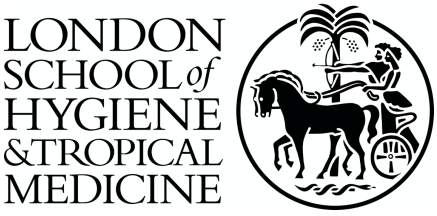

Health service responsiveness: A case study of integrated family planning and childhood immunisation services in Malawi

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DECLARATION OF OWN WORK

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ABSTRACT

Effective birth spacing, commonly achieved through the use of modern contraceptives, is vital to the health and well-being of women and children worldwide. Yet approximately 218 million women have an unmet need for modern contraceptives in low- and middle-income countries, many of which are postpartum women. Evidence suggests that integrating family planning (FP) services with childhood immunisations could reduce the unmet need among postpartum women by providing repeat opportunities for timely contact with FP services. However, despite being a key determinant of contraceptive uptake and the repeat use of health services, little is known about whether women's legitimate expectations for FP services are met when these services are integrated. This thesis addresses this knowledge gap through a multi-method case study of the responsiveness of integrated FP services delivered in routine outreach clinics in Malawi. Specifically, data from structured and semi-structured interviews with clients and their FP providers were analysed to assess and explain the ease of access, dignity, environment, confidentiality, choice of provider, communication, counselling, and service continuity experienced by clients. Additionally, a causal loop analysis of qualitative data was carried out to model and describe the system dynamics determining responsiveness in the studied context. Overall, this thesis demonstrates that in routine outreach clinics, FP services can be responsive to clients' legitimate expectations when integrated with childhood immunisations in terms of the dignity and service continuity afforded to clients, though less so in terms of the choice of provider, environment, and confidentiality experienced. Responsiveness is shown to be a product of the dynamic relationships between the organisational arrangement of resources, the processes involved in the provision of services, and the characteristics and behaviours of the actors interacting at the point of care. Crucially, by scrutinising these relationships using systems thinking, this thesis offers detailed recommendations for policy and practice.

DEDICATION

This thesis is dedicated to

Josée-Lynn and Carlo who taught me about family, fortitude, and love

&

Rehema who inspired this work.

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This research would not have been possible without the funding from the Pfizer Foundation; the support from Malawi's Ministry of Health district health teams; and the incredible women and health providers who unreservedly participated in this research with the hope of improving family planning services for their communities.

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Thank you to the many friends, and especially Melanie, who held Derek and I up as we balanced two PhDs and our jobs, and as we grieved the loss of our beloved brother-in-law. You saw us through our darkest days, and for that I will never cease to be grateful.

And finally, to Derek – thank you for being by my side every step of the way, for sharing the highs and lows, and for always believing in me. I love you and I am so glad that I went on this journey with you.

CONTENTS

ACRONYMS

AOR	Adjusted odds ratio
ART	Antiretroviral therapy
CI	Confidence interval
CLD	Causal loop diagram
DHIS-2	District health information system
DHS	Demographic health survey
DPT3	3rd dose of Diphtheria-Pertussis-Tetanus vaccine
EPI	Expanded programme on immunisation
FP	Family planning
GRAMMS	Good reporting of a mixed methods study
HSA	Health surveillance assistant
HIV	Human immunodeficiency virus
IUD	Intrauterine device
LARC	Long-acting reversible contraceptive
LMICs	Low- and middle-income countries
LSHTM	London School of Hygiene & Tropical Medicine
OR	Odds ratio
RC	Real client
SC	Standardised client
SD	Standard deviation
SOP	Standard operating procedures
SRQR	Standards for reporting qualitative research
SSA	Sub-Saharan Africa
SSI	Semi-structured interview
TTV	Tetanus toxoid vaccine
VCT	Voluntary counselling and testing

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CHAPTER 1. INTRODUCTION

BACKGROUND

Effective birth spacing, commonly achieved through the use of modern contraceptive methods, is vital to the health and well-being of women and children worldwide. Based on a substantial body of evidence, the WHO recommends intervals of at least 24 months between a live birth and a new pregnancy to reduce the risks of adverse health outcomes such as miscarriages, preterm births, stillbirths, new-born deaths, stunting, and maternal deaths [1–4]. However, roughly 218 million women have an unmet need for modern contraceptives[1] in low- and middle-income countries [5], which contributes to a high prevalence of unplanned and untimely pregnancies among postpartum women [6–11]. Evidence suggests that the unmet postpartum need for family planning (FP) in these countries is driven by fundamental deficiencies in the accessibility and quality of FP services [11–14]. In response to this gap, many national governments are working in partnership with stakeholders from civil society, multilateral agencies, nongovernmental organisations, and the private sector to accelerate universal access to high quality FP services. Together, they have tested and adopted a wide range of service delivery strategies, including social franchising, mobile outreach services, and immediate postpartum FP interventions. Meanwhile, in recent years, the integrated delivery of FP services with childhood immunisations has garnered attention as a promising high-impact practice that would benefit from further trial and study [15,16].

To a large extent, the integration of FP services with childhood immunisations represents a logical and pragmatic way of addressing the unmet need for FP among postpartum women. Typically delivered through the Expanded Programme on Immunisation (EPI), childhood immunisations allow for multiple

[1] Women with an unmet need is defined by the WHO as women "who are fecund and sexually active but are not using any method of contraception, and report not wanting any more children or wanting to delay the next child" [228].

timely contacts with women and their children during the extended postpartum period (12 months following childbirth) [17–19]. Additionally, EPI coverage, as measured by the proportion of children who have received the 3rd dose of Diphtheria-Pertussis-Tetanus (DPT3) vaccine, is high in many countries and therefore provides an effective platform for reaching underserved women [20]. Crucially, findings from several studies suggest that the integration of FP services with childhood immunisations can improve access to FP services without undermining immunisation uptake [18,19,21–23]. Research has also demonstrated that the integration of these two services is generally acceptable to health providers and their clients [18,21,24]. Yet very few studies have investigated the clients' experiences of integrated FP services.

Given the sensitive and repeat nature of FP services and the established relationship between clients' experiences and 1) their willingness to repeat the use of health services, 2) their choice of FP provider, and 3) their uptake of modern contraceptives [14,25–31], research that examines clients' experiences in this context is imperative. In particular, understanding the extent to which FP services are responsive to clients' needs when these are integrated with childhood immunisations is critical. As an intrinsic goal of health systems and a service performance indicator, responsiveness is concerned with the extent to which an individual's experience fulfils a set of legitimate expectations [32–34]. Here, 'legitimate expectations' refer to universally accepted ethical principles, rules, and standards, such as the respect afforded to individuals in terms of the confidentiality and dignity they experience when interacting with the health system. Examining the responsiveness experienced by clients not only provides insights into the proximal aspects of service delivery, such as the interaction between health providers and their clients, but it can also generate a better understanding of the wider environment in which services are provided [35] – both of which are vital to the design and delivery of client-centred FP services.

AIMS AND OBJECTIVES OF THE THESIS

The two primary aims of this thesis were to understand the responsiveness of FP services that are integrated with childhood immunisations and to identify ways in which service designers and implementers can strengthen the responsiveness of these services in resource limited settings. A secondary purpose of this thesis was to explore how mixed methods could be applied to the study of service responsiveness.

To address these aims, a case study of the responsiveness of FP services that were integrated with childhood immunisations in Malawi was carried out. Drawing on the service integration and responsiveness literature, this case study had the following objectives:

1) assess the responsiveness of FP services that are integrated with childhood immunisations,
2) determine the factors associated with clients' perceptions of responsiveness,
3) examine the factors influencing the responsiveness of these services,
4) model and describe the system dynamics determining the responsiveness, and
5) identify changes that service designers and implementers should prioritise to improve the responsiveness of integrated FP services in the studied context and others like it.

DESCRIPTION OF THE STUDIED CASE

In Malawi, most women who seek FP services utilise public health facilities, especially health centers [36]. In these facilities services are normally provided by nurses who offer a mix of short- and long-acting contraceptive methods, including implants and Intrauterine devices (IUDs). However, FP services are also available to varying extents in communities through Health Surveillance Assistants (HSAs). As a cadre of paid community health workers [37], HSAs typically hold a secondary school education and undergo 12 weeks of pre-service education [38]. Although they are trained to counsel women about all contraceptives, they are only tasked with administering short-term methods such as

injectables, condoms, and contraceptive pills [39]. Nevertheless, HSAs play an important role in the provision of FP services in Malawi as the contraceptives most used by married and sexually active unmarried women are injectables (30% and 15% respectively) [36], which require administration by a health provider every three months.

According to the latest Demographic Health Survey (DHS), the national rate of modern contraceptive use among women ages 15-49 is 45.2% [36]. Also, FP uptake at six months postpartum is around 30%, and it is estimated that 12% of postpartum women in Malawi have an unmet need for modern contraception [40]. In general, the unmet need for FP is greater in rural areas than in urban areas. This is in part due to a lack of accessible health facilities[2], a scarcity of FP commodities, a shortage of skilled FP providers, and some resistance among community leaders and members towards modern contraceptives [39]. Crucially, the national childhood immunisation coverage is relatively high in Malawi, with 76% of children ages 12-23 months receiving all basic vaccinations and 93% receiving the DPT3 vaccine [36]. This provides the necessary foundation on which to integrate FP services [36]. Recognising this and the benefits of proactively offering FP services to postpartum women during childhood immunisations, the Government of Malawi identified this strategy as a priority in their 2016-2020 Costed Implementation Plan for FP [39].

It is within this context that Save the Children, in collaboration with Malawi's Ministry of Health, supported the integration of FP services with childhood immunisations in routine outreach clinics between January 2015 and October 2019. This intervention was carried out as part of the multi-country *Healthy Families – Healthy Futures* project funded by the Pfizer Foundation. I chose to focus my thesis on this intervention not only because it served as an appropriate case for studying the responsiveness of integrated FP services, but also because it provided the opportunity to generate

[2] The distance travelled by individuals to reach the nearest health facilities in Malawi is on average 10-15 km, which far exceeds the target of 5-8km set by the country's Government [39].

meaningful and transferable insights given the widespread use of outreach platforms for childhood immunisations in low-income countries [41,42].

Broadly, the intervention involved the deliberate integration of FP services into the EPI delivered on a monthly basis through non-static public outreach clinics in three districts: Blantyre (rural only), Thyolo, and Mwanza (Figure 1).

Figure 1. Map of Malawi with district boundaries [36]

These districts were selected for the intervention due to their high childhood immunisation rates, and because their rates of contraceptive use and unmet need for FP were similar to national averages (Table 1). The choice of intervention area was also motivated by Save the Children's long-standing experience supporting the public health sector and engaging hard-to-reach communities in these districts.

Table 1. District FP and immunisation rates compared to national averages [36]

	Blantyre	Mwanza	Thyolo	National
Modern contraceptive use among married women age 15-49[3]	60.3%	59.7%	58.7%	58.1%
Unmet need for FP among married women age 15-49	18.7%	18.8%	18.9%	18.7%
Children 12-23 months with 3rd dose of DPT-HepB-Hib vaccine	85.7%	96.2%	91.4%	93.0%

The outreach clinics that received the intervention were carried out during a single day each month in either existing buildings (schools or churches) or in open spaces (under a tree). In these clinics, services were organised using a standardised client flow (Figure 2), which was developed to streamline the delivery of integrated services [43]. At the start of each clinic, a group health talk was held to provide clients with information about the clinic's client flow and key messages about child development, immunisations, nutrition, exclusive breastfeeding, and FP. Although clients who reached the clinic later in the day were able to receive services, they did not benefit from the information shared during the group health talk. Following this talk, children were measured and weighed as part of a growth monitoring service, and women and children were screened for FP and vaccinations. Eligible women then received the Tetanus Toxoid Vaccine (TTV), and children were immunised according to their individual schedule. Counselling was subsequently provided to women who expressed an interest in FP, and short-term contraceptives were given to new or returning clients opting to use a method. The contraceptive methods offered in these clinics included pills,

[3] Contraceptive use and unmet need for FP rates are presented for 'married women' in Table 1 because Malawi's latest DHS does not report district-level rates for 'all women' or 'unmarried sexually active women'.

injectables and condoms. Referrals to the nearest health facility were given to women who were interested in permanent methods or who wished to use long-acting reversible contraceptives (LARCs), such as implants or IUDs. This client flow was designed to function with a minimum of four HSAs and support from several community volunteers. HSAs were encouraged to rotate roles at each clinic site to enhance their comfort with performing every role involved in the standardised client flow. Typically, one HSA was also tasked with the role of Senior HSA and expected to supervise and mentor the remaining HSAs during clinic hours.

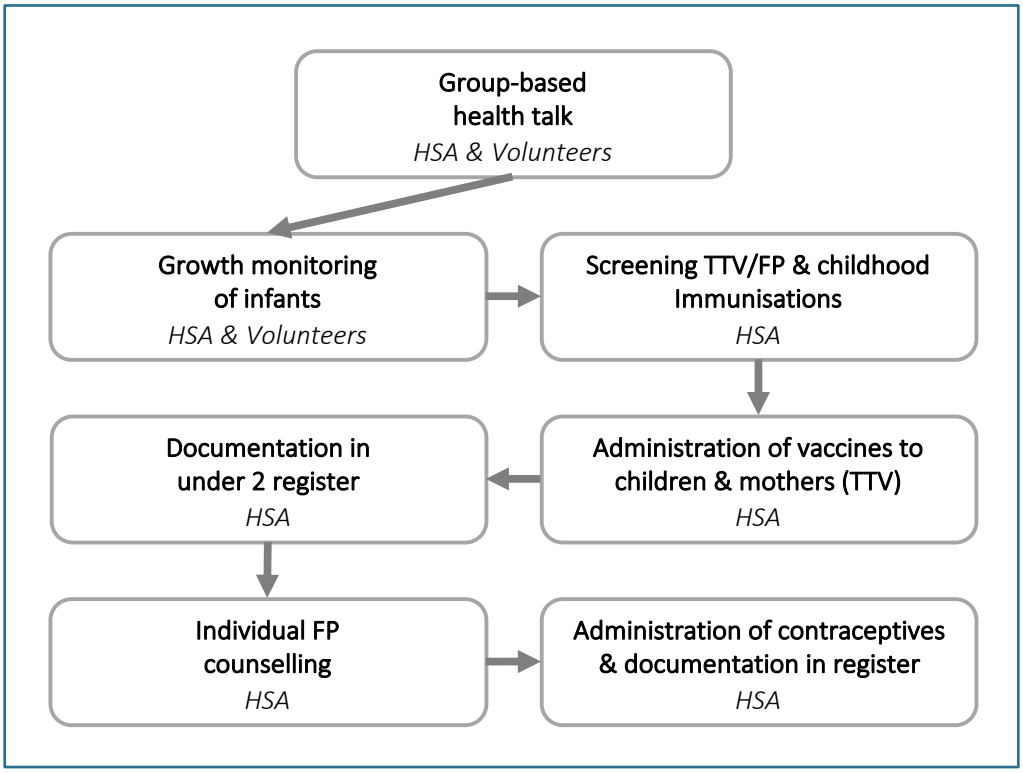

Figure 2. Standardised client flow used to streamline service integration in the studied clinics

OVERVIEW OF THE THESIS

This thesis is divided into seven chapters. In this first chapter, the motivation that underpins the thesis was introduced, the case upon which this thesis is centred was described, and the aims and objectives of the thesis were defined. In chapter 2, the existing literature pertaining to relevant concepts, empirical evidence and frameworks is summarised, and key knowledge gaps around service

integration and responsiveness are highlighted. In chapter 3, the research questions and methods adopted to achieve the aims of the thesis are explained. This includes a description of the study design and study sites, as well as an account of the approaches used to collect and analyse empirical data. The measures employed to mitigate potential methodological limitations are also detailed in this chapter. In chapters 4, 5 and 6, the results from the case study are reported in the form of journal articles. Specifically, results from a mixed methods assessment of service responsiveness in Malawi are conveyed in chapter 4; findings from a qualitative study of factors influencing service responsiveness are relayed in chapter 5; and the product from a causal loop analysis of the system dynamics determining service responsiveness is presented in chapter 6. In chapter 7, a summary of the key findings is provided, and the overall contributions of this thesis to the field of study are articulated. This final chapter concludes with a discussion of the implications for policy and practice alongside suggestions for future research. Given that this is a research paper-style thesis (with chapters 4, 5, and 6 consisting of freestanding journal articles), some repetition of ideas and references across chapters was inevitable. However, a concerted effort was made to limit the duplication of materials where possible.

