time after first menses)	_____ months + _____ days	
8. After your last birth what was the <u>first method</u> of contraception you adopted?	oral pill..... 01 injection..... 02 IUD..... 03 condom..... 04 diaphragm/foam/jelly..... 05 female sterilisation..... 06 male sterilisation..... 07 periodic abstinence..... 08 withdrawal..... 09 herbal/massage..... 10 implant..... 11 other (specify)..... 77	END

Questions 9 to 11 for women who had started menses in the last round but had not started to use contraception		
9. Since your last birth have you used any method of contraception <u>at any time</u> ?	Yes.....1 No.....2	END
10. How long after your first menses did you <u>1st start</u> to use contraception? *(or ask when or how long ago she first started to use and convert to time since first menses)	_____ months + _____ days	
11. After your last birth what was the <u>first method</u> of contraception you adopted?	oral pill..... 01 injection..... 02 IUD..... 03 condom..... 04 diaphragm/foam/jelly..... 05 female sterilisation..... 06 male sterilisation..... 07 periodic abstinence..... 08 withdrawal..... 09 herbal/massage..... 10 implant..... 11 other (specify)..... 77	END
Questions 12 and 13 for women who had started to use contraception last round but had not started menses.		
12. Has your menses returned since your last birth?	Yes.....1 No.....2	END
13. How long after your last birth did your menses return for the <u>first time</u> ? *(Or ask when or how long ago she had her <u>first menses</u> and convert to time after birth)	_____ months + _____ days	END

Appendix three: Qualitative research instruments used with family planning users

Postpartum adoption of contraception

In-depth interviews with community women

Interviewer's guideline: English version

Introduction

Thank you for allowing us to come and talk to you today. We would like to ask you some questions about the time after a birth, about looking after your child and about family planning. We want to chat with you and to hear about your own experience. We want to know what you think, and to hear your own opinions. We have been talking to lots of women in the neighbourhood and are doing this work for ICDDR, B. If you do not want to answer any of the questions then you are free to refuse, but it will be very useful for us if you try to answer as much as you can. Please don't feel shy and don't worry that you are not giving the right answers. Different people have different ideas and experience and we want to hear what you yourself think about these things.

Since it is difficult to remember and write down everything that you say we would like to tape the interview. Only we will listen to the tape, it will not be shared with anyone else. Do you have any objection to this?

Background

name

age

home bari

where born

religion

education

employment outside the home, now, in the past

when married, number of marriages

husband's education

husband's employment

Complete Birth History:

number of children ever born, boys and girls, ages, alive and dead

Youngest child

name, age, sex

Behaviours/beliefs regarding the period following the birth

Where was your youngest child born? In which room? In which place? on the bed, on the floor

Who delivered the child?

Do you know this person? How do you know this person?

Who called her?

Woman's behaviour following the birth

On the day of the birth, after the baby was born, what did you do first? Why?
and after that? Why?

(get a detailed account of the hours following the birth)

Where did you spend the days following the birth?

What did you do during the days following the birth of the child? Why was this?

Are there any rules that a woman has to follow at this time? Why?

Is there any problem/danger if she does not do this? What kind of problem/danger?

Who is in danger?

Following the birth how soon did you come out of your house?

Why not before this time?

What did you do during this time?

Was there anything you could not do at this time? Why not?

Did anyone tell you that you could not do that at that time?

And how many days after the birth did you first go outside of the bari? Why not before this?

Mother's food following the birth

After the baby was born, what was the first thing you took (to eat or drink)? Why was this taken?

After this what did you take?

In the days after the birth how did you eat?

Did you avoid any foods? Why?

Did you take any special foods? Why?

For how long did you do this?

Mother's blood loss

During the birth how much blood did you lose?

Did the bleeding last for a long time?

After the baby was born how long did your bleeding last?

What is this blood called? Is this blood like menstrual blood? How does it look and smell?

How did you feel at this time?

What did you do to clean the blood / wash the blood?

Was anyone with you at that time? Why? Why not?

Was your husband with you? Why? why not?

Mother's body/health following the birth

Following the birth how did you feel?

Were you ill at all? Did you feel weak? Did you have any pain?

Why did this happen?

Following a birth what happened to your body in the next few days?

What changes did you feel in your body? Why did this happen?

How long after the birth did your breastmilk start to come?

What did this feel like?

How did you know that the milk was coming?

How is the milk made inside the body?

What happens to the mother so that the milk starts to come?

Handling of the newborn child

Following the birth who took the baby?

What did they do to the child first? and after that?

Who cut the umbilical cord? How was it cut?

Why were these things done?

Where was the child put to lie?

(get a detailed account of what was done to the child and why after the birth)

Dangers/risks after the birth for mother and child

After the birth, in the days and weeks following the birth what is important, what is needed:

1) by the new child

2) by the mother

After a birth are the mother and child at risk of becoming ill? Why is this? What may happen?

Following the birth who is more vulnerable / at risk, the child or the mother? Why?

In what way are they vulnerable?

For how long does this vulnerability last?

What must be done to protect the child?

What must be done to protect the mother?

40/45 days postpartum period

(** see if this is spontaneously mentioned as an important period after the birth **)

Following the birth how many days later did you start to do the normal household work?

Why did you not do it before this time?

During this time after the birth are there certain things that a woman must do?

During this time after the birth are there certain things that a woman must **not** do?

What happens to the woman's body during this time?

What changes occur during this 40 day period to the woman's body?

How did you feel during this time?

Staying with husband / Sexual abstinence

How soon after the birth did you start to meet your husband again?

Did this cause any problems : for you? for your child? for your husband?

What kind? Why?

Where did you sleep before you started to meet your husband again?

If a woman stays with her husband before this time then can it cause problems / is it dangerous?

for you? for your child? for your husband?

What kind of problems can there be for mother/child/husband? Why?

Is there a rule that a woman can not stay with her husband before this time? Why?

Is this because she is impure (*napak*)?

What problems can this cause?

Is it because the woman is weak?

What problems can this cause?