CONTRIBUTIONS OF THE CANDIDATE TO THE THESIS

This thesis was nested within a wider process evaluation of the *Healthy Families – Healthy Futures* project, which was carried out in Benin, Kenya, Malawi, and Uganda. The process evaluation built on a previous realist evaluation and was led by a team of researchers from the Department of Disease Control at the London School of Hygiene & Tropical Medicine (LSHTM). As a member of this team, I contributed to the realist evaluation [43–46], and later coordinated the process evaluation across all four countries whilst leading the work presented in this thesis.

Specifically, I conceived the idea for the case study that was carried out in Malawi, and I developed the study design and tools with advice from the process evaluation team (Professor Jayne Webster

and Jane Bruce), my PhD supervisors (Dr Helen Burchett and Professor Susannah Mayhew) and members of the Save the Children team (Misozi Kambanje, Erick Mwale, and Shannon Pryor). I also trained the interviewers and managed the piloting of data collection tools in Malawi for both the case study and wider process evaluation. Furthermore, I remotely supervised the data collection activities, which were coordinated by a Malawian researcher, Ms Alice Kaponda. Once the data collection was completed, I carried out the analysis for the case study and led the writing of manuscripts to report my findings with input from my PhD supervisors and advisor, the Save the Children team, and Ms Kaponda.

CHAPTER 2. LITERATURE REVIEW

INTRODUCTION

In this chapter, a summary of the core literature pertaining to the integration of FP services with childhood immunisations and to the responsiveness of health services is presented, with a focus on evidence from Malawi where possible. The first part of this chapter concentrates on service integration and includes a summary of the literature specific to the integration of FP with childhood immunisations. Particular attention is also granted to the clients' experiences and the quality of integrated services reported in the literature. The second part of this chapter focuses on health systems and service responsiveness. It describes the concept of responsiveness and highlights findings from past empirical research carried out to measure and explain the responsiveness of health services. Finally, the chapter concludes with a presentation of the conceptual framework that guided this thesis and a summary of critical knowledge gaps.

The sources of evidence included in this chapter were identified through a search of the WHO online repository and of the MEDLINE, Embase, CINAHL, and Cochrane Library databases. The initial search was performed on 04 July 2018 and refresher searches were conducted on 26 February 2021 and 07 March 2022 to identify newly published literature. The reference lists of all relevant sources were also screened to identify sources that may have been missed by the bibliographic database search. Although no geographical limits were imposed on the search, sources from low- and middle-income countries (LMICs) were prioritised over sources from high-income countries where possible. Only responsiveness-related sources published from 2000 onwards were reviewed as the concept of health system responsiveness was introduced by the WHO in 2000 [32]. For illustrative purposes, the search strategy used in MEDLINE is provided in Box 1.

Box 1. Search strategy

MEDLINE refresher search – Monday, 07 March 2022

Integration of FP and childhood immunisation services [47]
(Integrated care or integrated service* or integrated health* or integrating health* or "integration of care" or "integration of services" or integrating care or care integration).mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kf, fx, dq, nm, ox, px, rx, an, ui, sy] AND (family planning or "family planning").mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kf, fx, dq, nm, ox, px, rx, an, ui, sy] AND (vaccination or vaccin* or immunization or immunisation or immun*).mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kf, fx, dq, nm, ox, px, rx, an, ui, sy]

Responsiveness
(Health system responsiveness or health systems responsiveness or service responsiveness or care responsiveness or healthcare responsiveness).mp. [mp=ti, ab, hw, tn, ot, dm, mf, dv, kf, fx, dq, nm, ox, px, rx, an, ui, sy]

SERVICE INTEGRATION LITERATURE

Service integration is commonly conceptualised as a type of health care integration alongside functional, organisational, professional, normative, and systematic integration [48]. Like all other types of integration, it varies in terms of foci, breadth, and degree depending on the context in which it is implemented. This is because integration is a complex public health intervention and as Kodner *et al*. note, it "depends on a tailor-made combination of structures, processes and techniques to address unique patient needs and system–institutional–community circumstances" [48, p.13]. For this reason, there is no standard definition of service integration in the literature. Yet, in most definitions the linking, pairing, harmonizing, or bundling of two or more vertical health services to maximise outputs (e.g., the accessibility of services or the optimisation of limited resources) is referenced [49–54]. Providing a clear definition is therefore crucial when investigating service integration initiatives or programmes. For the purposes of this thesis, service integration is defined as: *the deliberate combination and coordinated delivery of two or more health services at a single point of care and time under one management system, which aims to enhance the quality and client-centeredness of services, optimise the use of resources and processes, and maximise health outcomes* [51,54,55].

Historically, much of the service integration literature has focused on programmes and experiences from high income countries [56]. However, over the last two decades literature on service integration in low-income countries has grown as policymakers and implementers have progressively shifted away from a siloed and vertical delivery of primary health services towards a more integrated approach to enhance the efficiency (financial and operational), equity, quality, and accessibility of key services [51–54,56–58]. Yet for many years, the benefits of service integration were largely assumed and left unproven. This was in part due to the wide range and scope of integration initiatives, which some researchers felt rendered synthesising evidence challenging [52].

In fact, in 2006, Briggs and Garner's review of strategies for integrating primary health services at the point of care revealed that conclusive evidence on the effectiveness of service integration was lacking [51]. This review highlighted that the actors involved in delivering integrated services were concerned about whether it would increase providers' workloads and damage the quality of services altogether. A lack of consideration for the demand side in the literature was also uncovered, with most sources focused on the supply side of service integration and only one study taking a rudimentary look at clients' perspectives.

In 2011, Dudley and Garner conducted a similar review in which nine[4] relevant studies were identified [54]. Among other findings, this review demonstrated that whilst linking several services to one another could increase service utilisation, there was no evidence to suggest that more comprehensive forms of integration (e.g., a model that involves a single provider delivering multiple services at once) would improve the provision of services or lead to better health outcomes compared to vertical programmes. The authors of this review ultimately concluded that published sources were too dissimilar to delineate the determinants of successful integration.

[4] Three of the nine studies in Dudley and Garner's review were also included in Briggs and Garners' review.

Nevertheless, in 2018, Topp *et al.* moved past claims that service integration programmes were not suited to comparison due to their heterogeneity and demonstrated that with the right methods a meaningful synthesis of the health system factors and capabilities that are essential for effective integration in low-income settings is possible [52]. Recognising that health systems are dynamic and adaptive, this review showed that the factors determining the effective integration of health services included the organisation of services at the point of care, the preparedness of providers, clients, and communities, as well as the upstream logistics and policies. It also highlighted that effective and context-appropriate integration requires sufficiently functional frontline services, trained and motivated providers, essential commodities, and devolved decision-making processes. For instance, the review identified that to be sufficiently functional for integration, frontline services must already be delivered in a context where 1) appropriate physical space is available to accommodate the flow of clients, to respect clients' privacy, and to store supplies; 2) staffing levels are sufficient to coordinate the flow of clients; 3) communities support service integration and trust health providers and health systems; and 4) the existing logistics and policies enable 'integrative actions'. These insights are of particular importance given that health system shortcomings in many low-income countries represent a considerable challenge to effective integration [59].

Furthermore, in 2020, Zonneveld *et al*. contributed to a deeper understanding of service integration by building on a prior systematic review [60] and carrying out an international Delphi study with the involvement of 33 experts[5] to determine the core values (e.g., beliefs, principles or behavioural standards) that underpin the collaborative processes and the behaviours of actors involved in the integrated delivery of health services [53]. Through this study, 18 core values were identified across four levels of integration: personal, professional, management, and system. Of note, at the personal level, being trustful, reciprocal, preventative, respectful, person-centred, holistic, and collaborative were identified as the most relevant values. Also, the values considered most pertinent at the

[5] All participating experts originated from high-income countries.

professional level were reciprocity, coordination, flexibility, collaboration, trustfulness, effectiveness, and a shared responsibility and accountability.

Taken together, these sources provide a foundation for understanding the structural and behavioural aspects of service integration across different countries, contexts, and integration models. Nonetheless, a closer look at the service integration literature pertaining specifically to FP services is warranted.

FP service integration

In LMICs, evaluations of integrated FP services in the health sector have primarily focused on the combination of FP with reproductive, sexual, or child health services [50,61,62]. A few studies have also examined the integration of FP services with post-abortion care [63], water and sanitation initiatives [64], and intimate partner violence programmes [65]. Among these studies, several models of FP integration have been scrutinised. These include 1) 'single service with referral' models in which providers deliver one service and refer clients to a separate provider or facility to access an additional service on a different day; 2) 'one-stop-shop' models in which services are co-located and linked through messaging so that clients can access multiple services during a single visit; and 3) 'provider-based' models in which a provider delivers multiple services to a client during a single consultation [15,50,61,62]. These models have been implemented in health facilities and in communities (through home visits or outreach sessions). However, studies focused on integrated FP services, and FP services for postpartum women more broadly, have primarily focused on the single service with referral and one-stop shop models in health facilities [62].

In reviewing quantitative studies published between 1994 and 2009 that investigated the effect of integration on FP services, Kuhlmann *et al*. found that the integration of FP with other health services

could have a positive effect on reproductive (e.g., contraceptive prevalence) and behavioural (e.g., service utilisation) outcomes [50]. For example, increases in the mean number of new and repeat family planning clients in intervention clinics were reported by a quasi-experimental study in Togo and by a case-control study in Ghana respectively [19,63]. Of the nine sources included in this review, none stated that integration with other health services had a negative effect on family planning outcomes, and six reported improved outcomes relating to the other health services. Despite providing limited details, three studies also reported positive reactions to FP integration among clients, providers, and community members [19,64,66]. That said, the authors of this review ultimately concluded that, at the time, the body of evidence supporting the integration of FP with other health services remained insufficient to claim its effectiveness.

It was not until Cleland *et al*. [61] and Blazer *et al*. [62] put forth complementary reviews of postpartum FP interventions in LMICs that the integration of FP with other health services (particularly maternal and child health services) was considered warranted. In addition to highlighting positive findings from the integration of FP with childhood immunisations[6], these reviews showed that integrating FP services with the prevention of mother-to-child transmission of HIV had a positive impact on clients' FP knowledge in Zimbabwe [67] and on their intention to use contraceptives in both Swaziland [68] and Kenya [69]. However, this combination of services was found to have no effect on postpartum contraceptive use in Zimbabwe and a negative impact on clients' intentions to use FP within six weeks of birth in Lesotho [70]. Despite these mixed results, agreement was reached by these two groups of authors that overall, the evidence published prior to September 2015 suggested that the integration of FP with other health services can improve postpartum knowledge and use of contraceptives. This resulted in a call for future studies to focus on ways to optimise this strategy in various contexts. In particular, Blazer *et al*. argued for further research to focus on

[6] These are discussed in the following section of this chapter.

community-based models of integration across diverse regions in LMICs, whilst Cleland *et al.* advocated for health systems analyses to identify and mitigate implementation challenges.

Since then, several evaluations have examined the factors determining the successful implementation of integrated FP services. These have mainly reported the influence of factors such as resources, structures, financing, information systems, and service organisation on integration [71]. However, in 2017, researchers from the Integra Initiative – the largest evaluation trial of integrated HIV and reproductive health services – argued the importance of understanding both software and hardware factors to optimise integration [49]. As defined by Sheikh *et al.,* hardware factors refer to the resources, structures, financing, information systems, and forms of service organisation and delivery; whereas software factors are less quantifiable and include the attitudes, values, interests, practices, and power dynamics that define the relationships between system actors, elements, and contexts [72]. Besides demonstrating that hardware factors (e.g., the availability of supplies, and the allocation and workload of providers) are crucial to successful integration, the Integra Initiative's findings from Kenya and Swaziland suggested that without due attention to software factors, the return on investments made to improve integration would likely be limited. Several of these same researchers also recently argued that with proper motivation, agency, flexibility, teamwork, and support, frontline health providers and managers can contribute to overcoming hardware deficiencies in the delivery of integrated services [73].

As the integration of sexual and reproductive health services with other health services is believed to either improve or diminish the quality of care depending on the outcome of trade-offs between the breadth and depth of service delivery [74], careful attention must be granted to clients' experiences of integrated FP services. Yet, few studies in LMICs have investigated clients' experiences and their perceptions of service quality in this context [18,21,57,75–77]. This represents an important gap in the literature, and one echoed more broadly in 2018 by the Lancet Global Health Commission on High

Quality Health Systems [29]. Among other assertions, the Commission noted the importance of understanding the experience of clients. It also emphasised the need for more evaluations that focus on this component given that evidence from LMICs demonstrates systematic deficits in the quality of care, particularly in terms of the attention, respect, communication, and length of visit, experienced by clients.

Still, studies that have examined the quality of care that is delivered when FP and HIV services are integrated provide some noteworthy insights. For instance, using a cluster randomised controlled design in two districts of Uganda, Brunie *et al*., found that the integration of HIV testing and counselling into existing community-based FP services did not appear to have a negative impact on the quality of FP services [78,79]. On one hand, providers felt that service integration had improved the quality of their work and was advantageous in terms of the increased convenience and privacy it afforded clients. On the other hand, most FP clients in the intervention group saw no disadvantage to integration, and felt that it reduced wait times, and improved the services and advice they received from providers. Importantly, almost all clients who received HIV testing and counselling through the integrated service delivery programme reported trusting the providers with private information and feeling satisfied about their interpersonal relationships with providers [78].

Similar findings were noted by the Integra Initiative in Swaziland and Kenya. For example, despite concerns about longer wait and consultation times in intervention sites, clients who received integrated HIV and FP services were more likely to be highly satisfied than clients seeking stand-alone services [80,81]. Also, in Kenya, the integration of HIV and FP services was shown to significantly improve the clinical (or technical) quality of consultations [82]. In this context, factors positively associated with the clinical quality included: the availability of key commodities, adequate infrastructure, and the providers' clinical knowledge, job satisfaction and supervision. However, the providers' workload was negatively associated with the clinical quality of care.

Positive outcomes were also described by Close *et al*. who compared integrated and non-integrated services in Malawi and Tanzania and found that the integration of FP with HIV services was associated with a better quality of FP services, and appeared to improve the availability of FP commodities [83]. In contrast, Kriel *et al*. recently reported less favourable outcomes from the integration of FP with primary health care, including HIV services, in KwaZulu-Natal, South Africa [84]. Their study revealed that stakeholders believed that service integration had resulted in 1) FP being overshadowed by HIV services, 2) longer wait times at the point of care, and 3) providers working within more stringent time constraints, which was believed to undermine provider-client interactions and the counselling received by clients.

FP and childhood immunisation service integration

Given the broad reach and global success of the EPI, the value of integrating FP services with childhood immunisations in LMICs has long been theorised. For example, in 2012, Anand *et al*. analysed DHS data from 28 countries in sub-Saharan Africa (SSA) to estimate the gains that could be achieved if FP services were linked to the delivery of measles vaccinations [85]. They posited that the unmet need for FP could be lowered by 50% in nearly all countries included in the study. Equally, implementers have speculated on the acceptability, feasibility, and programmatic challenges of this intervention. In particular, the immunisation community has questioned whether the integration of childhood immunisations with socially sensitive, and at times stigmatised, FP services would negatively impact immunisation coverage [15,86]. Although examples of FP and childhood immunisations being delivered alongside each other have been reported for several decades [87], in practice, FP is seldom paired deliberately with child immunisations. This is possibly because the latter tends to be integrated with other primary health services (e.g., HIV, malaria, nutrition, growth monitoring, etc.) [61].

Nevertheless, a review of the literature revealed 16 studies of variable quality that have scrutinised this specific pairing of services. It is worth noting that appraisals of the literature published before 2012 [50,51,88] identified Huntington and Aplogan's 1994 two group quasi-experimental study as the only study of reasonable quality that investigated the integration of FP with childhood immunisations [19]. However, for the purposes of this thesis, evidence from all 16 studies were considered.