Is this because of danger to the **child**, or to the **mother**, or to the **husband**?

Did you do anything before starting to meet your husband again?

* ritual cleaning * medicine

Did you discuss with him before starting to stay together again? What did you discuss?

Postpartum amenorrhoea

Own Experience

After the birth did your menses start to come / or was it stopped for some time?

How long was it stopped for?

Has your menses started again now?

If not, when do you expect your menses to begin again?

What about in the past, after your other births, did your menses stop then?

Did it last for a longer or shorter time in the past?

What do you call this, when menses is stopped? Is there any name for this time?

Reasons for PPA

Why do you think your menses stopped like this?

What is the cause of it?

Did you worry about this? Were you frightened about this?

Have you talked to anyone about this?

Who have you talked to? What did they say?

Did you discuss this with your husband? What did he say?

Is this normal, does it happen to all women?

How long does this usually last?

Is it the same for all women?

When a woman's menses is stopped, what happens to the woman's body inside?

Does the woman still have blood in her body?

If so, then why does it not flow?

Does the blood get stored up in the body during this time?

Is this dangerous? Why? What may happen?

Is this painful? Why?

How do you / did you feel during amenorrhoea?

Do you like this time, when your menses is stopped?

Is it a good thing or a bad thing? Why?

Is it a difficult time? Why?

Is this a time when the woman is '*napak*'? why? why not?

Do you / Did you have any problems during this time of amenorrhoea?

Do you / Did you have any pain? If so, did you do anything to stop this pain? What did you do?

Is it dangerous for a woman if her menses is stopped like this? Why?

What problems can it cause?

Would you like the period of amenorrhoea to be longer or shorter? Why?

What duration of amenorrhoea is good?

Can anything be done to make the period of amenorrhoea longer or shorter?

Behaviour Patterns

During this time when your menses was stopped did you continue to:

* work * move outside the house, outside bari * prayer / religious rituals

Did you change your behaviour in any way during the period of amenorrhoea?

Are there any rules that a woman must observe during this time that her menses is stopped?

If this is not done, what can be the problem/danger?

Food During Amenorrhoea

What kind of food should a woman eat during this time of amenorrhoea?

Is there anything that she should not eat at this time? why?

Is there anything that is helpful at this time? why?

Breastfeeding and amenorrhoea

Is there any relationship between breastfeeding and amenorrhoea?

What is the relationship, how does this happen?

Does amenorrhoea last as long as a woman is breastfeeding?

Does amenorrhoea last if a woman feeds other foods to the child as well as breastmilk?

Is the period of amenorrhoea the same for all women?

Why is it longer for some women?

Why is it shorter for some women?

What makes the difference?

**** If no relationship is recognised between breastfeeding and amenorrhoea then probe:**

How is breastmilk made in the body?

Is breastmilk made from the body's blood?

If so, then is this why menses does not come?

First Menses after amenorrhoea

So after the period of amenorrhoea, when did your menses come back again?

What was this first menses like?

How did you feel at this time?

Was the blood flow the same as usual, or less or more?

Did you have any pain or discomfort at this time?

physical

emotional/mental

Were you happy that your menses had returned? Why? Why not?

When the first menses comes after amenorrhoea, is this a time that the woman is '*napak*'?

After the period of amenorrhoea, then why does menses start again?

What happens to the woman's body to make the menses come again?

What is the difference in a woman's body between when she is in amenorrhoea and when she is having her menses?

Does the menses come back at the same time for everyone?

Why is there this difference?

Does this depend on the woman's: * health * nutrition * behaviour * age ?

Why? In what way does it depend on these things?

What did you do when your first menses happened?

Did you discuss this with anyone?

Did you discuss this with your husband? What did they say?

What is it called when the first menses comes back after amenorrhoea?

Is there any difference between this first menses and the ones that follow?

Do you think that this is a special time?

Should anything be done at the time of this first menses?

What? Why?

Return to Fertility / risk of pregnancy again

After a child has been born can a woman get pregnant again straightaway/immediately?

Is there any time after the birth when a woman cannot get pregnant?

How long does this time last?

Why can she not get pregnant?

Is there anything about her **bodily state** that means she can not get pregnant?

How is a child formed when the husband and wife come together? What does the woman and what does the **man** contribute to the child?

Does a woman contribute 'seeds' or 'eggs' to the child?

Does a woman contribute blood to the child?

Does the woman have this seeds/blood immediately after a child is born? Why? Why not?

Pregnancy During Amenorrhoea

We have talked about the time when a woman's menses is stopped, can a woman get pregnant at that time?

If Yes: How is this possible?

What is this type of pregnancy called?

Is this type of pregnancy common?

If No: Why is this not possible?

Is the chance of pregnancy more when menses is stopped, or when the menses is coming each month?

Have you ever had a pregnancy that happened without menses returning in between?

How did you feel about this?

Did this cause any problems for you or your family?

Do you think this caused any difficulty for you?

Did this cause any difficulty for the child in the lap?

Did this cause any difficulty for the child in the womb?

What problems?

Is there any difference between a pregnancy without menses and a pregnancy after menses?

* for the mother * for the child

What kind of women get pregnant during amenorrhoea?

Why do some women get pregnant without menses and some do not?

What does this depend on? * health * nutrition * age * hereditary / 'bongsho'

Is it possible to say who will have this kind of pregnancy and who will not?

Birth interval

How long is the gap between two births usually?

Does the interval between births differ from woman to woman? Why is this?

What does this depend on?

Do some women get pregnant again quickly? Why?

Do some women have long intervals between their births? Why is this?

What is the difference between women who have long intervals and those who have short? * health

* nutrition * age * behaviour etc.

How long were the intervals between your births in the past?

**** Make sure you have the birth history: first to second child, second to third child etc.**

Did you think these intervals were too short or too long or just right?

Why do you think the intervals were so short / too long?

Did this cause any problems?

Who did it cause problems for? probe: mother, younger child, older child, family in general

What kind of problems? probe: financial, health, nutrition, caring

What do you think is the best interval between two births?

Why is this gap good?

If the gap is shorter is there any problem?

If the gap is longer is there any problem?

Why? What kind of problem?

What do you think if a woman has children quickly one after another?

What do other people say if a woman has children quickly one after another?

Breastfeeding and pregnancy

Do you think there is any relationship between breastfeeding and getting pregnant again?

Does breastfeeding delay the next pregnancy / make the chance of pregnancy less?

If yes: How does this happen?

What happens to the woman's body during breastfeeding that means a child can not come?

Does this protection happen even if the women feeds other things to her child as well as breastmilk?

How long does breastfeeding delay pregnancy?

If No: If a child dies very young then does the next pregnancy come quickly?

Why is this?

Is this because the child does not breastfeed?

Monthly Menses

Is your monthly menses coming regularly now?

What do you call this?

Are there any other names for this time?

Why does this monthly bleeding happen?

What happens to the woman's body when the monthly bleeding comes?

How do you feel during monthly menses?

Do you have discomfort during this time? * physical * mental

Is this monthly bleeding a good thing? Is it needed?

Can there be any problem if it does not come? What problems?

Is there any treatment for this?

Do you prefer to have your monthly menses, or to have your menses stopped like after the birth? Why?

Is the monthly menses a time of 'napak'? Why?

How do you behave during this time?

* work * movement outside of the house, outside of the bari * prayer * relations with husband

Contraceptive use

We have talked a lot about the time following a birth, now I would like to talk about contraception, and the use of contraception following a birth.

When did you start to use contraception for the first time?

Why did you start to use it?

Which method did you choose?

Have you used any other methods of contraception?

Which methods have you used and when?

**** Get a complete history of the methods used and when.**

Contraception since the last birth

Have you used any method of contraception since your last baby was born?

What was the first method you used after your youngest baby was born?

Why did you choose this method?

Are you still using this first method?

Have you used any other method since then?

How long after your last baby was born did you start to use this first method of contraception?

Why did you start to use contraception at this time?

How did you know you needed to start contraception at this time?

Why didn't you start before this time?

Why didn't you start after this time?

Did you start to use contraception before or after your menses had returned?

For those who started after menses: Why did you wait until your menses returned before you started the method?

For those who started before menses: Why didn't you wait until your menses returned before you started the method?

For those who started before menses:

Did you have any test to see if you were pregnant before starting the method?

If Yes: What kind of test?

Why did you do this?

Where did you do this?

How much money did this cost you?

If No: Why did you not have any kind of test?

Contraception before or after menses: all women

For those who have not yet mentioned using contraception before menses:

Have you ever used contraception before your menses returned in the past?

When?

Which method did you use?

All women:

Do you think it is better to start to use contraception before or after the menses returns?

Why? What are the reasons why it is better?

Can the use of contraception during amenorrhoea cause any problems?

Can there be any problem **for the women** if she uses contraception before menses returns?

Which methods may cause problems?

What problems may be caused? * affects menses * side effects * get details on problems

Can there be any problem for **the young child** if she uses contraception before menses returns?

Which methods cause problems?

What problems are caused?

Which methods of contraception **can be used** before menses returns?

Which methods of contraception **can not be used** before menses returns? Why not?

probe for other methods: IUD, pill, Injection, condom etc.

Which is the best method for use during amenorrhoea?

Can there be any problems if a woman waits until her menses returns before she starts to use contraception?

What kind of problems?

Do you know other women, maybe friends or relatives, who started contraception **before** the return of menses?

Who?

Do you know other women, maybe friends or relatives, who started contraception **after** the return of menses?

Who?

After a birth do most women start to use contraception before or after their menses returns? Why?

If a woman is in amenorrhoea does she **need** to use contraception if she wants to avoid pregnancy? Why?

When is the best time to start contraception after the birth?

Can there be any problems if a woman starts a method of contraception at **40-45** days after birth?

* for the mother * for the child

Can there be any problems if a woman starts a method of contraception after just a few days, say **4 or 5 days**, after birth?

* for the mother * for the child

Do you think that starting contraception will cause more disturbance to menses, if it is started before the return of menses, or after the return of menses?

What kind of disturbance? irregular, no menses, lots of blood

Why?

Have you seen this yourself

Have you heard this from others, who?

Where did you learn these things?

Who told you these things about contraception?

Who do you talk to about these things?

Contraception and breastfeeding

Have you ever used contraception while breastfeeding?

Which method did you use?

Did it cause any problem to your child?

What kind of problem? : quantity, quality, child illness, etc.

How/why did it cause this problem?

Do other methods of contraception cause problems to **the child** if the mother uses while breastfeeding?

Which methods?

What kinds of problems are caused? : quantity, quality, child illness

How/why are these problems caused?

probe methods: condom, IUD, pill, injection

Can it cause any problem to **the mother** if a mother uses contraception while breastfeeding?

Which methods?

What kinds of problems are caused?

How do you know about these things? Have you seen these things or just heard them?

Who has experienced these problems?

Decision-making / chain of events

So you say that you started to use *********, ********* days/months after your baby was born:

Did you decide **when** you would start contraception, **before the baby was born**?

Did you decide which **method** you would use **before the baby was born**?

Did you talk to anyone **before the birth** about using contraception?

Who? Where? What did they say?

(husband, relatives, friends, family planning workers)

After the baby was born did you discuss using contraception with anyone else? Who with?

What advice did they give you?

husband / people who delivered the baby 'medical', **dai**, nurse / relatives / neighbours / door-to-door
fp worker / doctor / fp clinic staff

Did anyone tell you that you should start a method **before your menses returns**?

Who? What reasons did they give you? Why did they say this?

Did anyone tell you that you should start a method **at 40-45 days after the birth**?

Who? What reasons did they give you?

Did anyone tell you that you should **wait until after menses** to start contraception?

Who? What reasons did they give you?

Did you have any difficulty in getting the contraceptives?

Did anyone refuse to give you a method of contraception?

Did you get **the method that you wanted**?

Did you get the contraceptive **at the time that you wanted**?