Together, these studies have examined interventions implemented in 15 countries across SSA, South Asia, and Southeast Asia (Figure 3) in contexts where modern contraceptive prevalence rates were low or unmet need for FP was high, and where full immunisation coverage rates ranged from moderate (e.g., 57.4%) to high (e.g., 93.0%[7]) [22,45]. Among the seven studies published since 2020, four were carried out as part of the multi-country *Healthy Families – Healthy Futures* project in which this thesis was nested.

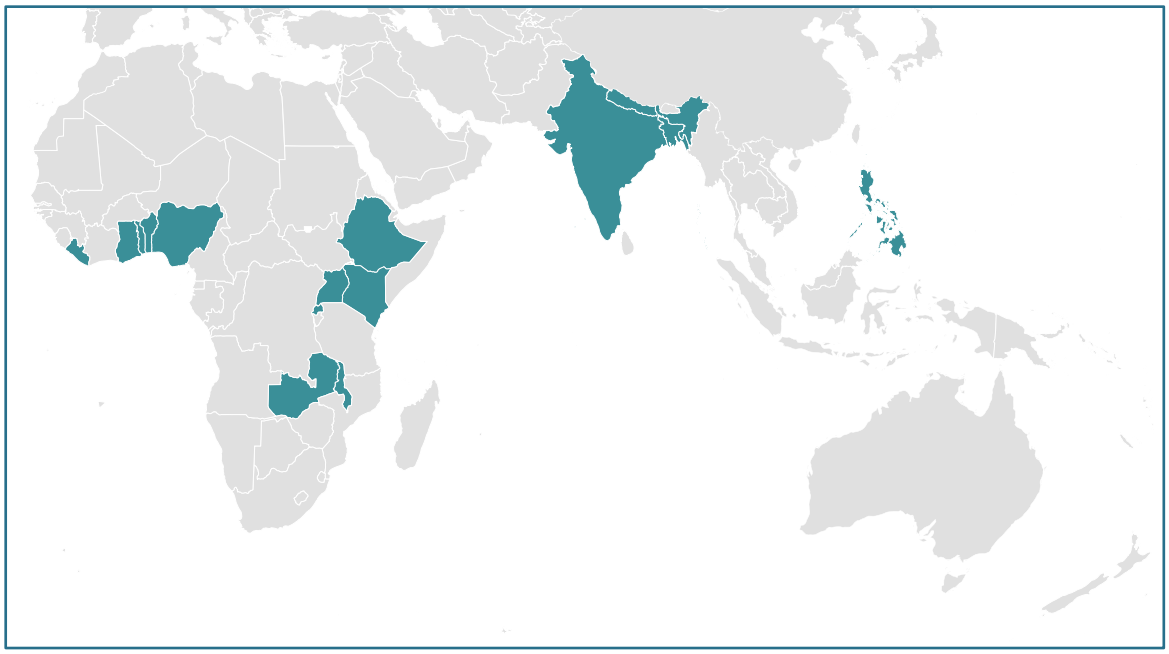

Figure 3. Countries where the integration of FP services and childhood immunisations has been studied

[7] According to national three-dose diphtheria–pertussis–tetanus (DPT3) vaccination coverage – a common proxy indicator for full childhood immunisation.

To date, most researchers have adopted observational designs to investigate the integrated delivery of FP and childhood immunisations. Observational studies have included realist evaluations, mixed methods process and programme evaluations (with and without comparison groups), and case studies. However, two group quasi-experimental studies were conducted in Nigeria [89], Bangladesh [23], and Togo [19], and randomized controlled trials were carried out in Rwanda [21], and in Ghana and Zambia [17]. Broadly, these studies aimed to 1) document the implementation of integrated FP and childhood immunisations; 2) explain how the intervention model works (or doesn't work); 3) assess the effect of service integration on FP and immunisation outcomes (e.g., its impact on contraceptive uptake and immunisation dropout rates); or 4) describe the factors that facilitate/hinder service integration.

Although most studies considered clients' and/or providers' views, only two studies set out to examine the experience of clients and their views of the quality of integrated services. First, a mixed methods programme evaluation with two group comparison in Liberia sought to understand the clients' and health workers' perspectives of 1) the quality of care provided through integrated services, 2) the contextual factors influencing implementation, and 3) the effect of integration on immunisation and FP outcomes [18]. Second, a qualitative process evaluation in Benin aimed to capture clients' experiences and to describe the implementation fidelity of the intervention [77].

Integration models

As summarised in Table 2, according to the 16 sources, a variety of models have been used to integrate FP services with childhood immunisations to date. Services have primarily been integrated in fixed health facilities (e.g., health centres, health posts), with few models leveraging community-based platforms such as door-to-door educational campaigns, household visits, and outreach clinics/sessions. Several interventions have adopted a one-stop-shop model in which intra-site links from childhood immunisations to co-located FP services are put into practice. For example, in Ghana

and Zambia, vaccinators screened women for pregnancy risk (based on lactation amenorrhoea criteria), delivered a FP message, and referred interested women to co-located FP services [17]. A slightly different approach was employed in Liberia, where bidirectional intra-site links were implemented to refer women from immunisation to FP services and vice versa [18]. In these examples, FP services and childhood immunisations were delivered to women by separate providers. In contrast, community-based integration has entailed the combined delivery of FP and immunisations through a single provider trained to deliver both services at once [23,45,90], with the exception of outreach clinics in Malawi that involved multiple service provision stations [43]. For instance, postpartum women in Ethiopia received FP services from health extension workers during postnatal and 45-day immunisation household visits [45].

Almost all facility-based models involved some form of group or one-on-one FP messaging and/or in-depth counselling about the benefits of FP, the different types of contraceptives, and the potential side effects. Notable exceptions were the models implemented in Togo and the Philippines, in which vaccinators simply provided a referral message about FP services to women seeking immunisations for their child [19,91]. Similarly, community-based models involved FP counselling and the provision of a selection of contraceptives by community health workers [22,23,43,45,90]. However, in community-based models, complicated cases were referred to fixed health facilities (e.g., for IUD and implant insertions or removals[8]).

Despite these relatively standard models, researchers noted important implementation variations across sites due to contextual factors, such as the availability of staff and other resources [22]. These factors are presented later in this chapter.

[8] In Ethiopia, implants were provided to women by Health Extension Workers during household visits, but women were referred to fixed health facilities for implant removals.

Table 2. Summary of sources focused on integrated FP services and childhood immunisations[9]

Source	Country	Service integration model	Purpose of study	Study design	Key outcomes reported
Hoyt *et al.* * 2021 [46]	Benin, Ethiopia, Kenya, Malawi, Uganda	• Single service with referral, one-stop-shop, and provider-based models • Facility- and community-based[10] • Group and individual FP messaging and counselling	Examine how service integration influences women's reproductive choices and decision-making	Qualitative study	• Integration was believed to improve knowledge and perceptions of FP, and the access to contraceptives • Integration created opportunities for women to make decisions autonomously
Krishnaratne *et al.* * 2021 [45]	Ethiopia	• Provider-based model • Household visits and health post-based • Individual FP messaging and counselling	Determine the key mechanisms and their triggers that drive successful implementation and use of integrated services.	Realist evaluation	• Service integration facilitated by trained community health workers and supported by religious leaders can trigger a perceived relative advantage of service integration and increase self-efficacy among providers and acceptance of FP among communities
Sheahan *et al.* 2021 [89]	Nigeria	• Single service and one-stop-shop model • Facility-based • Individual FP messaging and/or counselling • Intra-site link from immunisation to FP clinic	Determine whether integration changes over time and identify factors associated with integration in facilities	Longitudinal two group quasi-experimental design	• Significant mean change in provider integration index scores from baseline to endline • Providers were increasingly able to offer integrated services over time
Webster *et al.* * 2021 [44]	Benin, Ethiopia, Kenya, Malawi, Uganda	• Single service with referral, one-stop-shop, and provider-based models • Facility- and community-based[11]	Identify mechanisms of acceptability and the contexts in which they are triggered, and generate evidence-	Qualitative interpretative synthesis of findings from	• In certain contexts, acceptance of service integration is driven by models that 1) align with values without requiring compromise; 2) promote actors' certainty in their

* Study carried out as part of the multi-country *Healthy Families – Healthy Futures* project in which this thesis was nested.

[9] In this table, 'integration', 'service integration', 'integration models' and 'intervention' refer to the integration of FP services with childhood immunisations.

[10] Community-based refers to household visits in Ethiopia [45] and monthly outreach clinics in Malawi [43].

[11] Idem.

Source	Country	Service integration model	Purpose of study	Study design	Key outcomes reported
		• Group and individual FP messaging and/or counselling	based theories to improve the selection and implementation of integration models	five realist evaluations	ability to avoid harm and make the intervention work, and 3) promote actors' understanding of the intervention
Cooper *et al.* 2020 [22]	Malawi	• One-stop-shop model • Facility-based and community-based sessions • Integration of FP and immunisations with growth monitoring services • Intra-site link from immunisation to FP provider	Examine the implementation and results of an intervention integrating FP and immunisations	Mixed methods process evaluation	• Integration improved knowledge and perceptions of FP • Significant increase in FP users • No effect on immunisation doses administered or dropout rates • Providers felt integration increased their workload • Community-based services improved geographical convenience of services • Integration prevented the need for multiple visits to seek services
Erhardt-Ohren *et al.* 2020 [77]	Benin	• One-stop-shop model • Facility-based • Group FP messaging and/or counselling • Intra-site link from immunisation to FP provider	Describe implementation fidelity and clients' experiences	Mixed qualitative process evaluation	• Only one woman received FP counselling after an immunisation session and started FP on the same day • Most women felt they were well-received by staff
Hamon *et al.* *[12] 2020 [43]	Malawi	• One-stop-shop model • Monthly outreach clinic • Group and individual FP messaging and/or counselling • Integration of FP and growth monitoring services with immunisations	Determine the mechanisms and their contextual triggers that drive the outcomes of the integration model	Realist evaluation	• Integration improved the acceptability and availability of FP services • Women were motivated to attend outreach clinics due to shorter travel distances • Women felt confident they could access the FP services and contraceptives covertly if needed
Nelson *et al.* 2019 [18]	Liberia	• One-stop-shop model • Facility-based	Examine clients' and health workers'	Mixed methods programme	• Slightly higher FP uptake in intervention group

[12] This realist study was carried out prior to the research presented in this thesis.

Source	Country	Service integration model	Purpose of study	Study design	Key outcomes reported
		• Individual FP messaging and/or counselling • Bidirectional intra-site links from immunisation to FP provider and vice versa	perspectives of the quality of care provided through integrated services, the contextual factors influencing implementation, and the effect of integration on immunisation and FP	evaluation with two group comparison	• No negative impact on immunisation service use or Pentavalent vaccine dropout • Providers felt integration had a favourable impact on their workload • Women in both groups were satisfied with the services • Women were embarrassed to accept a FP referral in a public setting
Dulli *et al*. 2016 [21]	Rwanda	• One-stop-shop model • Facility-based • Group and individual FP messaging and/or counselling • Intra-site link from immunisation to FP provider	Test the effectiveness of integrating FP into immunisation to increase contraceptive use	Cluster-randomized controlled trial	• Significant increase in FP users in intervention group • No negative effect on immunisation service uptake • No difference between groups in the proportion of women who stated that providers treated them with respect or who were satisfied with the wait time • More women in the intervention group reported being able to ask questions and receive the information they needed
Cooper *et al*. 2015 [24]	Liberia	• One-stop-shop model • Facility-based • Individual FP messaging and/or counselling • Intra-site link from immunisation to FP provider	Examine the implementation of a contextualized integration model and describe the factors that influenced service delivery	Mixed methods programmatic assessment	• Integration was believed to improve knowledge and perceptions of FP • Increase in new contraceptive users • No client (FP referral acceptor and non-acceptor) reported feeling discouraged to return to the clinic for immunisations • Long wait times for FP services
Vance *et al*. 2014 [17]	Ghana, Zambia	• One-stop-shop model • Facility-based • Individual FP messaging and/or counselling	Assess contraceptive use and its determinants before and after the	Cluster-randomized controlled trial	• No significant effect on non-condom FP use in the intervention group • No improvement in referrals to FP services

Source	Country	Service integration model	Purpose of study	Study design	Key outcomes reported
		• Intra-site link from immunisation to FP provider	introduction of the intervention		• No improvement in women's knowledge on return of fecundity
Phillipson 2013 [92]	Nepal	• One-stop shop • Facility-based • Intra-site link from immunisation to FP provider	Evaluate the cost efficiency and effectiveness of integration	Mixed methods case study	• The costs of service integration are high, but better cost-efficiency is projected at the 10-year mark • Integration of the FP/EPI clinics is highly cost-effective in terms of DALYs averted
Herrin *et al*. 2012 [91]	Philippines	• Single service with referral model • Facility-based • Referral message for FP at immunisation point of care	Evaluate the effect of integrating FP into EPI on FP use	Mixed methods evaluation with two group comparison	• Larger increase in contraceptive use in intervention group
FHI360 2012 [90]	India	• Provider-based model • Facility-based and monthly village health and nutrition days • Individual FP messaging and/or counselling	Describe how services were integrated and make recommendations to strengthen service delivery	Mixed methods case study	• Clients reported receiving integrated FP information or methods far less frequently than providers reported offering them
Amin *et al.* 2001 [23]	Bangladesh	• Provider-based model • Door-to-door educational campaigns (in phase 1) and facility-based (in phase 2) • Individual FP messaging and/or counselling • Integration of FP and immunisation with microcredit loans	Describe the provision of microcredit assistance and immunisations with FP education, referrals, and non-clinical FP commodities.	Two group quasi-experimental study design	• Higher increase in contraceptive prevalence in intervention group (in phase 1) • Use of contraceptives and of clinic for FP was more likely among microcredit members that non-members (phase 2) • No negative effect on immunisation service uptake
Huntington and Aplogan 1994 [19]	Togo	• Single service with referral model • Facility-based • Referral message for FP at immunisation point of care	Evaluate the impact of a referral message and availability of FP services on the EPI clients' knowledge and intention to use FP	Two group quasi-experimental study design	• Mean number of FP clients and new FP users increased per month in intervention clinics but not in control • No negative effect on immunisation service uptake

Outcomes of FP and immunisation integration

Collectively, the evidence from the 16 studies indicates that the integration of FP with childhood immunisations can improve key service and health outcomes. Albeit mixed results have been found across different implementation settings. On one hand, service integration resulted in an increase in contraceptive use in Malawi, Rwanda, Togo, Bangladesh, Liberia and the Philippines [19,21–24,91]. For example, referrals from immunisation services to co-located FP services in Rwanda had a significantly positive effect on postpartum FP use among the intervention group compared to the control group between baseline and 16-months postintervention [21]. On the other hand, results from Ghana, Zambia and Benin were less favourable. In Ghana and Zambia, the intervention did not have a significant effect on contraceptive use, nor did it improve women's knowledge of return to fecundity factors [17]. And in Benin, only one woman was observed taking up a contraceptive on the same day as receiving a referral during a childhood immunisation consultation [77]. Having said that, it is worth noting that in all three cases, the absence of observable impact was believed to result, in part, from implementation inconsistencies and deficiencies due to contextual constraints (e.g., a shortage of personnel and supplies).

Importantly, six of these studies investigated the effect of FP integration on immunisation outcomes. Together the findings from these studies suggest that the integration of FP with childhood immunisations is unlikely to negatively impact immunisation outcomes. Specifically, no negative impact was found on immunisation service uptake in Rwanda [21]; on pentavalent vaccine dropout rates in Liberia [18]; on DPT1 to DPT3 dropout rates at outreach sessions in Malawi [22]; on DPT immunisation coverage in Bangladesh [23]; nor on the mean number of vaccine doses administered per month in Togo [19]. Through focus group discussions in Liberia, Cooper *et al*. also confirmed that clients were willing to return to the facility for their child's vaccination regardless of their decision to take up a FP referral [24].

Along the same line, several studies demonstrated that the integration of FP with childhood immunisation is largely acceptable to clients and providers alike [43]. In studies that examined the acceptability of this intervention, clients and providers generally supported the idea of accessing/delivering FP services alongside childhood immunisations. In Rwanda, almost all women in both the intervention and control groups of a trial voiced support for the combined delivery of these two services (97.9% in each group) [21]. In Liberia, clients, providers and supervisors all encouraged the intervention to continue [24], and 86.4% of immunisation providers interviewed in Togo thought referrals to FP services had a positive effect on their consultations with women [19]. Also, in a first attempt at examining bidirectional intra-site links between FP and childhood immunisations, Nelson *et al*. found that providers were accepting of integration as it helped them locate clients lost to follow-up whilst furthering the reach of both services [18]. In some cases, concerns about increases in workloads and documentation brought on by integration were voiced by providers [22], although this was not commonly reported.