If problems encountered: what problems did you have getting the method that you wanted / at the time that you wanted?

Reasons for use of contraception: stopping and spacing

Do you want to have any more children in the future?

What about your husband, or your other relatives do you think they want you to have more children?

If yes: when would you like to have the next child?

If no: Did you use contraception between births in the past to delay the next child?

Women who have used or are now using contraception for spacing:

Why are you / did you use contraception between births?

What is the reason for spacing births?

Probe for reasons: child health, mother's health, financial

Women who have never used contraception for spacing:

Why have you never used contraception in between births?

Is there any benefit from using contraception between births?

What kind of benefit? Why no benefit?

Advice to other women

If a woman has had a baby and says she does not want to get pregnant again for several years then what advice would you give her?

When should she start to use contraception after birth? Why?

Should she wait until her menses comes back before starting contraception? Why? Why not?

Which method would you recommend? Why?

Postpartum adoption of contraception

In-depth interviews with community women

Recorder's form

Date:

Time started:

Time finished:

Background information

Name:

ID:

Postpartum fp status :

Timing: 1/2 months >2 months & before. menses after menses

Method:

Age:

Education:

Religion:

Current employment:

Previous employment:

Years since first marriage: Number of marriages: Years in this marriage:

Husband's education:

Husband's occupation:

SES:

Complete pregnancy history (most recent pregnancy first):

Include: live births, still births, miscarriages, and abortions. Living and dead children.

Outcome lb,sb,mis,ab	Year	Name (for lb)	Sex (lb)	Alive/dead (for lb)	Age now / age at death (for lb)

Contraceptive use history (first method used —> most recent method used)

Method	When started use (in relation to pregnancy history)	Months of use	Reason for drop	Comments (during ppa, mths after birth)

Comments about interview

Date:.....

Location:.....

Time started:.....

Time finished:.....

Presence of other people

Interruptions

Responsiveness

Confusion

Areas where information lacking and why

Additional comments

Appendix four: Qualitative research instruments used with family planning providers

Postpartum adoption of contraception

Semi-structured interview with family planning personnel

Interviewer's copy: English version

Background information

Name

Designation

Block

How old are you?

How long have you been working in this position?

Have you worked elsewhere in health & family planning before this job? How long did you work there?

How much training have you received in family planning?

initial training

refresher/follow-up

Do you yourself work door-to-door or in a clinic or both?

What are your own current activities in the field of family planning?

What other activities do you do as part of your job?

Attitudes/ knowledge of postpartum family planning

Now I would like to talk to you about family planning following the birth of a child. Please tell me what you think and what you have learnt from your experience in this field. I am not asking for any 'right answers'. We will be talking to several people about this and we are interested to know what different people think, so please give me your own opinion.

Reasons for amenorrhoea

After a woman has a child she is often amenorrhoeic for several weeks or months.

Why do you think this happens?

How long does a woman's menses usually stay stopped?

Is this the same for all women?

Why? Why not?

What does the duration of amenorrhoea depend on?

Relationship between breastfeeding and amenorrhoea

Do you think there is any relationship between breastfeeding and amenorrhoea?

If Yes: How do you think breastfeeding and amenorrhoea are related?

If No: Is the duration of amenorrhoea the same for women who breastfeed and for those who do not?

Breastfeeding and pregnancy

Is there any relationship between a woman breastfeeding and the chance of a woman becoming pregnant again?

Do you think that breastfeeding reduces the chance/possibility of becoming pregnant again?

If Yes:

How does this relationship work?

Why does breastfeeding protect against pregnancy?

Does breastfeeding prevent a pregnancy completely, or only reduce the chances?

Does this protection exist for all women, or only for some women?

If only some women, why only some?

How long does breastfeeding protect against pregnancy?

Does it protect against pregnancy if the mother feeds other foods to the child as well as breastmilk, (that is if the baby is not exclusively breastfed)?

Why? Why not?

If No: If a child dies young then does the women conceive again quickly?

Why? Why not?

Breastfeeding and use of contraception

If a woman is breastfeeding her child can she use contraception if she wants to?

If Yes:

At what age of the child can she start to use contraception?

Can she start to use contraception immediately after the child has been born?

If a breastfeeding woman uses contraception can this cause her child any problem?

If Yes:

What kind of problems can be caused/ how can this cause her child problems?

Probe for different methods: pill, injection, IUD, condom etc.

If a breastfeeding woman uses contraception can this cause any problem to herself?

If Yes: What kind of problems can this cause/ how can it cause problems?

If a woman is breastfeeding her child what is the most suitable method of contraception for her to use?

Are there any methods which should not be used during breastfeeding? Why?

Postpartum amenorrhoea and the need for contraception

If a woman is amenorrhoeic following a birth, and she does not want to have another child, does she need to use contraception?

If Yes:

Why does she need to use contraception?

How long after the birth does she need to start contraception?

Do all women need to start a method of contraception, or only some?

If only some, which women need to start? Why do they need to start?

If No:

Why does she not need to use contraception?

You said there is no need to use a method of contraception during PPA, but if a woman is amenorrhoeic following a birth can she start to use contraception **if she wants to**?

If a woman is amenorrhoeic following a birth what is the most suitable method of contraception for her to use?

If an amenorrhoeic woman uses contraception can this cause any problems to herself?

If Yes:

What kinds of problems can this cause and how?

probe: what about different methods of contraception?

pill, injection, IUD, condom, sterilisation

Can a method of contraception be adopted at **any time during amenorrhoea**?

Probe: Immediately after birth, after 6 weeks, after several months

Why? Why not?

Are there any methods which can not be used during PPA?

If Yes: Which ones? Why?

Timing of contraception adoption

When a woman has had a child and does not want to get pregnant again, how long after the birth do you think she should start to use contraception?

Why should she start at this time?

Why shouldn't she start **before** this time?

Why shouldn't she start **after** this time?

Should she start after or before her menses returns? Why?

Is this the same for all methods?

If No: What is the rule for each method?

Probe: pill, IUD, injection, condom, sterilisation

Is the same for all women?

If No: What does this depend on?

**** For respondents who say that a woman should start after menses**

If a woman has not yet resumed her menstruation following a birth but **she says herself** that she wants to use contraception what do you do?

Can she take any method that she wants to?

If a woman starts to use a method of contraception while in amenorrhoea does she need to check she is not pregnant first?

If Yes: How is this done?

Is this needed for all methods? Which ones?

Do all women do this? Why? Why not?

If No: Why not needed?

Community women's behaviour

Following a birth when do the women in your area/served by your organisation usually start to use contraception?

Do any women start before the return of their menses? Why? Why not?

Do women in the community get pregnant again before the return of their menses?

What is this type of pregnancy called?

Is this common or not?

Do you think that the number of these pregnancies is more than in the past or less or just the same?

Why? What is the reason for this change?

Does this type of pregnancy cause any problems?

What problems? For who?

for mother / for youngest child/ child in the womb / for older child/ child in the lap: for breastfeeding / for father / for family in general

Usually how long a gap do women have between two children in the area where you work?

Is this gap the same for all women? **If No:** Why does it vary?

Is the gap the same for all women who do not use fp? **If No:** Why does it vary? what does it depend on?

Nowadays are children born more closely together than in the past, or further apart, or the same?

What is the reason for the change?

How long a gap between 2 children is best? Why?

If the gap is smaller than this does it cause problems?

If Yes: What kind of problems?

Problems for who?

Probe:

for mother / for youngest child / for older child / for father / for family in general

If the gap is longer than this does it cause problems?

If Yes: What kind of problems?

Problems for who?

What do people think if a woman has children quickly one after another?

Is there any name for this?

How do people look on this?

Postpartum adoption of contraception

Focus group discussion with community health workers

Facilitator's question route: English version

Introduction

First I'd like to welcome everyone and thank you all for coming here today.

Today we are going to have a group discussion about our work in the area of family planning. We want everyone to participate. We should all listen to what each other has to say and only one person should speak at a time. This is not a test and the things you say will not be shared with anyone else outside the group. You are the ones who work with the community everyday and we regard you as the experts. We want to hear your opinions and to learn from your experience of working in the field of family planning.

I will ask you all some questions to start the conversation, but this is an open discussion and we want you all to contribute as much as possible. We will record our conversation because it will be too difficult for us to remember everything. Only those of us here in the group will listen to the tape later.

Now, I want each person in our group to say your name, and how long you have been working with ICDDR, B. I also want you to mention one thing that you like about your work, and one thing that you don't like about it.

(Facilitator to begin)

I will begin: my name is, I have been working here with ICDDR, B for, one thing I like about my work is, and one thing I don't like about my work is

Now I am going to describe to you some situations that you might come across in your work and we will discuss how you would deal with them.

(1) Sumana is just 17 years old and gave birth to her first child, a son, 2 months ago. Both the boy and the mother are healthy. Since the child was born Sumana has not had her menses. She is worried about the fact that her monthly menses has not started and feels embarrassed to discuss this with anyone.

What would you say to Sumana?

Is her situation normal? Is there any danger if menses is stopped?

Do many women worry when their menses stops after having a baby?

Why do women experience amenorrhoea after a birth?

How would you explain this to Sumana?

When can Sumana expect her menses to return?

Is this the same for all women? why? why not?

What does the duration of amenorrhoea depend on?

Is it better if the menses starts again soon, or if it stays stopped for a long time?

**** If breastfeeding is not spontaneously mentioned:**

Is there any relationship between breastfeeding and amenorrhoea?

How do you think breastfeeding and amenorrhoea are related?

(2) When you visit Sumana the next month, her child is now 3 months old, and she is still experiencing postpartum amenorrhoea. She says that she now understands why her menses is stopped but that she is frightened that she will get pregnant again since her husband has returned from the city to stay with her.

What would you say to her?

Do you need to ask Sumana any more questions/ get any more information from her before you can give her advice?

Is there a chance that Sumana can get pregnant?

Is she very likely to get pregnant or not very likely?

Why?

Why not?

**** If breastfeeding is not mentioned spontaneously**

Will Sumana's breastfeeding reduce the chance/possibility of her becoming pregnant again?

If yes, how does this relationship work? Why does breastfeeding protect against pregnancy?

Does this protection exist for all women, or only for some women?

If only some women, why only some?

How long will breastfeeding protect Sumana against pregnancy?

Will it protect against pregnancy if she starts to feed other foods to the child as well as breastmilk, (that is if the baby is not exclusively breastfed)?

Why? why not?

Would you advise Sumana to start to use a method of contraception?

Why? Why not?

For those who say they would advise her to start contraception:

Which method of contraception would you suggest?

Why?

Can other methods be used? Which ones can be started? Why?

Which methods can not be started? Why not?

Can she delay the adoption of contraception if she wants to?

For how long can she delay the adoption of contraception?

Is this the same for all women?

For those who say they would not advise her to start now:

When would you advise her to start a method of contraception?

(3) Anowara is 30 years old and has 3 sons. She is now pregnant with her fourth child. This baby was conceived without her menses returning, that is it was a 'mura' pregnancy. She did not realise she was pregnant until a few weeks ago and expects to have the baby after 3 months. She has decided that she does not want to have any more children and that she will take the oral pill as soon as she has had the baby.

What advice would you give to Anowara?

Is Anowara's plan to take the pill a good one?

Why? Why not?

Does she need to start contraception immediately after the birth?

why? why not?

If not, when does she need to start?

Is she likely to have another 'mura' pregnancy?

Do 'mura' pregnancies tend to occur in certain families and not in others?

How soon after a birth can a 'mura' pregnancy happen?

Is the oral pill a good method for her to take immediately after the birth?

Why? Why not?

Which other methods would be better for her?

Why?

Which other methods should not be taken soon after a birth?

Why?