Additionally, through a realist evaluation in Malawi, my colleagues and I found that in contexts where FP services were hard to reach and some men were unsupportive of FP, clients' acceptance of this intervention was in part driven by women feeling confident that they could access FP without their husband's knowledge due to the cover provided by the immunisation services [43]. In a qualitative interpretive synthesis of findings from realist evaluations conducted in Benin, Ethiopia, Kenya, Malawi and Uganda, we also found that acceptability among one group of actors could alter the prevailing context in which FP services were integrated with childhood immunisations and thereby trigger acceptability mechanisms among other actors [44].

As mentioned earlier, few studies have directly investigated the clients' experiences of FP services that are integrated with childhood immunisations. Nonetheless, together, the evidence from these 16 sources provides some indication of clients' experiences worth considering. For instance, in Rwanda

and Benin clients generally expressed positive views regarding the respect they received from providers [21,77]. However, findings from two studies conducted five years apart in Liberia highlight concerns about the confidentiality afforded to clients when services are integrated [18,24]. In both studies, a lack of privacy during the provision of immunisations (particularly when offered in public spaces or in groups) prevented some clients from accepting a FP referral for fear of being seen seeking FP services. Similarly, clients in Benin voiced concerns about publicly accepting a FP referral card and emphasised the importance of private counselling spaces due to a fear of being outed as a FP user to their community [77]. Notable discrepancies were also found between clients' experiences and providers' perceptions of the services they provide. For example, in India, less than 5% of clients that were interviewed reported receiving FP information or services during their latest immunisation visit, whilst 93% of providers said they offered condoms to clients during consultations and 90% said they offered contraceptive pills [90].

Furthermore, there seems to be a consensus in the literature around the idea that the integration of FP services and childhood immunisations improves the accessibility of FP services. According to the clients, providers, managers, and community members interviewed in several studies, the co-location of FP services and childhood immunisations reduces the need for frequent travel to seek services on separate days, and thereby decreases the costs and time associated with accessing these services [18,22,43]. In Liberia, clients also appreciated the opportunity to receive information about a service they did not originally intend to seek out [18]. And in Malawi, access to FP services was enhanced by the availability of integrated services at the community level (through outreach clinics or sessions) [22,43]. In fact, Cooper *et al*. found a near doubling of the average number of clients who accessed FP through community-based platforms following the integration of services at the community level [22]. That said, concerns about increases in wait times due to service integration and high client loads were noted by providers and clients at community sites. This mirrored findings from Liberia where one of the main reasons cited by clients for refusing a FP referral was the long wait time associated with

seeing a FP provider [24]. Additionally, according to several sources, by creating repeat opportunities for providers and clients to interact, the integration of FP with childhood immunisations also helps providers dispel fears, misconceptions and ultimately stigma surrounding FP in different communities, thereby reducing the social barriers that limit access to FP services [22,24,46].

Factors influencing the implementation and outcomes of FP and immunisation integration

In reviewing the literature on integrated FP and childhood immunisations, a number of factors known to influence the implementation and outcomes of this approach to service delivery were identified. This included wider contextual factors, programmatic factors, as well as factors relating to the point of care, the health providers, and the clients.

First, wider contextual factors included both the coordination of the intervention and its funding. According to research conducted in India, the coordination between the core governing bodies overseeing the delivery of FP services and childhood immunisations is key to the effective integration [90]. Equally, the allocation of sufficient funding to support the integration of services was highlighted by two studies given the relatively high cost of this intervention. Specifically, a facility-based one-stop-shop model linking childhood immunisations to co-located FP services was found to cost $32.05 USD per new FP user in Rwanda and between $55.00 and $73.00 USD in Nepal [21,92]. Evidence from Nepal suggests that better cost-efficiency could be achieved if FP services are integrated with childhood immunisations for several years given high start-up costs [92]. Importantly, the duration of the intervention could also have a positive influence on its implementation. For instance, in Nigeria, providers were found to be increasingly able to provide integrated FP services over time [89].

Several factors relating to the point of care were also mentioned in the literature. The availability of a private space for the provision of confidential services was found to be essential to the delivery and use of integrated FP services [21,24,90]. Providers across numerous studies similarly highlighted that

the availability of FP commodities and staffing levels can considerably impact the delivery of integrated services [18,21,22,24,43,77,90]. In Malawi, the availability of contraceptives, and especially discreet methods that can be used by women covertly, was found to affect the provision and use of integrated services [22,43]. As Cooper *et al.* note, in this setting, contraceptive shortages may have inhibited the potential for increased demand [22].

In some settings, staff shortages at the point of care were also found to impede integration and result in services being delivered differently across sites [18,21,22,77]. For example, in Benin, only half of the facilities that integrated FP services with childhood immunisations had the necessary personnel to implement education sessions on FP as dictated by the intervention's design [77]. Interestingly, in Rwanda, it was provider attrition due to inter-facility transfers that was found to pose a problem, as these transfers resulted in untrained providers replacing those who were trained and familiar with the delivery of integrated services [21].

The client load at the point of care was also found to influence service integration in Nigeria, Malawi, and India [22,89,90]. In particular, Sheahan *et al*. found higher levels of integration among facilities in Nigeria with smaller FP client loads [89]. They noted that the ability of providers to deliver high-quality integrated services may be limited in busier sites. Likewise, the time allotted to FP service provision reportedly impacted the effectiveness of integration in several settings. In Zambia, the typical duration of an immunisation consultation was short due to the high demand for immunisation services (relative to supply), which made the provision of individualised FP messages and referrals during childhood immunisations challenging [17]. This resulted in almost all vaccinators reportedly delivering FP information to clients in groups instead of individually. A similar situation was observed in Malawi at community sites where clients were occasionally turned away due to insufficient time [22].

Also, the use of a standardised client flow at the point of care was found in some cases to help enhance the providers' confidence to deliver services, optimise the time spent by clients waiting for services, and provide clients with clarity about the referral pathway between immunisations and FP services [18,43,77]. This is particularly interesting as the clarity and simplicity of the referral pathway itself was found to influence clients' willingness to accept a referral in several settings. For example, in Benin, FP users and non-users found the referral process confusing and voiced concerns about accepting referral cards, which were used to facilitate the referral process [77]. Earlier evidence from Togo suggests that successful referrals to FP services may be best achieved by providing a simple message on the benefits of birth spacing and the availability of co-located FP services to postpartum clients during immunisation consultations [19].

Furthermore, a few provider-level factors were found to influence the delivery and use of integrated FP services. Several studies highlighted the need for providers to receive context appropriate pre- and in-service training on service integration and FP services for the integration of FP with childhood immunisations to be successful [43,45,46,89]. Other studies demonstrated that insufficient training can lead to a sub-standard implementation of the intervention and thus result in unfavourable outcomes [17,21,90]. Importantly, pairing additional training with some form of on-site supervision is believed to further the development of providers' capabilities and thereby positively affect the delivery of integrated FP services [18,19,21,22,77]. However, to my knowledge, no study has examined the impact of on-site supervision on the delivery of integrated FP services to date.

In Malawi, providers were found to be motivated to deliver integrated services when they felt their work was recognised by the communities they served [43]. Similarly, some vaccinators in Liberia felt the value of their role had improved due to service integration, which in turn enhanced their confidence to provide services [24]. Community-based providers in Malawi and Ethiopia were also found to be motivated by teamwork to deliver integrated FP services, as collaboration was perceived

to lessen their workload and render the integration of services more manageable [43,45]. Interestingly, Sheahan *et al*. found that higher levels of integration were associated with providers possessing fewer years of experience in Nigeria [89]. These researchers hypothesised that this could be due to the long lag time between experienced providers' pre-service training and the introduction of service integration.

Finally, a small number of client- and community-level factors were found in the literature to influence both the implementation and outcomes of the integrated delivery of FP and childhood immunisations. In several countries, these factors included the presence of community-wide misconceptions and fears about modern contraceptive side effects, which precluded women's use of integrated FP services [18,22,46,77]. The stigma surrounding FP in some communities also reportedly determined women's willingness to accept referrals to FP services [18,22,77]. In Liberia, clients and providers reported that stigma related to strong beliefs in postpartum sexual abstinence prevented women from seeking FP services [18]. Similarly, in Benin, women's reluctance to accept referrals to FP services was reportedly driven by their communities' stigmatisation of FP and a common belief that women using contraceptives were promiscuous or engaged in prostitution [46,77].

In settings where women wished to obtain their husband's input or permission to use contraceptives, the emphasis placed on same-day uptake of FP services (particularly in one-stop-shop models) was believed to impede women's acceptance of referrals to FP services [24,44,77]. In contrast, in settings where husbands were supportive of FP, women reported feeling empowered to take up a contraceptive method when seeking integrated services [43]. Evidence also suggests that women who perceive the benefits of using FP for their own health and/or for their children's wellbeing are more likely to accept FP when services are integrated [46]. For instance, in Rwanda, women who perceived an unplanned pregnancy as a greater risk were more likely than other women to use FP [21].

Collectively, these sources indicate that understanding the contextual and programmatic factors at the point of care and beyond is key to the successful design and implementation of this intervention. However, it appears that the relationships and dynamics between these factors have yet to be examined.

In this first part of the chapter, the idea behind service integration was presented and the evidence surrounding the integrated delivery of FP with other health services in LMICs, including childhood immunisations, was summarised. To complement this, the next part of this chapter addresses the notion of the responsiveness of health systems and services.

RESPONSIVENESS LITERATURE

Conceptualisation of responsiveness

In the field of health systems research, the notion of 'responsiveness' is conceptualised and defined in many ways. When introduced by the World Health Organisation in the 2000 World Health Report, responsiveness was conceptualised as one of three intrinsic health system goals alongside the achievement of better health outcomes and fair financing [32–34]. It was also defined as the health system's ability to meet the population's legitimate expectations of the non-health enhancing aspects of their interaction with the health system, and regarded as a contributing factor to the attainment of people's welfare [34,93,94]. Legitimate expectations were defined as expectations that conform to universally accepted ethical principles (e.g., providing privacy during medical examinations), rules, and standards.

At the time, the acknowledgement of responsiveness as a central measure of health system performance was part of a growing recognition of human-rights in healthcare and the broadening of the concept of patient experience following a period in which little attention was granted to the demand-side of health care delivery [32,94,95]. Since then, the concept of health system

responsiveness has evolved and there is now a lack of consensus around its interpretation. Some researchers have proposed that it consists not only of the system's ability to respond to the population's legitimate expectations, but also of its actual response (e.g., actions taken by health providers to meet their clients' legitimate needs) [35,96].

Crucially, in mapping the existing evidence on health system responsiveness in 2021, Khan *et al*. identified three distinct categories pertaining to the conceptualisation of responsiveness in the literature. The first category conceptualises responsiveness as the 'unidirectional user-service interface'; the second focuses on 'feedback between users and the health system'; and the third defines responsiveness in terms of the 'accountability between the public and the system' [98, p.7-8]. In this thesis, responsiveness is understood as the unidirectional user-service interface. This is in line with the WHO's framing and conceptualises responsiveness as an indicator of service performance at the point of care. Responsiveness is also understood, here, to be separate, but adjacent, to the concept of quality of care. Ultimately concerned with the achievement of desired health outcomes, the idea of quality of care focuses on the effectiveness, safety and people-centredness of the clinical and non-clinical aspects of care [34,98].

The importance of responsiveness as an intrinsic goal of health systems is largely undisputed as the value of enhancing people's welfare and safeguarding their basic human rights during their interactions with health systems is irrefutable [34,94,95,99]. However, responsiveness is also recognised as a determinant of service utilisation. As Valentine *et al*. state, "people are more likely to seek care and to follow instructions of health providers in a responsive system" [94, p.588]. This is because most individuals do not possess the medical knowledge needed to fully comprehend the clinical quality of care; thus, health-seeking decisions are commonly based on the experience of care that individuals anticipate. By being client-oriented and by adapting to people's changing needs, a

responsive system is therefore likely to improve the acceptability of health services and people's willingness to seek care [35,97,99,100].

Conversely, when responsiveness is weak, individuals are likely to experience problems when seeking health services and consequently lose trust in the health system and health providers. This is particularly true for vulnerable or marginalized populations, including women, whose needs are multi-dimensional and who are more heavily impacted by system issues [95,101]. Evidence suggests that in low-income countries these issues commonly include poor access to services, low-quality amenities, disrespect, an absence of choice, rights violations, discrimination, and in some cases even verbal or physical abuse [29,32,102–105]. And yet, despite its importance, responsiveness remains the least studied of the three health system goals in LMICs [97,101].

A more widely explored measure of health system performance in LMICs is patient satisfaction. Although responsiveness and patient satisfaction involve overlapping dimensions and a few studies have demonstrated that they can be correlated [100,106–108], these two measures differ in several important ways. Patient satisfaction is based on the amalgamation of individuals' aspirations for the care they receive and their perceived need. As such, it is a largely subjective measure of their experience. In contrast, responsiveness is a measure of people's experiences, which is commonly assessed against a set of standards [34,93]. And as Murray and Evans state, "in some circumstances, it is conceivable that system responsiveness may actually lead to individual dissatisfaction" [109, p.116], particularly if people hold unreasonable expectations. Also, patient satisfaction is concerned with both the clinical and experiential components of care and rarely captures dimensions of care relating to human rights, such as being treated with dignity [34,93,94,110]. Despite being widely used to measure the quality of health services in LMICs [30], research also suggests that the high prevalence of low-quality health services in resource limited settings often results in low-expectations and consequently reports of high patient satisfaction [29]. This raises questions about the appropriateness

of patient satisfaction as a measure of performance. Another benefit of using responsiveness to measure the performance of health systems is that it is less open to biased responses from clients than questions about satisfaction. This is in part because clients tend to conflate satisfaction with gratitude or report feeling satisfied with their experience as a means of justifying the costs of their decision to seek health services [34]. Thus, by measuring responsiveness rather than satisfaction, it is possible to more clearly define a path towards improving the performance of health systems and health services [94].

Responsiveness domains

Prior to the 2000 World Health Report, the WHO built on a review of social science research and medical ethics principles to outline the domains of responsiveness believed to represent 'legitimate expectations' for the performance of health systems [34,94,95]. In all, the WHO defined eight[13] domains, which they grouped into two categories: 1) client orientation and 2) respect of persons [34,93,94]. On one hand, domains relating to the 'client orientation' are structural in nature and include a client's right to: a choice of provider; provision of prompt attention; quality basic amenities; and access to social support networks (for inpatient services). On the other hand, domains related to the 'respect of persons' are behavioural in nature and include a client's right to: autonomy; confidentiality; communication; and dignity. Detailed descriptions of these eight domains based on the WHO's definitions are provided in Table 3 [32,34,94,95,109].

[13] Initially, only seven domains were defined by the WHO in the World Health Report. However, an eighth domain (communication) was added soon after following a review of the measurement of responsiveness at an international conference [34].

Table 3. Description of core responsiveness domains

Structural domains	Description
Choice of provider	Individuals should have the freedom (power or opportunity) to decide which individual or institution provides their health care. This includes a choice of general and specialist services and implies that more than one option should be available.
Prompt attention	Individuals seeking care should receive attention as soon as necessary (including immediate care in emergencies), experience reasonable waiting times (especially for routine care) and should have the ability to access services at convenient times within easy travelling distances.
Quality of basic amenities	Basic amenities and physical infrastructure at the point of care should be of adequate quality for individuals to receive services in a welcoming, and pleasant environment. This includes the cleanliness, space, furniture, ventilation, water, toilets, and food at the point of care.
Access to social support networks	Individuals should have reasonable access to family and friends whilst receiving care as inpatients.
Behavioural domains	**Description**
Autonomy	Individuals should be able to participate in decisions about their health care by being informed about prevention or treatment options, encouraged to ask questions, and provided with an opportunity to explain their preferences. Individuals of sound mind should also be given the opportunity to provide informed consent or dissent.
Confidentiality	Individuals seeking care should have the right to determine who can access their personal and health information and this information should not be shared by others without their prior consent. Equally, individuals should receive care in an environment where their privacy can be safeguarded at all times.
Communication	Individuals seeking care should receive clear information from providers that evokes the necessary understanding and should have the opportunity to ask questions and be granted sufficient time to consider their options in order to make autonomous decisions.
Dignity	Individuals seeking care should be treated with respect, concern, and care, and without abuse or discrimination by health providers at all times regardless of the asymmetry of information between clients and providers.