(4) Rabeya has 3 children and her youngest daughter is 10 months old. She is breastfeeding her daughter and also giving suji. Rabeya has not yet had her menses following the last birth. Rabeya wants to have another child, but not for another 3 or 4 years, since she wants her daughter to start school first. Rabeya is not using any method of contraception and says that she does not need any because her children come later naturally.

Would you advise Rabeya to start a method of contraception?

For those who say that they would advise her to start contraception:

Should she start before her menses comes or after it returns?

For those who say that they would not advise her to start contraception:

Why would you not advise her to start contraception?

For those who say that they would advise her to start before her menses comes:

Which methods could she use before her menses comes?

Which methods can not be taken before her menses comes?

Why? Why not?

If she starts a method before her menses comes, can there be any problems?

What kind of problems?

Can there be any problems for herself? For her child?

Have you ever seen or heard of women using contraception before the start of menses?

Which methods?

Is this common?

Which women do this?

Why do women start before their menses returns?

Have you seen any problems associated with this?

**** If not mentioned spontaneously then probe for pregnancy checking.**

Does Rabeya need to check if she is pregnant before starting a method of contraception, if her menses has not started?

How can Rabeya find out if she is pregnant?

Does this cost money?

Do many women do this?

Rabeya's children were each born 3 years apart, is this a good spacing between children?

Is it better if children are born closer together? farther apart? Why?

What problems can there be, for mother, for children?

What is the best spacing between births? Why?

General Questions

So, in general, when a woman has given birth to a baby, when to you advise her to start to use contraception?

Why?

Why not earlier?

Why not later?

Do you face any problems in the field regarding the provision of contraception to women who have recently had a child?

What kinds of problems?

Do you have any confusion in this area?

Do you usually know which method to give the woman, and when to give the method?

Now I would like to ask whether any of you have any questions. Or is there anything else that you would like to say.

Thank you all very much for giving your time, it has been very useful for us.

Postpartum adoption of contraception

Focus group discussion with community health workers

Recorder's form

Block:

Date:

Time started:

Time finished:

Participants:

	Name	CHW no.	Years of service	Education	Age	No. of children	Comments
1							
2							
3							
4							
5							
6							

Seating arrangement with names / numbers of participants

General comments on the group

Participation by participants:

- (1) poor medium good
- (2) poor medium good
- (3) poor medium good
- (4) poor medium good
- (5) poor medium good
- (6) poor medium good

Quiet participants?: Yes no

Dominating participants?: Yes no

Interruptions:

Areas of confusion:

Areas where little information:

Suggestions for change in guideline:

Appendix five: Background characteristics of family planning users interviewed in Matlab and Dhaka

	Matlab users		Dhaka users	
	Contraception adopted:		Contraception adopted:	
	after menses	before menses	after menses	before menses
Age (years)				
Less than 20	4	3	3	2
20-29	12	10	5	10
30 and over	4	6	5	5
unknown	0	0	1	3
Religion				
Muslim	14	11	11	19
Hindu	6	8	3	1
Education				
None	10	9	9	16
1-5 years	5	7	4	3
6 or more years	5	3	1	1
Number of living children				
0	0	0	1	1
1-2	10	12	7	9
3-4	8	7	5	6
5-6	2	0	1	4
Number of contraceptive methods ever used				
1	8	8	9	7
2	8	7	3	9
3	4	3	1	3
4	0	1	1	1
First method adopted after last birth				
Pill	6	4	7	7
IUD	1	5	2	1
Injectable	11	7	0	3
Condom	2	1	4	9
Sterilisation	0	2	1	0
Total number of respondents	20	19	14	20

Appendix six: Family planning service points visited in Dhaka city

1. GoB services

Location / type of outlet	Thana	Type of providers interviewed
Azimpur Maternal and Child Health Training Institute (out-patient family planning clinic)	Lalbagh	Family Welfare Visitor Medical officer (physician)
Drama Hall Club (family planning clinic)	Lalbagh	Family Welfare Assistant Family Welfare Visitor
Palashi Barrack Outdoor Dispensary (family planning clinic)	Lalbagh	Family Welfare Assistant Family Welfare Visitor
Sarawardi Hospital (out-patient family planning clinic)	Mohammadpur	Family Welfare Visitor
Shishu Hospital (out-patient family planning clinic)	Mohammadpur	Family Welfare Visitor
Administrative office for wards 42, 43, 44	Sutrapur / Demra	Family Welfare Visitor

2. NGO services

Organisation	Thana	Type of providers interviewed
Al-Falah Model Clinic	Mohammadpur	Fieldworker Supervisor
Bangladesh Mohila Samaj Kallayan Samity	Demra	Fieldworker Supervisor Manager/coordinator
Community Health Care Project	Mohammadpur	Fieldworker Supervisor
Concerned Women for Family Planning	Lalbagh Kotwali Sutrapur	Fieldworker Supervisor Manager/coordinator
Paribar Parikalpona Seva Kendro	Mohammadpur	Fieldworker Supervisor
New Life Centre, World Concern	Mohammadpur	Fieldworker Physician
Bangladesh Women's Health Coalition	Sutrapur	Fieldworker Supervisor

Appendix seven: List of family planning provider training materials

1. GoB materials

NIPORT (1988) Family Welfare Assistant's Guide: Mother and child health and family planning (Bengali).

NIPORT, Azimpur, Dhaka, May 1988.

NIPORT (1993) Family Welfare Visitor Basic Training, module no. 14: Family Planning. NIPORT, Azimpur, Dhaka, July 1993.

NIPORT (1993) Family Welfare Visitor Basic Training, module no. 12: Postpartum care. NIPORT, Azimpur, Dhaka, July 1993.

NIPORT (1995) Birth control pill, norplant and condom manual (Bengali). NIPORT, Family Planning Clinical Services Programme, Dhanmondi, Dhaka, Sept. 1995.

NIPORT(1995) IUD and Birth control injection manual (Bengali). NIPORT, Azimpur, Dhaka, September 1995.

2. NGO materials²⁰³

Bangladesh Women's Health Coalition: training course for clinic workers.

Concerned Women for Family Planning: fieldworker training notes.

²⁰³ Both these NGOs conduct training for workers from other family planning organisations.

Appendix eight: Glossary of Bengali words

English transliteration	বাংলা	English translation
adla beyram	আদলা ব্যারাম	postpartum pain
adla beytha	আদলা ব্যাথা	postpartum pain
adla kamor	আদলা কামড়	postpartum pain
aduli kamor	আদুলী কামড়	postpartum pain
agun tengha	আগুন টেঙ্গা	using heat to reduce pain after childbirth
alga	আলগা	separate, ghost, spirit, supplementary food
alga jinish	আলগা জিনিষ	separate thing
alga rokto	আলগা রক্ত	other blood, bad blood
amar	আমার	my, mine
amar baccha emneyi deritey	আমার বাচ্চা এমনিই দেরীতে আসে	my children are conceived late anyway
ashey		winter rice crop
amon	আমন	'a body like the amon rice crop', i.e. the menses returns later and children are conceived after a long gap
amon shorir	আমন শরীর	elder sister(s), respectful term of address
apa, apara	আপা, আপারা	danger
apod bipod	আপদ বিপদ	actual, main thing
ashol jinish	আসল জিনিষ	postpartum pain
atla	আতলা	place of confinement after birth
atur ghor	আতুর ঘর	place of confinement after birth
aus ghor	আউজ ঘর	rice crop sown in rainy season
aush	আউস	'a body like the aus rice crop', i.e. the menses returns soon and children are conceived after a short gap
ausha shorir	আউসা শরীর	child
baccha	বাচ্চা	'child's bag' i.e. womb
bacchar dani	বাচ্চার দানী	bucket
balti	বালতি	a time
bar	বার	time and again
barey barey	বারে বারে	village homestead
bari	বাড়ি	left over, spoilt food
bashi khabar	বাসী খাবার	wind, spirits
batash	বাতাস	arrangement, contraception
bebostha	ব্যবস্থা	pain
beesh	বীষ	a lot, too much
beshi	বেশী	more harmful, very harmful
beshi khoti	বেশী ক্ষতি	illness, pain
beyram	ব্যারাম	pain
beytha	ব্যাথা	elder brother's wife
bhabi	ভাবী	fate, fortune
bhago	ভাগ্য	good
bhalo	ভাল	broken
bhanga	ভাঙ্গা	heavy feeling
bhar bhar lagey	ভার ভার লাগে	

English transliteration	বাংলা	English translation
bhari	ভারী	heavy
bhoy	ভয়	fear
bhut	ভূত	ghost, spirit
bhut kamrae	ভূত কামড়ায়	postpartum pain
bhut petni	ভূত পেত্নী	ghost, spirit
bij, bijo	বীজ, বীজ	seed, sperm
bishakto	বিষাক্ত	poisonous
bochor	বছর	year
bochorey ey mathae oy mathae	বছরের এই মাথায় ঐ মাথায়	at the beginning and again at the end of the year
bod rokto	বদ রক্ত	bad blood
bod rokto shoriley kamraibo	বদ রক্ত শরীলে কামড়াইবো	the bad blood makes the body ache
bodna	বদনা	water jug for use in the toilet
bondho	বন্ধ	closed
bongsho	বংশ	family line
bori	বড়ী	pill
boro shoro	বড় সড়	old, grown up
bruno	ক্রম	fertilised egg
chachi, chachira	চাচী, চাচীরা	father's brother's wife(s)
chaka	চাকা	lump
cheera	চিড়া	puffed rice
chikon	চিকন	thin
choti	ছোট	ritual impurity after birth
choti ghor	ছোট ঘর	place of confinement after birth
chuka	চুকা	sour
dag	দাগ	mark
dag porey gelo	দাগ পড়ে গেল,	a mark, wound was made
dai	দাই	traditional birth attendant
dhup	ধূপ	smoke used by Hindus for purification
doodh	দুধ	milk
doodher aga	দুধের হাগা	diarrhoea caused by breastmilk
doosh khaya hoosh hoe	ডুস খাইয়া হুস হয়	'once bitten twice shy' i.e. once you have experienced it you do not make the same mistake again
dupur	দুপুর	midday (around 12-2pm)
durbol	দুর্বল	weak
dushito rokto	দুষ্টিত রক্ত	bad blood
ekdom	একদম	completely
ekta lengu ekta tengu	একটা লেঙ্গু একটা টেঙ্গু	expression for children born close together
fakir	ফকির	traditional healer
gha	ঘা	wound
ghat shutika	ঘাট শুতিকা	postpartum digestive disorder
ghono ghono	ঘন ঘন	thick, close together
goley jaowa	গলে যাওয়া	dissolve
gorom	গরম	hot
gushti	গুষ্ঠি	family line
habi jabi kotha	হাবি জাবি কথা	gossip, insults
halka	হালকা	light, not damaging