Studies carried out since the WHO's introduction of responsiveness have mainly confirmed and validated the importance of these eight domains. However, some adaptations have been proposed based on empirical research. For instance, effective care, coordination, service continuity and follow-up, and the quality of counselling have been suggested as additional domains in the context of services requiring long-term and frequent utilisation such as mental health care and HIV-related services [106,111–116]. This development is of particular relevance to this thesis because like HIV and

mental health care, FP services in many contexts are heavily stigmatised and users of contraceptive methods require repeat service utilisation over several months or years.

Evidence indicates that the relative importance of these domains is likely to differ across populations and settings depending on people's perceived needs, which are influenced by a wide variety of socio-economic and cultural factors [34,93,95,99]. Understanding these differences is a crucial part of assessing and improving responsiveness as trade-offs between domains are inevitable at every level of the health system. For example, trade-offs are likely to occur at the macro-level in accordance with decision-makers' priorities and the socio-economic context of the health systems, at the meso-level in light of organisational constraints, and at the micro-level based on the perceptions and priorities of health providers [34,35,99]. In order to enhance responsiveness, decisions at each of these levels regarding which domains to prioritise and where to allocate resources should consider people's primary concerns and needs.

Researchers have suggested that several of these domains could be strengthened with minimal financial investment. Some researchers posit that improving behavioural domains may entail modifying health providers' attitudes towards their clients, but that it is unlikely to involve significant costs [32,93]. However, others highlight that for providers to shift their attitudes or behaviours they must feel motivated to do so, which may require substantial financial incentives [99]. Although policymakers are increasingly encouraged to look beyond financial incentives to motivate the delivery of high-quality services [117], little is known about the optimal strategies and resource allocation for strengthening responsiveness. This gap is due to the fact that, as shown in the following section of this chapter, few empirical assessments of responsiveness have adopted an approach that can generate recommendations that go beyond an enumeration of the domains that require strengthening.

Empirical assessments of responsiveness

Assessments of health system and service responsiveness

To date, several studies have empirically examined responsiveness as an indicator of health system and service performance, most of which have been carried out in high income settings [97]. The first empirical studies investigated and compared the responsiveness of national health systems through household surveys. This included the WHO's 2000-2001 Multi-Country Survey [118] on health and responsiveness, and the 2001-2004 World Health Surveys [119]. These assessed the responsiveness of inpatient and ambulatory (outpatient) care based on nationally representative samples using predominantly Likert scale questions. For example, the World Health Survey established that in Malawi [120] the responsiveness of outpatient care in 2003 was relatively good according to female clients in terms of the dignity and basic amenities they experienced, but less favourable in terms of the prompt attention, autonomy, and choice of health care provider.

Since then, most studies have loosely adopted the WHO's strategy for measuring responsiveness by relying on the use of structured surveys to capture quantitative data on relevant responsiveness domains [93]. Among these, a few have examined the responsiveness of health systems for population sub-groups. Of note, Peltzer and Phaswana-Mafuya conducted a population-based cross-sectional study to understand the health system responsiveness experienced by older adults in South Africa [121], and Mohammed *et al*. investigated the responsiveness experienced at the point of care by individuals enrolled in a national health insurance scheme in Kaduna State, Nigeria [122]. This latter study demonstrated, among other things, that examining the responsiveness experienced by clients within the context of a specific intervention (i.e., the implementation of a health insurance scheme) can generate useful insights into the functioning of said intervention and can help determine pathways towards improvement.

Other studies have assessed the responsiveness of particular health services. Historically, 'health service responsiveness' has been muddled with 'health system responsiveness' and to some extent viewed as its proxy [35]. However, the need for a theoretical distinction between these two concepts was recently stressed by several researchers as it would enable more defined and practical investigations into certain parts of the health system [97,106,113]. As such, in this thesis, service responsiveness is recognised as a distinct but related concept that is concerned with the extent to which an individual's experience with a given health service fulfils legitimate and service-specific expectations.

To date, the studies that have investigated service responsiveness have mainly focused on mental health, chronic diseases, and sexual and reproductive health in upper-middle- or high-income countries (especially Iran). For instance, Bramesfeld *et al*. [114] and Forouzan *et al*. [123] measured the responsiveness of mental health services in Germany and Iran respectively. These studies revealed that in both settings, the confidentiality and dignity afforded to clients seeking mental health services was generally good, but that the autonomy and quality of basic amenities that clients experienced was far less favourable. They also demonstrated the value of including a domain related to the continuity of care alongside the WHO's eight responsiveness domains when assessing mental health care given the repeat nature of these services.

Similarly, in testing the applicability of the WHO's conceptualisation of health system responsiveness to the context of chronic disease care in Germany, Röttger *et al*. recommended adding a domain on the coordination of care (between different providers and across time) [111]. And in studying the responsiveness of perinatal care in the Netherlands [124] and delivery care in southern Thailand [125], Van der Kooy *et al*. and Liabsuetrakul *et al*. found that behavioural domains (e.g., dignity, autonomy, communication) tended to perform better than structural domains. In both cases, the

authors concluded that responsiveness was critical to clients' experiences of these services but stopped short of providing concrete recommendations on how to enhance or maintain it.

Assessments of service responsiveness in sub-Saharan Africa

Among the studies focused on health service responsiveness, only 13 were carried out in countries within SSA[14]. Although none focused on services delivered in Malawi, six were conducted in Ethiopia, three in Tanzania, two in Nigeria, one in Kenya, and one in South Africa. Among these studies, six focused on HIV/AIDS services, two investigated maternal care services, and five scrutinized the responsiveness of a mix of facility-based services. All of these studies focused on services provided in health facilities and none explored the responsiveness of services delivered through outreach or community-based platforms. As Table 4 shows, they examined a range of domains, but most included the seven domains proposed by the WHO for outpatient services (dignity, autonomy, confidentiality, prompt attention, basic amenities, choice, and communication). Surprisingly, only four of the 13 studies explored respondents' views about the relative importance of these domains [113,126–128].

Of these 13 studies, ten sought to assess the level of responsiveness achieved by specific services and to determine its associated factors or correlates. Of the three studies with alternative aims, two investigated the relationship between responsiveness and service utilisation [129,130] and the other compared informed and non-informed clients' perspectives [131].

[14] Among these 13 sources, seven were publicly available at the time of the design and implementation of the case study presented in this thesis.

Table 4. Domains examined by service responsiveness studies carried out in SSA

Source	Service type	Dignity/respect	Autonomy	Confidentiality	Prompt attention	Basic amenities	Choice	Communication	Social support	Provider skill
Negash *et al.* [100]	Outpatient services in primary facilities	X	X	X	X	X	X	X		
Asefa *et al.* [107]	HIV/AIDS services	X	X	X	X	X	X	X		
Zepro *et al*. [130]	Maternal care services	X	X	X	X	X	X	X	X	
Hompashe *et al.* [131]	Outpatient services in primary facilities	X		X		X		X		
Abdo *et al*. [132]	Maternal care services	X	X	X	X	X	X	X	X	
Kapologwe *et al.* [101]	Services in primary facilities[15]	X	X	X	X	X	X	X		
Yakob and Ncama [108]	HIV/AIDS services	X	X	X	X	X	X	X		
Ughasoro *et al.* [128]	Specialist services in hospitals	X	X	X	X	X	X	X	X	
Yakob and Ncama [133]	HIV/AIDS services[16]	X	X	X	X	X	X	X		
Miller *et al.* [126]	HIV/AIDS services	X		X	X			X		
Poles *et al.* [129]	HIV/AIDS care adherence			X	X			X		X
Adesanya *et al.* [127]	Outpatient services in hospitals	X	X	X	X	X	X	X		
Njeru *et al.* [113]	HIV/AIDS services	X	X	X	X	X	X			

As detailed in Table 5, the methods used to study service responsiveness in SSA to date have generally aligned with the WHO's measurement strategy [93]. In most studies, structured questionnaires based on the WHO's Multi-Country Survey and the World Health Surveys that relied heavily on Likert scale questions were administered as exit interviews at the point of care to capture clients' experiences of specific services. However, a few researchers extended their scope of inquiry beyond clients to include the views of health providers, facility managers and administrators [113,127,130].

Interestingly, a different design was chosen by three groups of researchers. First, Njeru *et al*., carried out a concurrent nested mixed methods study to assess the applicability of the WHO responsiveness tool to the context of voluntary HIV counselling and testing services in Kenya [113]. Much like the others, these researchers conducted exit interviews with clients at the point of care. However, they

[15] Kapologwe *et al*. (2020) relabelled prompt attention as access to care and redefined prompt attention as the level of attention paid by the provider to the clients' needs.
[16] Yakob and Ncama (2016) replaced communication with a domain on 'client-provider interaction', which addressed more broadly the communication between these two types of individuals.

opted to add a qualitative open-ended question to their otherwise structured and quantitative tool to enable respondents to explain what they believed was needed for the services to be responsive. This decision was based on findings from their pilot study, which revealed the limitations of the quantitative survey and the importance of having a way of capturing unanticipated insights.

Second, to compare informed and non-informed clients' experiences of contraception, hypertension, and tuberculosis services in South African health facilities, Hompashe *et al.* carried out exit interviews with real clients and standardised clients (i.e., mystery clients) [131]. In many ways, this slight departure from the WHO's strategy enabled a more systematic and robust measurement of responsiveness.

Third, a novel approach was embraced by Zepro *et al*. who explored the experiences and perceptions of skilled birthing care among women in nomadic communities of Ethiopia [130]. These researchers conducted a phenomenological analysis of exploratory qualitative data from in-depth interviews, focus group discussions, and focused observations with post-natal women, health providers and administrators. In doing so, they generated a deeper understanding of the effect that service responsiveness can have on people's willingness to use health services.

Table 5. Summary of service responsiveness studies carried out in SSA

Source	Country	Purpose of study	Study design	Participants	Key outcomes reported
Responsiveness of HIV care and treatment services					
Asefa *et al.* 2021 [107]	Ethiopia	Assess the responsiveness of HIV/AIDS treatment and care services and associated factors in Shewarobit town's public hospital and health center in North Shewa Zone.	• Facility-based cross-sectional study. • Structured exit interviews.	ART patients (adult).	• Overall responsiveness: 55.3% (95% CI: 50.6–59.8). • High performing domain(s): confidentiality, respect, communication. • Low performing domain(s): prompt attention and choice. • Domain importance: not examined.
Yakob and Ncama 2017 [108]	Ethiopia	Assess the responsiveness of HIV/AIDS treatment and care services and its correlates at outpatient HIV care units of one hospital and five health centers in Wolaita Zone.	• Facility-based cross-sectional study. • Structured exit interviews.	Pre-ART and ART patients (adult).	• Overall responsiveness: 68.3% (95% CI: 67.6–68.9). • High performing domain(s): confidentiality, respect, communication. • Low performing domain(s): autonomy, choice, attention, amenities. • Domain importance: not examined.
Yakob and Ncama 2016 [133]	Ethiopia	Examine the factors associated with perceived access to HIV/AIDS treatment and care services in one hospital and five health centers in Wolaita Zone.	• Facility-based cross-sectional study. • Structured exit interviews.	Pre-ART and ART patients (adult).	• A unit increase in the responsiveness score results in a 10.0% increase in the likelihood of higher perceived access to HIV/AIDS treatment and care services ($p<0.001$). • Domain importance: not examined.
Miller *et al.* 2014 [126]	Tanzania	Assess the responsiveness of 10 private sector HIV/AIDS care clinics in Dar es Salaam.	• Facility-based cross-sectional study. • Structured exit interviews.	Clients (adult).	• Overall responsiveness: 55.3% (95% CI: 50.6–59.8). • High performing domain(s): confidentiality, respect, communication. • Low performing domain(s): prompt attention. • Domain importance: quality of service and confidentiality were most important.
Poles *et al.* 2014 [129]	Tanzania	Examine the relationship between responsiveness and visit nonadherence at six HIV/AIDS clinics in public sector hospitals and	• Facility-based cross-sectional study with retrospective clinical record review.	ART patients (adult, non-pregnant).	• Among responsiveness domains, poor communication was consistently associated with nonadherence to care. • Gaps in care were associated with younger age (AOR: 3.86 [2.02-7.40]), no explanation of

Source	Country	Purpose of study	Study design	Participants	Key outcomes reported
		health centres in Dar es Salaam.	• Structured exit interviews.		medication side effects (AOR: 2.21 [1.49-3.28]), and less time on treatment (0-3 months).
Njeru *et al.* 2009 [113]	Kenya	Assess the applicability of the WHO responsiveness tool to voluntary HIV counselling and testing (VCT) services in 15 facilities in Malindi district.	• Facility-based cross-sectional concurrent nested mixed methods study. • Structured exit interviews and observations.	Clients (adult) and VCT counsellors (health providers).	• Overall responsiveness: not measured. • High performing domain(s): confidentiality and autonomy • Low performing domain(s): choice of provider • Domain importance: confidentiality and autonomy were most important. • Access to social support, continuity and follow-up, and quality of counselling and testing were other important domains of responsiveness.
Responsiveness of maternal care services					
Zepro *et al.* 2021 [130]	Ethiopia	Explore the lived experiences and perceptions of skilled birthing care among mothers in pastoral (nomadic) communities in Afar Region.	• Interpretive phenomenological analysis of exploratory qualitative data. • In-depth interviews, focus group discussions, focused observations.	Post-natal women (adult), and facility-based health providers and administrators.	• Low use of skilled birthing care was linked to negative staff attitude (dignity), lack of involvement in decision making (autonomy), lack of choice of provider, long wait times (prompt attention), lack of providers' knowledge of local language (communication), the poor quality of basic amenities (shared bed linens), and discomfort with clinical procedures (confidentiality). • Domain importance: not examined.
Abdo *et al.* 2021 [132]	Ethiopia	Assess the responsiveness of maternity care and its determinants in all four public hospitals of the Hadiya Zone.	• Facility-based cross-sectional study. • Structured exit interviews.	Clients (women of all ages who gave birth in selected hospitals).	• Overall responsiveness: 53.0% of clients gave high ratings. • High performing domain(s): dignity, prompt attention, communication, confidentiality • Low performing domain(s): autonomy, amenities, social support, choice of provider. • Domain importance: not examined.
Responsiveness of facility-based service delivery					
Negash *et al.* 2022 [100]	Ethiopia	Assess the responsiveness and its associated factors of outpatient services in public and private primary health facilities in Asagirt District.	• Facility-based cross-sectional study. • Structured exit interviews.	Clients (adult).	• Overall responsiveness: 66.2% (95% CI: 61.4—70.7). • High performing domain(s): dignity, confidentiality • Low performing domain(s): choice • Domain importance: not examined.

Source	Country	Purpose of study	Study design	Participants	Key outcomes reported
Hompashe *et al.* 2021 [131]	South Africa	Examine the interactions of informed and non-informed clients with providers in 39 public and urban health facilities in the Eastern and Western Cape provinces.	• Facility-based, cross-sectional study. • Standardised clients (SC) as informed clients and exit interviews with real clients (RC).	Clients (mostly adult) seeking contraception, hypertension, and tuberculosis services.	• Being satisfied with a visit was associated with an increased likelihood of being greeted (RC: 30%, p<0.01; SC: 15%, p<0.05); being satisfied with the providers' attitudes (RC: 22%, p<0.01); the privacy experienced (RC: 7%, p<0.01; SC: 16%, p<0.01); the providers' understanding of the clients' health problems (RC: 10%, p<0.05; SC: 31%, p<0.01); and the providers' explanations (RC: 15%, p<0.01; SC: 29%, p<0.01). • Satisfaction was lower across all responsiveness domains among informed clients.
Kapologwe *et al.* 2020 [101]	Tanzania	Assess the responsiveness of 14 health centers and 28 dispensaries prior to the implementation of a direct health facility financing programme across seven regions.	• Facility-based cross-sectional study. • Structured exit interviews.	Clients (adult and caregiver of children).	• Overall responsiveness: 69.6% (SD: 11.7) in dispensaries and 68.0% (SD: 11.3) in health centers. • High performing domain(s): confidentiality, dignity, prompt attention. • Low performing domain(s): amenities, access to care. • Domain importance: Not examined. • Significant differences observed between type of facility for prompt attention (p = .042), dignity (p = .037) and access to care (p < .0005).
Ughasoro *et al.* 2017 [128]	Nigeria	Assess the responsiveness of specialist services in three tertiary hospitals in Enugu and Abia States.	• Facility-based cross-sectional study. • Structured exit interviews.	Inpatients (adult and caregiver of children).	• Overall responsiveness: 59.1% • High performing domain(s): confidentiality, social support, dignity • Low performing domain(s): choice of provider, autonomy, amenities, prompt attention. • Domain importance: Access to social support was least important.
Adesanya *et al.* 2012 [127]	Nigeria	Compare the levels of responsiveness experienced by outpatient clients of two private and two public hospitals in Lagos.	• Facility-based cross-sectional study. • Structured exit interviews.	Clients (adult) and hospital managers.	• Private hospitals performed better than public ones in terms of the dignity and prompt attention. • Private facility clients were generally more satisfied with their experience than public facility clients. • Domain importance: communication, amenities, confidentiality were most important to clients in both types of hospitals.

The findings from these 13 studies revealed that across service types and countries, the domains of autonomy, choice of provider, and basic amenities generally performed poorly whereas the dignity and confidentiality was perceived more favourably by clients [100,101,107,108,113,126,128,132]. Although this commonality should be interpreted with caution, it is interesting because it suggests a possible deviation from the assumption that domain performance differs across sites in line with health system and cultural differences [93]. It also diverges from evidence that indicate that the type of facility influences the performance of domain-specific responsiveness [101,127]. Research into the providers' perspectives and experiences could perhaps shed some light on the commonalities found across contexts. However, whilst the studies that have examined the views of health providers, facility managers and administrators to date have helped to contextualise the experiences reported by clients, they provide minimal insight into the providers' perspective on the delivery of responsive health services [113,127,130]. For example, *Adesanya et al*. interviewed health facility managers to understand the challenges involved in delivering responsive services in public and private hospitals in Lagos, Nigeria. Yet, the findings reported from these interviews are limited to reports on the availability of infrastructure and health providers in the facilities.

Additionally, three studies in relatively different contexts demonstrated the relationship between service responsiveness and service utilisation. First, Yakob and Ncama defined perceived access as the "process of knowing about, seeking, entering, passing through, getting satisfaction from the care and benefiting from the outcomes of health service" [132, p.3], and found that improved responsiveness increased the likelihood of clients perceiving favourably their access to HIV/AIDS treatment and care services in Ethiopia. Second, Poles *et al*. reported that poor communication consistently undermined clients' visit adherence to HIV care in Tanzania [129]. And third, Zepro *et al.* established that the dignity, autonomy, prompt attention, communication, confidentiality and quality of basic amenities all influenced nomadic women's decisions to use maternal health services in Ethiopia [130]. Negative

attitudes among health providers, an absence of good client-provider relations, and a lack of opportunity to be involved in decision-making processes were among the central reasons cited by women in this context for the low utilisation of skilled birthing services.

Furthermore, several of the studies carried out in SSA generated a basic understanding of the factors influencing service responsiveness (Table 6). Of note, the type of facility (e.g., private vs public) and the delivery of culturally appropriate care were found to influence clients' experiences of maternal and outpatient services in Ethiopia [100,130]. Also, the shortage of health providers, the lack of space, and the absence of an appropriate demand management strategy (e.g., an effective appointment system) at the point of care were all perceived to negatively impact the wait time experienced by clients and thus the prompt attention they received in Tanzania, Kenya and Nigeria [113,126–128]. Similarly, the motivation of health providers was found to influence the overall responsiveness in health centres and dispensaries across seven regions of Tanzania [101].

Although clients' socio-demographic characteristics were not identified as strong determinants of service responsiveness, in some contexts, the client's age, gender, employment status and health were believed to have some influence on clients' experiences. For example, male clients of specialist services in three tertiary hospitals in Nigeria reportedly experienced better autonomy than their female counterparts and were more likely to report having received prompt attention [128].

Table 6. Factors influencing service responsiveness by domain according to studies conducted in SSA

Domain	Factor (effect on the responsiveness experienced by clients)	Source
Autonomy	Being male (positive)	[128]
	Providers' lack of language skills (negative)	[113]
	Time spent by providers educating clients on health outcomes (positive)	[128]
	High provider-patient asymmetry of health information (negative)	[128]
	Paternalistic culture resulting in an inherent trust of providers (positive)	[127]
Choice of provider	Structure of health system that imposes a single provider (negative)	[128]
	Paternalistic culture resulting in an inherent trust of providers (positive)	[127]
	Lack of available of providers (negative)	[127]
Communication	Clarity of providers' explanations (positive)	[129]
Confidentiality	Appropriate location of service delivery site (positive)	[113]
Dignity	Appropriate location of service delivery site (positive)	[113]
	Competition between health facilities incentivising the recruitment, training, and retainment of quality staff (positive)	[127]
	Providers' respect of clients (positive)	[127]
	Bad provider attitude (negative)	[130]
Prompt attention	Being male (negative)	[128]
	Higher socio-economic status (negative)	[128]
	Long travel time to reach the clinic (negative)	[127,128]
	Long wait time at the point of care (negative)	[113,126–128]
Quality of basic amenities	Being male (positive)	[128]
	Lack of space at the point of care (negative)	[127]
Social support	Availability of social support groups (positive)	[113]
	Possibility of being accompanied whilst seeking care (positive)	[130]

Overall, the findings from these 13 studies demonstrate the applicability and value of exploring health service responsiveness based on the principles and strategies outlined by the WHO for investigating health system responsiveness. They also offer some indication of the range of factors that influence service responsiveness and suggest that a single factor can influence responsiveness across multiple domains. However, a more comprehensive understanding of the context-specific determinants of service responsiveness at the micro level of the health system where clients interact with health providers is needed.

Assessments of FP service responsiveness

Although Hompashe *et al*. examined clients' experiences of contraception visits in terms of four responsiveness domains in South Africa, data from clients seeking contraception-related services were combined with data from clients receiving services for hypertension and tuberculosis [131]. Therefore, this study provides limited insights into the responsiveness of FP services. To date, only two groups of researchers have explored the responsiveness of FP services, and as such many questions remain unanswered.

In 2002, Bossyns *et al.* reported results from an interventional study of supply-level measures to increase the use of FP services in Niger, which examined the intersection of responsiveness and FP service integration [134]. Whilst not directly assessing the responsiveness of FP services, this study established the plausibility of a relationship between increased contraceptive uptake and low-cost interventions aimed at improving the responsiveness of FP services.

To improve responsiveness, FP services in this study were offered to all eligible women attending health centres for curative consultations, clinics for children under five years of age, and post-natal care. The procedures for obtaining contraceptives in health centres were also made more flexible (e.g., strict follow-up schedules were relaxed). And providers were trained to interact respectfully with clients around the subject of FP to render the services more client friendly. This intervention was implemented in a context where health facilities were difficult to reach, women's willingness to use FP in the future was low (29%), the uptake of FP services was even lower (4.4%) [135], and where health providers were mostly male and reportedly lacked empathy towards their clients [134].

Despite some initial resistance to the intervention among health providers, a significant and sharp increase in the number of new contraceptive acceptors (a threefold increase in year 1) was observed

following the start of the intervention. Importantly, the authors highlight that the intervention represented a marginal cost to the health system and that further responsiveness could have been achieved by strengthening the communication between providers and clients, and by encouraging an open dialogue based on the client's preferences and priorities. They also conclude that most women welcomed the idea of using contraceptives when it was proposed and that only a small proportion felt it was unacceptable.

Nearly a decade later, Perera *et al*. investigated the responsiveness of FP services in the Sri Lankan context. They used mixed methods (focus group discussions, in-depth interviews, and a modified Delphi method involving key stakeholders) to develop a *Health System Responsiveness Assessment Questionnaire* to measure the responsiveness of FP services [136]. They also validated the instrument through a confirmatory factor analysis of data from a cross-sectional survey administered to clients who sought services in FP clinics in a randomly selected district. Through this work, they identified six domains believed to be central to the responsiveness of FP services in Sri Lanka, namely the 1) clinic environment; 2) choice; 3) dignity; 4) communication; 5) confidentiality; and 6) ease of access. Ultimately, several of the WHO's responsiveness domains were retained, and some were renamed to suit the local context and the FP focus. For example, the WHO domain of 'prompt attention' was replaced by 'ease of access'[17], and 'autonomy' was replaced by 'choice', which combined the choice of contraceptive and the choice of provider.

Subsequently, these same researchers assessed the responsiveness of FP services and identified its correlates by administering a cross-sectional survey to a random sample of clients using a structured questionnaire with Likert scale questions [106]. This study was carried out in 38 FP clinics[18] in the

[17] Although not explicitly explained by Perera *et al*. (2011), 'ease of access' may have been deemed a more appropriate term than 'prompt attention' given the non-emergent nature of routine FP services.
[18] FP clinics were in small facilities or outreach clinics that provided services near clients' homes.

Colombo district of Sri Lanka where FP is considered a sensitive topic and where the clients' expectations of their experiences with health services have a reportedly strong influence on their willingness to use health services.

Most clients (83.4%, N=1268) who participated in this study rated the overall responsiveness of FP services as good, yet some variation was found between the specific domains. Being treated with dignity was the strongest performing domain, with 88.0% of the clients rating this domain as good, whilst the communication (76.1%) and choice (72.0%) experienced by clients were perceived less favourably. A possible explanation for the positive perceptions of dignity that was offered by the authors was that the respect established between the clients and FP providers (many of which were public health midwives) likely enhanced the dignity experienced by clients. Additionally, the key factors that were found to be correlated with clients' perceptions of responsiveness included the clients' use of one contraceptive method in the past 12 months and obtaining all FP services from a single point of care in the past 12 months (Table 7).

Table 7. Factors correlated with clients' perceptions of FP service responsiveness in Sri Lanka [106]

Factor	Nature of correlation
Being employed	Negative (OR=0.247, CI 0.104-0.587)
Using contraceptives that can be received through home visits	Negative (OR=0.09, CI 0.02-0.31)
Obtaining a satisfactory contraceptive method at the point of care	Positive (OR=10.68, CI 4.80-23.74)
Having used only one contraceptive method in the past 12 months	Positive (OR=6.69, CI 2.74-16.33)
Obtaining all FP services from one site in the past 12 months	Positive (OR=9.91, CI 3.87-25.36)
Intending to return to the point of care for FP services in the future	Positive (OR=14.24, CI 4.13-49.08)
Being satisfied with the overall services	Positive (OR=69.07, CI 20.31-234.87)

In an effort to ascertain clients' non-clinical expectations of FP services in terms of the clinic environment and the clients' ease of access and choices, Perera *et al*. also carried out semi-structured interviews with a purposive sample of 38 clients in public outreach clinics [137]. In these clinics, FP

services were combined with antenatal care and child health services enabling clients to seek multiple services at once. Their findings revealed that clients expected the FP services to be free of charge, but they also acknowledged that expecting more than an efficient use of space and good sanitary facilities (toilets) from free services would be inappropriate. Generally, the clients viewed their ease of access favourably as they felt that the outreach and integrated nature of the clinics rendered FP services sufficiently accessible. Moreover, some clients viewed the clinics as an opportunity to socialise with their peers, which had a positive impact on their tolerance of long wait times in the clinic. Conversely, for employed clients, the timing of weekday clinics was viewed unfavourably, as these clients expected better accessibility. Additionally, despite being an important part of what normally constitutes service responsiveness, many clients believed the choice of contraceptive method should be determined by the provider, and few clients expected to have a choice of clinic or provider for FP services. That said, some clients pointed out that a female provider would be preferrable when more intrusive procedures (e.g., IUD insertions) were needed. These findings highlight the importance of understanding the socio-cultural contexts when examining and interpreting the responsiveness of FP services.

It is worth noting that several of the domains and factors identified by Perera *et al*. overlap with Jain and Hardee's seminal rights-based FP quality of care framework [28,30]. For instance, in Jain and Hardee's framework, the importance of treating clients with dignity, ensuring their confidentiality, and providing them with the opportunity to make choices that respond to their personal needs is emphasised. However, a closer examination of the framework exposes two domains that could be relevant to the responsiveness of FP services but that were not examined in Perera *et al*.'s empirical work. First, the framework includes the element of 'information exchange', which comprises both the act of asking clients about their personal preferences and the provision of advice. Albeit closely related to the responsiveness domain of 'communication', this definition of 'information exchange'

speaks to the process and autonomy that clients should experience when counselled about FP at the point of care [138]. As such, adding a 'counselling' related domain that encompasses this idea could be of use to the study of FP service responsiveness. Second, adding a domain focused on service continuity or on follow-up mechanisms could be similarly beneficial. Although according to Jain and Hardee's framework service continuity is central to clients' experiences of FP services, it was not captured by the domains studied by Perera *et al*. This addition would be consistent with the call to include service continuity in research focused on the responsiveness of services that involve repeat utilisation [113,114,123,139,140].

Whilst this chapter has thus far largely focused on the findings from empirical studies pertaining to the integration of FP services and the responsiveness of health services, the next part explains how the conceptual framework that underpins this thesis was built upon the frameworks considered most relevant to these topics.

CONCEPTUAL FRAMEWORK

As demonstrated earlier in this chapter, the WHO's initial conceptualisation of responsiveness is the most widely used framework by researchers and implementers seeking to understand service responsiveness. Nevertheless, in recent years, a few frameworks were developed to supplement this initial idea based on a wide range of literature and empirical evidence. Among these, the frameworks that are most relevant to this thesis conceptualised responsiveness as a product of the interaction between systems and people, and the characteristics that define each.

Of note, Robone *et al*.'s framework explicitly linked responsiveness to people's decisions about service utilisation based on findings from the World Health Survey, and highlighted the environment and population's characteristics as key components of responsiveness [141]. Also, in investigating the

responsiveness of human resources for health in rural Bangladesh, Joarder advanced a framework that included provider- and client-specific dimensions to highlight both the demand- and supply-side contexts determining responsiveness [96]. In this framework, the contextual factors on the supply side focused predominantly on material aspects and included the availability of health providers and infrastructure. Whereas on the demand side, the contextual factors included relational aspects, such as social norms and people's perceptions of both their entitlement and their health condition.

However, in 2017, Mirzoev and Kane took one step further and drew on existing conceptualisations to propose a more comprehensive framing [35]. Broadly, these authors positioned the interaction between clients and health providers at the centre of responsiveness and argued that this interaction was commonly overlooked in the literature. They also stressed the importance of recognising the cultural, social, political, economic, and historical contexts that influence responsiveness. Likewise, they highlighted the relationships that are known to shape both the people's expectations (e.g., their families and communities) and the health providers' response to individuals' needs (e.g., health system managers and policymakers) [142]. In doing so, they accentuated the value of considering multiple points of views and of focusing on a particular country or service delivery context when seeking to understand responsiveness. This framing is supported by empirical studies carried out in SSA, which demonstrate the importance of taking into account the wider contexts (e.g., cultural, social, and geographic) when assessing clients' experiences [100,113,130]. It also aligns with the established notion that health systems, including the micro-level systems present at the point of care, are interconnected, complex and dynamic, and ultimately consist of a process driven by human actions, beliefs, and norms [143–145].

Building on these frameworks and upon the critical elements of service integration and responsiveness synthesised in this chapter, I developed a conceptual framework to guide this thesis.

As illustrated in Figure 4, the framework draws on Mirzoev and Kane's conceptualisation of responsiveness [35] and focuses on the domains of responsiveness considered most relevant to FP services (i.e., the ease of access, environment, service continuity, choice, dignity, confidentiality, communication and counselling) [112–114,136]. It also outlines the hardware (e.g., resources, service provision design and process) and software factors (e.g., beliefs, values, norms, attitudes, priorities) expected to determine service responsiveness at the micro-level of the health system. Additionally, it accounts for the intersection between the health systems (service provision strategy, point of care, and providers) and social systems (community, family, and clients) that likely define the responsiveness of integrated FP services [145].