English transliteration	বাংলা	English translation
hater angool shob shoman na	হাতের আঙ্গুল সব সমান না	'the fingers on the hand are not all equal', i.e. you cannot predict what will happen
hatla	হাতলা	postpartum pain
hukna shutika	হুকনা শুতিকা	postpartum digestive disorder
iro	ইরো	tendency
jal	জাল	husband's brother's wife
jat	জাত	caste
jeera gura, kali jeera, jeera bhaja	জিরা গুড়া, কালি জিরা, জিরা ভাজা	cumin (ground, black, fried)
jhal	ঝাল	spicy
jhim jhim korey	ঝিম ঝিম করে	dizzy, sleepy feeling
jinish	জিনিস	thing
joger fota	জোগের ফোটা	Hindu ritual of purification
jolaibo	জ্বলাইবো	it will burn
joley jaowa	জ্বলে যাওয়া	to burn
joma rokto	জমা রক্ত	blood that is stored up in the woman's reproductive organs
jomey	জমে	it remains, it is stored
jor	জ্বর	strength
goraiyu	জরায়ু	uterus
jowar bhata	জোয়ার ভাটা	tide
kacha	কাঁচা	raw, weak, vulnerable
kacha nar, kacha nari	কাঁচা নার, কাঁচা নারি	the raw reproductive parts of a woman after childbirth
kacha shorir	কাঁচা শরীর	the weakened body of a woman after childbirth
kamrae	কামড়ায়	it bites, gives a biting pain
kamrano	কামড়ানো	to bite, to have a biting pain
kapor holey	কাপড় হলে	if menses comes
khali	খালি	empty
kharap	খারাপ	bad
kharap korey	খারাপ করে	to harm, to do bad
kharap rokto	খারাপ রক্ত	bad, polluted blood e.g. of menses or childbirth
khawaner peyt	খাওয়ানোর পেট	food stomach
khomota	ক্ষমতা	power
khomota nai	ক্ষমতা নয়	no power
khoti	ক্ষতি	harm
khula	খোলা	open
koler baccha	কোলের বাচ্চা	child in the lap
kolija	কলিজা	heart
kolshi	কলসি	water jar
kolshi kolshi rokto	কলসি কলসি রক্ত	buckets and buckets of blood
komjor	কমজোর	weak
komor	কোমর	waist
kopal	কপাল	luck
kora	কড়া	strong
kuti kuti baccha	কুটি কুটি বাচ্চা	lots of small children
labh	লাভ	benefit
lep	লেপ	to put mud on the floor of a house
lojja	লজ্জা	shame, embarrassment

English transliteration	বাংলা	English translation
mach	মাছ	fish
magur mach	মাগুর মাছ	a type of fish
maja	মাজা	hip, waist
majar rokto	মাজার রক্ত	blood stored in the waist after childbirth
mangsho	মাংশ	meat
masala	মশলা	spices
mashik	মাসিক	menses
mashik bondo	মাসিক বন্ধ	'menses closed, stopped' i.e. postpartum amenorrhoea
milamisha	মেলামেশা	sexual relations
modhu	মধু	honey
moila	ময়লা	dirty
moillir uporey choilli	মল্লির উপরে চল্লি	another child is born soon when one dies
moillitey polli barey	মইল্লিতে পল্লি বারে	another child is born soon when one dies
moira geley polli barey	মইরা গেলে পল্লি বারে	another child is born soon when one dies
mojar	মজার	pleasurable
molli tolli geley tara tari mashik	মল্লি টল্লি গেলে তাড়া তাড়ি মাসিক	menses comes quickly when a child dies
hoey jae	হয়ে যায়	
mura baccha	মুরা বাচ্চা	child conceived during postpartum amenorrhoea
mura snan	মুরা স্নান	conception during postpartum amenorrhoea
mura, muria	মুরা, মুরিয়া	conception during postpartum amenorrhoea
muri	মুড়ি	puffed rice
murubi, murubira	মুরুবি, মুরুবিরি	elder, elders
namaj roja	নামাজ রোজা	fasting and prayer
napak	নাপাক	impure
nar bondho	নার বন্ধ	reproductive organs of the woman no longer fertile
nar, nari	নার, নারি	tube, woman's reproductive organs
nari goley jae	নারি গেলে যায়	the woman's reproductive organs dissolve
nari joley jae	নারি জ্বলে যায়	the woman's reproductive organs burn
neom	নিয়ম	rule
nicher peyt	নীচের পেট	lower stomach
nichey	নীচে	below
nirapod	নিরাপদ	safe
nishokti	নিশক্তি	weak
nistej	নিস্তেজ	weak
nistej korey rakhey	নিস্তেজ করে রাখে	keeps it weak
norom	নরম	soft
noshto	নষ্ট	broken, damaged
noshto korey pheley	নষ্ট করে ফেলে	it ruins it
olpo olpo	অল্প অল্প	a small amount
onek	অনেক	many
onek khoti hoe	অনেক ক্ষতি হয়	a lot of harm

English transliteration	বাংলা	English translation
opobitro	অপবিত্র	impure
oporishkar	অপরিষ্কার	not clean, dirty
oshud	অসুধ	medicine
oshuj ghor	অসুজ ঘর	place of confinement after birth
oshuk	অসুখ	ill
oshustho	অসুস্থ	ill
paikhana	পায়খানা	faeces, diarrhoea
pak	পাক	pure
pakostoli	পাকস্থলি	stomach
pani	পানি	water
pap	পাপ	sin
patla	পাতলা	thin
petni	পেত্নী	ghost, spirit
peyt	পেট	stomach, abdomen
peyter baccha	পেটের বাচ্চা	child in the womb
peyter chaka jomey	পেটে চাকা জমে	lump in the stomach
phuley	ফুলে	swollen
pobitro	পবিত্র	pure
pora	পড়া	to fall
porishkar	পরিষ্কার	clean
poush	পৌষ	rice crop, winter month
pousha shorir	পৌষা শরীর	'a body like the aush/poush rice crop' i.e. the menses returns soon and children are conceived quickly
pukurer pani	পুকুরের পানি	pond water, stagnant
pura puri	পুরা পুরি	completely, fully
purush lok	পুরুষ লোক	men
puti mach	পুটি মাছ	type of fish
ritu	ঋতু	season, menses
ritur rokto	ঋতুর রক্ত	menstrual blood
rokto	রক্ত	blood
rowg	রোগ	disease
ruti	রুটি	bread
sauci	সূচি	impure
shadona bottle	সাধনা বোটল	liquid herbal preparation for regaining strength
shashto kharap	স্বাস্থ্য খারাপ	unwell, menstruating
shek newa	সেক নেওয়া	to heat the body after birth to reduce pain
shing mach	শিং মাছ	type of fish
shob shesh	সব শেষ	all is finished
shojo	সহ্য	to stand or tolerate
shokti	শক্তি	strength
shokto	শক্ত	hard
shondha	সন্ধ্যা	evening time
shongkochito	সংকোচিত	contracted
shongkochon	সংকোচন	contract
shoril	শরীল	body
shorir	শরীর	body, health
shorir kharap hoese / hoeychey	শরীর খারাপ হইছে/হয়েছে	menses returned