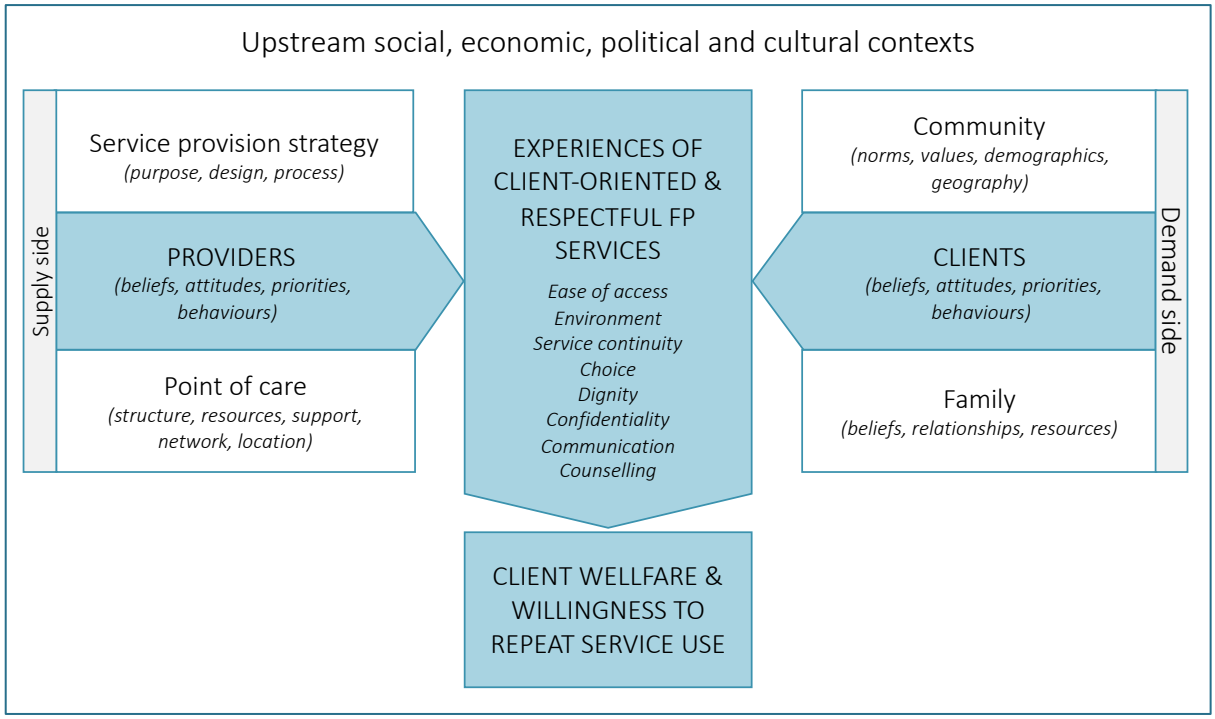

Figure 4. Conceptual framework for examining the responsiveness of integrated FP services

CRITICAL KNOWLEDGE GAPS

As presented throughout this chapter, numerous knowledge gaps came to light in reviewing the literature pertaining to health service integration and responsiveness. These are summarised in Table 8. The contributions made by this thesis to addressing several of these gaps are discussed in subsequent chapters.

Table 8. Summary of knowledge gaps identified in the reviewed literature

FP and childhood immunisation integration
• Evidence from low-income countries • Evidence from outreach platforms, rather than fixed health facilities • Evidence on optimal integration models and components • Evidence on the clinical quality of care and on clients' experiences • Evidence on the software factors that affect service integration • Evidence that explains the dynamics and causal relationships between the factors that affect the provision and use of integrated services
Service responsiveness
• Evidence from low-income countries and countries in SSA • Evidence from outreach platforms, rather than fixed health facilities • Evidence on the provider's perspective and its impact on responsiveness • Evidence on the determinants of responsiveness at the point of care • Evidence on the optimal strategies for enhancing responsiveness in specific contexts • Evidence from research that applies a systems lens to the study of responsiveness • Evidence on the responsiveness of FP services

CHAPTER 3. METHODOLOGY

RESEARCH ORIENTATION

Research questions

Based on the findings from the literature review presented in the preceding chapter, research questions were defined for each of the five thesis objectives. To address objectives 1 and 2, three research questions were formulated with regards to the clients' experiences of FP services in the studied clinics and to their views on responsiveness.

- Research question 1: How do clients rate the service responsiveness they experience in terms of eight domains: clinic environment, service continuity, choice of provider, ease of access, dignity, confidentiality, communication, and counselling?
- Research question 2: What do clients feel is most/least important among the eight responsiveness domains studied?
- Research question 3: What clinic, service and client characteristics are associated with better/ worse perceptions of responsiveness?

To address objective 3, three research questions were articulated that centred on capturing and comparing clients' and FP providers' views of the factors influencing the responsiveness of integrated FP services in the studied clinics.

- Research question 4: What are the hardware and software factors that influence the responsiveness of FP services in the studied clinics according to clients and their FP providers?

- Research question 5: How does the combined delivery of FP services with childhood immunisations affect the responsiveness of FP services?
- Research question 6: How do clients' and providers' views of the factors influencing service responsiveness align/differ?

Finally, to address objectives 4 and 5, four research questions were defined. The first two questions focused on modelling and describing the system dynamics determining the responsiveness of FP services in the studied context. Whereas the two final questions were articulated to help identify the changes that service designers and implementers should prioritise to improve the responsiveness of integrated FP services based on the modelled system dynamics.

- Research question 7: What are the causal relationships between the factors influencing the responsiveness of integrated FP services in the studied context?
- Research question 8: What effect does the feedback between these factors have on the responsiveness of integrated FP services in the studied context?
- Research question 9: What are the main drivers of responsiveness in the studied context?
- Research question 10: What changes should be made to enhance the responsiveness of integrated FP services?

Study design

As illustrated in Figure 5, the case study of the responsiveness of FP services that were integrated with childhood immunisations in routine outreach clinics was carried out using several methods to address the thesis objectives and answer each research question.

First, a cross-sectional convergent mixed methods design was used in which quantitative and qualitative data were collected simultaneously and thereafter combined and compared to understand clients' experiences and perceptions of service responsiveness (objectives 1 and 2) [146]. General trends and relationships were derived from the quantitative data and these were complemented by individual perspectives captured in the qualitative data [147]. My decision to adopt this design was informed by Njeru *et al*.'s findings from their assessment of the WHO's health system responsiveness tool in Kenya, which highlighted the importance of using mixed methods in the assessment of clients' experiences of outpatient services [113]. As Creswell and Plano Clark note, the convergent mixed methods design can be particularly useful when the time available for data collection is limited, when data must be collected in a single visit, and when the research question can be best answered by collecting both qualitative and quantitative data from each participant – three conditions that applied to this case study [146]. The empirical data used in this first part of the case study were collected through clinic audits and exit interviews with clients using structured questionnaires. Exit interviews were used because they offered the means to capture clients' experiences without introducing substantial recall and recognition biases. Also, it is a method commonly used to assess health system and service responsiveness [93,97].

Second, semi-structured interviews (SSIs) with clients and their FP providers were carried out to determine the factors influencing the responsiveness of FP services in the studied clinics (objective 3). By combining scripted open-ended questions with questions that naturally emerged through the discussion between the interviewer and the respondent [148,149], SSIs provided an effective method for exploring clients' and FP providers' experiences and beliefs. Results from a thematic and framework analysis of the SSI transcripts were synthesised to identify the hardware and software factors influencing service responsiveness. This classification enabled a further exploration of both the material and relational elements of the health systems influencing the responsiveness of integrated

FP services [150]. Additionally, clinic characteristics were summarised from clinic audit data to contextualise the qualitative findings.

Third, systems thinking was applied through a causal loop analysis of qualitative data (from the structured exit interviews and SSIs) to generate an evidence-based model of the responsiveness of integrated FP services and to identify changes that service designers and implementers should prioritise (objectives 4 and 5). Systems thinking proposes that interpreting the interrelationships between the elements of a system can generate a comprehensive understanding of complex issues, situations and interventions [144,151,152]. In the field of health systems research, causal loop diagrams (CLDs) are increasingly being used to apply systems thinking to the analysis of empirical data. A CLD is a tool that enables the visualisation of causal linkages, including reciprocal relationships, between elements of a system. This tool can also be used to examine the influence of exogenous variables (i.e., variables whose value is determined outside the system) on the system's functioning, which is key to understanding service responsiveness in different contexts [35]. Past applications of CLDs within the field of public health have focused on questions related to: trust in vaccinations; immunisation systems; neonatal health and mortality; gatekeeping; emergency presentation in cancer patients; health promotion; prevention of mother-to-child transmission of HIV; and pay for performance programmes [153–162]. Together, these applications have demonstrated that CLDs can generate a deeper understanding of the influence of system dynamics on health issues or health services and can help explain the unintended or unfavourable effects of certain public health interventions.

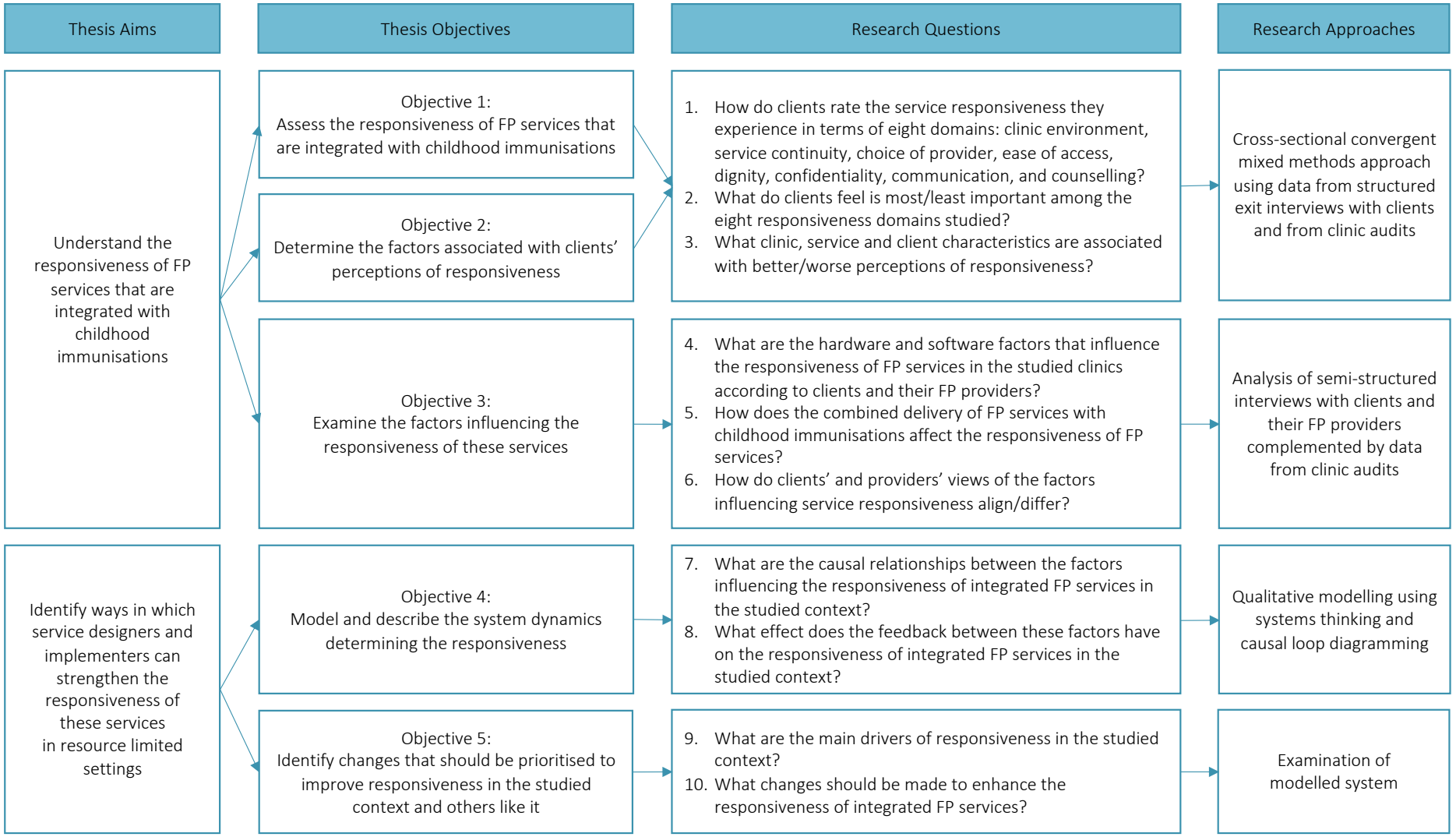

Figure 5. Summary of research orientation

EMPIRICAL DATA COLLECTION

Selection of study sites

At the time of the study, FP services were integrated with childhood immunisations in 91 routine outreach clinics across Mwanza, Blantyre (rural) and Thyolo districts with support from Save the Children. However, due to logistical and time constraints, clinics in Mwanza were excluded from the case study. Among the clinics operating in Blantyre and Thyolo districts, only clinics where FP services were integrated with childhood immunisations for 12 months or more prior to the start of the data collection were considered for inclusion in this study. This selection criterion was based on the assumption that assessing the responsiveness in clinics where providers had delivered integrated services for at least a year would generate better insights. Among the 16 clinics that met this inclusion criteria, one was excluded due to a conflict in the data collection schedule. Ultimately, the study was carried out in 15 clinics across two districts: Blantyre (n=7) and Thyolo (n=8).

Structured exit interviews with clients and clinic audits were conducted in all 15 clinics, whilst SSIs with clients and their FP providers were conducted in a subset of six clinics. Ideally, more clinics would have been selected for SSIs; but constraints imposed by the wider process evaluation in which this case study was nested prevented this. An equal number of clinics were selected in each district for the SSIs. These included high, moderate, and low performing clinics according to the intervention's monitoring data from the preceding 12 months. The performance indicators considered in the selection of sites for the SSIs were: 1) the clinics' average fulfilment of staffing standards (four HSAs or more); 2) the clinics' average FP client load; and 3) the level of involvement (high/low) from community members in the clinics as reported by the Save the Children team.

Interviewers

The empirical data collection was carried out between June and July 2019 by eleven experienced and independent local interviewers and coordinated by a local researcher whom I supervised. The team coordinator and interviewers were experienced in conducting fieldwork in the studied districts but had not been involved in, or associated with, the intervention. Among the eleven interviewers, nine (four women and five men) were tasked with conducting the structured exit interviews and clinic audits. The remaining two interviewers (both men) were responsible for carrying out the SSIs for the case study and leading in-depth interviews for the wider process evaluation. The interviewers' past experiences and familiarity with the relevant methods were considered in the assignment of their roles. Of note, both (male) interviewers tasked with carrying out the SSIs had extensive experience conducting qualitative interviews within the study setting on potentially sensitive topics (including sexual and reproductive health services) and were thus best suited to this role.

To standardise the data collection procedures as much as possible, I trained the interviewers over a period of four days. The training involved several didactic sessions, which focused on the study's objectives and methods; good research practices; effective interviewing techniques; and research ethics, principles, and practices. This training also involved role-playing sessions in which interviewers paired up to practice the recruitment, consenting and interviewing techniques, and procedures explained in the didactic sessions. Additionally, I developed standard operating procedures (SOPs) for the team coordinator and interviewers to use as a reference throughout the data collection period. These SOPs outlined each step involved in the collection and management of data, and they provided detailed instructions on how to carry out ethical research.

At the end of each data collection day, the team coordinator led the interviewers in a debriefing session, which I attended either in person or by telephone. During these sessions the interviewers

discussed their overall impressions and observations of the day's activities, the context of the clinic where the interviews took place, and the challenges they faced during the day. In response, the team coordinator and I provided practical and context-appropriate advice on how to overcome challenges. Also, interviewers were encouraged to reflect on and share their assumptions and personal biases, the dynamics they observed between clients and providers in the clinics, and the interviewer-respondent dynamics they experienced. Notes taken by the team coordinator and I during these sessions were compiled at the end of the data collection period and used to inform the data analysis and interpretation of results.

Data collection instruments

Instrument development

Prior to their implementation, the instruments used in this case study were drafted, translated, pre-tested, and ultimately piloted to address language and procedural issues. To start with, I drafted the questions relating to the case study's objectives for each tool. These drafts were revised through several rounds of discussions with my PhD supervisors, the implementing team from Save the Children, and the researchers involved in the wider process evaluation.

A near-final version of the instruments was translated into Chichewa by experienced translators in Malawi and refined by the interviewers during their training week. Building on lessons from previous studies[19], particular attention was paid at this stage to the terminology used to describe the different domains of responsiveness. That is, before refining the instruments, the interviewers discussed how women in the communities would likely perceive each responsiveness domain. For example, the interviewers expected that women in Thyolo and Blantyre would conceptualise 'dignity' as politeness

[19] In adapting the WHO responsiveness survey for their study of FP responsiveness in Sri Lanka, Perera *et al.* replaced 'prompt attention' with 'ease of access' and 'basic amenities' with 'clinic environment' [136].

and feeling welcomed. This was believed to be separate but complementary to the concept of 'kindness', which the interviewers associated with being helpful, considerate, and taking the time needed to interact fully with an individual. Following this discussion, the interviewers compared the English and Chichewa versions of each tool, debated the appropriateness of the terms used in Chichewa, and together decided on the changes that were needed to refine the language. Each question was also back translated into English to check whether the original intent was preserved. Not only did this process serve as a way of refining the questionnaires and interview guides, but it also provided an opportunity for the interviewers to become familiar with the instruments and to reflect on their personal biases. For example, one interviewer declared that he expected most clients would respond positively to questions about confidentiality because they inherently trust that providers will keep private any information they disclose. However, this belief and others like it was not shared by all interviewers, which led to a lively discussion and the dispelling of several misconceptions and pre-conceived ideas that were held about health providers and their clients.

An informal pre-test of the revised instruments was also performed during the role-playing sessions that were included in the interviewers' training. Specifically, the team coordinator and I observed the role-playing sessions and noted procedural issues that required correcting. Feedback from the interviewers on the usability of the instruments was also compiled at the end of each session. This step proved critical as several issues were addressed. For instance, multiple corrections were made to the skip logic in the structured exit interview questionnaire and important procedural instructions were added to all instruments to improve their clarity.

Ultimately, the instruments were piloted in one outreach clinic in each of the study districts over two days. Pilot sites were selected based on the clinics' schedules. Only clinics where FP services were integrated with childhood immunisations with support from Save the Children and that were not among the 15 eligible for inclusion in the study were considered for the pilot. During these two days,

the audit was carried out in both clinics alongside a total of 23 structured exit interviews and six semi-structured interviews (4 with clients and 2 with FP providers). Data captured during the pilot were not included in the study's final datasets. Nevertheless, lessons learned from both piloting days were used to revise the instruments and to improve the recruitment and interviewing procedures.

Structured questionnaire used for exit interviews

The structured questionnaire used to carry out the exit interviews with clients (Appendix A) was primarily developed for the wider process evaluation in which this case study was nested[20]. This instrument featured questions on several topics, such as the client's 1) socio-demographic background; 2) birth history; 3) family planning history; 4) family planning knowledge; 5) exposure to family planning messages in the community and in the clinic; 6) access to the clinic; as well as questions on 8) the elements of FP counselling they received in the clinic on the day of the interview, and on 9) their child's immunisations.

Although responses to a few of the questions from each of these topics were used in this case study, an additional set of questions focusing on the clients' experiences were included in the questionnaire for the purpose of assessing the responsiveness of FP services for this thesis. Clients were asked to rate their experience of eight responsiveness domains using a five-point Likert scale[21] with responses ranging from 'very good' to 'very bad' [163–165]. The Likert scale and questions were adapted from the WHO's 2002 World Health Survey and other publicly available surveys previously used to measure the responsiveness of specific health services [108,125,136,166–169].

[20] The structured questionnaire was jointly developed by the process evaluation's research team, of which I was a member. However, I led the development of the section relating to the clients' experiences of FP services (Questions 36-56 in Appendix A).

[21] A laminated copy of the Likert scale in Chichewa, which included illustrations of happy faces, was used alongside the questionnaire as a visual aid to help respondents answer these questions.

Clients were also asked elaborative and hypothetical questions based on cognitive interviewing techniques to 1) check their understanding of each Likert questions; 2) verify their interpretation of the Likert scale; and 3) explain their domain ratings (Table 9) [170–172]. To my knowledge, this is the first attempt at combining cognitive interviewing probes with Likert questions to assess service responsiveness. As Beatty and Willis state "all forms of cognitive interviewing entail administering survey questions to a participant while collecting additional verbal information relevant to survey responses" [170, p.289]. In this study, two verbal probes were used following each Likert question to achieve this: 'can you explain what made you feel this way?' and 'what would it have taken for you to answer inversely?'. These two probes were chosen because they provided the means to verify whether there was conceptual alignment between the questions and the clients' responses. The latter probe, which was a more cognitively demanding question, was additionally chosen because it provided further clarity around the clients' interpretation of the four domains (i.e., access, dignity, confidentiality, and counselling) that were likely to elicit a broad range of possible interpretations. Although there is a risk of recall bias and reactivity (where probing influences respondents' subsequent answers) associated with this type of probing compared to a think aloud approach[22], this method was adopted because it placed a lower burden on the respondent and conserved the flow of the interview [170,173,174].

Interviewers noted the respondents' answers to these questions directly on the questionnaire. Instead of recording responses v*erbatim* in Chichewa, the interviewers were asked to translate the responses and write them in English. For quality assurance purposes, this simultaneous note taking and translating was trialled and practiced by the interviewers during their training and during the piloting days prior to the data collection with support from the team coordinator. To ensure that this

[22] A think aloud approach to cognitive interviewing is one in which respondents are asked to explain their thought process whilst simultaneously answering the question posed by the interviewer. This approach can be fruitful; however, it is more cognitively demanding and imposes a higher burden on respondents than the approach adopted in this study.

task was adequately completed (i.e., that the original meaning of the response was conserved and that the interviewers' own interpretation of the response was not introduced into their notes), the interviewers were instructed to translate the information as directly as possible, focusing on the accuracy of the translation rather than the elegance of the phrasing.

Table 9. Responsiveness domains and questions included in the structured exit interview questionnaire

Domain	Question and cognitive interview probe
Ease of access	How easy was it for you to access this clinic today? - Probe: How much time did it take you to travel to the clinic today? - Probe: What would it have taken for you to answer [*state inverse answer given*] [23]?
Dignity	How was the respect you received from the provider? - Probe: Can you explain what made you feel this way? - Probe: What would it have taken for you to answer [*state inverse answer given*]?
Environment	How was the cleanliness and space in the clinic? - Probe: Can you explain what made you feel this way?
Confidentiality	How was the confidentiality provided to you by the FP provider? - Probe: Can you explain what made you feel this way? - Probe: What would it have taken for you to answer [*state inverse answer given*]?
Choice of provider	How was the freedom you had to choose a provider to assist you with FP in the clinic? - Probe: Can you explain what made you feel this way?
Communication	How clear was the information you received from the provider? - Probe: Can you explain what made you feel this way?
Counselling	How was the attention the provider paid to your reproductive preferences? - Probe: Can you explain what made you feel this way? - Probe: What would it have taken for you to answer [*state inverse answer given*]?
Service continuity	How clear was the information about where and when to seek follow-up FP services? - Probe: Can you explain what made you feel this way?

In this section of the questionnaire, clients were also asked to rank the eight responsiveness domains from most to least important. To aid respondents, each domain was printed onto a laminated strip of paper, allowing literate respondents to physically organise the domains by moving around the strips of paper. For non-literate respondents, the interviewers supported the respondents by reading the list of domains and asking them to name the most important among all the domains mentioned. Once the most important domain was chosen, the interviewer read the list of remaining options and asked

[23] The instructions for the interviewer provided in brackets in the questionnaire were not read aloud to the respondent.

the respondent to name the next most important domain, and so on. This question was followed by the final responsiveness-related question in the structured exit interview, which asked respondents how likely they were to recommend the clinic to a friend or family member interested in family planning.

Prior to being piloted, this questionnaire included three questions corresponding to each responsiveness domain. Also, cognitive interviewing probes were only intended to be used on piloting days to ascertain whether the Likert scale was correctly interpreted by respondents and to optimise the structure of the Likert questions. However, during the first piloting day, it became evident that asking 24 Likert questions caused respondent fatigue (Box 2). Interviewers believed this was due to the repetitive nature of the questions and the fact that they were asked at the end of a relatively long interview.

To address this issue, three changes were made to the questionnaire between the first and second day of piloting (Box 3). First, the questions were moved to an earlier section of the questionnaire to avoid ending the interview with these more complex queries. Second, the number of Likert questions was reduced from 24 to eight, with one question retained per responsiveness domain. To determine which of the three questions to retain for each domain, the data from the first day of piloting were examined. In cases where no single question stood out as the most representative for a given domain, the selection was informed by a rapid review of published responsiveness-related Likert questions and by the elements of Jain & Hardee's FP quality of care framework [28]. Consideration was also given to the other questions included in the questionnaire to prioritise the collection of responses that were not captured in other sections of the interview. For instance, clients were asked several questions elsewhere in the interview about their choice of contraceptive method and the FP counselling they experienced in the clinic, the responses to which could be used to complement the clients' responses to the Likert questions. Third, a decision was made to permanently include

cognitive interviewing probes after each Likert question in the questionnaire. These probes served to confirm whether each respondent accurately understood the Likert questions and scale whilst providing important insights into the respondent's views that were otherwise lost by reducing the number of Likert questions for each domain from three to one. Despite these changes, the Likert scale was not amended, and the formulation of questions remained unchanged. The data collected through the cognitive interviewing probes during the two pilot days revealed no major issues relating to the four cognitive tasks involved in responding to such questions according to Tourangeau's response model: comprehension, retrieval, judgement, and response [175]. Following these changes (and others made for the benefit of the wider process evaluation), the total length of the interview was reduced from roughly 80 minutes to an average of 45 minutes, resulting in what interviewers perceived to be less reluctance from clients to participate in the study and better engagement in the interviewing process.

Box 2. Excerpt from my field notes

Pilot Day 1 – June 2019

The data collection team received a warm welcome from the clinic's providers and clients. Despite the rain, clients wanted to be interviewed. They were initially excited, but the length of the exit interview wore them down (estimated time: 80 minutes). Interviewers said the clients grew tired during the Likert questions – at first, they were engaged, listened well and were able to answer, but over time they stopped listening and started answering 'moderate' (choosing the middle point of the scale) to each question. There are too many questions! Will try fewer Likert questions on Monday (1 per domain max) and will include cognitive interviewing probes alongside them all for more insight.

Box 3. Excerpt from the team coordinator's debriefing notes

Pilot Day 2 – June 2019

It was exciting to conduct the interviews as compared to first piloting day (interviewers were getting familiar with the questionnaire). The exit interview work has been made easier after taking out some questions.

Structured questionnaire used for clinic audits

A second structured questionnaire (Appendix B) was developed to facilitate an audit of each outreach clinic on the day of the exit interviews. This tool was used by a selected interviewer with support from an HSA working in each clinic. The purpose of the audit was to help contextualise the data collected through other methods by providing a detailed account of the clinic's characteristics and resources. It captured information on the clinics' infrastructure, the number and cadre of providers working in the clinic on the day of the interviews, the availability of FP supplies and immunisation commodities, and on the training of the providers working in the clinic. The questions included in this instrument were adapted from the WHO's Service Availability and Readiness Assessment and the Quick Investigation of Quality developed by MEASURE Evaluation [176,177].

The audit questionnaire was translated into Chichewa for ease of administration. Although less complex in nature than the structured exit interview, this instrument was nonetheless scrutinised by the interviewers prior to its pilot to ensure that the translated version accurately maintained the intent of the original questions. No substantial changes were made to this instrument during or following its piloting. However, a few minor amendments were made to the order of the questions to improve the overall flow of the audit. These changes were successfully implemented during the second piloting day and no further modifications were made thereafter to the questionnaire as it proved to capture the targeted information.

Interview guides used for semi-structured interviews

Two interview guides were developed for the SSIs (Appendices C and D). Both included a set of open-ended questions and prompts to facilitate the discussion and maximise the depth of the answers provided by respondents. The interview guide used for the SSIs with clients focused on women's experiences of the services and the changes they felt were needed to improve these experiences. The guide used to interview FP providers centred on their experience delivering integrated FP services in

routine outreach clinics, the improvements they felt were needed, and the factors they believed influenced the providers' and clinics' ability to meet clients' needs. Clients and providers were also asked about their thoughts on the integration of FP services with childhood immunisations. Additionally, clients were asked to explain which responsiveness domains they felt were most and least important, and providers were asked what they believed was most and least important to their clients.

The SSIs were conducted in either Chichewa or English depending on the respondent's preference and audio recorded. After completing each SSI, the interviewers were encouraged to reflect on their experience and observations by completing field notes using a form developed for this purpose. Interviewers were prompted to reflect on 1) the space in which the interview was conducted; 2) the people around the interview site and whether their presence may have influenced the interview; 3) significant interruptions during the interview and how these impacted the interview; 4) the mood and comfort level of the respondent; 5) noteworthy non-verbal cues observed during the interview; and 6) other contextual or environmental factors that may have influenced the respondent's answers to the questions. The interviewers were also prompted to consider and record their thoughts on the information shared by the respondent during the interview.

No changes were made to the SSI guides during the piloting days; though, the recruitment procedures for the SSIs with clients were amended. Originally, these procedures involved selecting clients that had first taken part in the structured exit interview. However, given the respondent fatigue observed in the exit interviews during the first day of piloting, it was evident that asking women to take part in the SSI following the exit interview would not be feasible. Consequently, a decision was made to recruit women for the SSIs who had not participated in the exit interview.

Recruitment of participants and sample selection

For the structured exit interviews, all eligible clients were recruited upon exit from the clinics based on the availability of interviewers until the sample size needs for the wider process evaluation were met. This sample size was determined by the process evaluation's statistician based on an assumed percentage use of modern contraceptive methods of 50%, relative error 0.2 and design effect 3.0. Assuming 95% confidence and 80% power, a total of 192 exit interviews were required, with 13 per clinic as a target. Clients who were considered eligible for inclusion in the wider process evaluation were women 18 years of age or older with a child under the age of three years who had attended the outreach clinic on the day of the interview. To streamline the recruitment process, the community volunteers who supported the HSAs to deliver services in the clinics were asked to assist the interviewers by identifying women who met the inclusion criteria and directing them to the area where the interviewers were located. The interviewers in turn carried out the formal recruitment procedures using a structured questionnaire and invited all eligible clients to take part in the study. Ultimately, the sample of clients included in the case study was a sub-group of the clients recruited for the wider process evaluation. This sub-group was determined through the skip logic in the interview questionnaire. Only clients who received FP services on the day of the interview were asked the service responsiveness questions and therefore included in the case study.

For the SSIs, a convenience sampling approach was used to recruit clients and their FP providers. All eligible clients were recruited upon exit from the clinics based on the availability of interviewers. Clients were considered eligible for the SSIs if they were women 18 years of age or older and received the childhood immunisation and FP services provided in the clinic on the day of the interview. Meanwhile, all providers who delivered FP services on the day of the interviews in the six clinics selected for SSIs were invited to be interviewed at the end of their shift before leaving the clinic. Overall, interviewers aimed to recruit four clients and one FP provider in each clinic.

Clients and providers who met the inclusion criteria but who refused to consent to participate in the study were excluded. Similarly, clients who self-reported as having an ill child on the day of the interview were excluded from the study even if they otherwise met the inclusion criteria. Also, the inclusion of clients under the age of 18 was discussed with the implementing team from Save the Children. Interviewing clients that were considered minors according to the Convention on the Rights of the Child [178] and the African Charter on the Rights and Welfare of the Child [179] could have provided important insights into the responsiveness of services for this arguably more vulnerable clientele. However, given that most, if not all, clients who usually sought services in the studied clinics were over the age of 18 according to the Save the Children team, minors who otherwise met the inclusion criteria were excluded from the case study.

Data collection challenges

A few challenges were encountered during the data collection, which were documented in the team coordinator's debriefing notes, the interviewers' field notes, and my field notes from the piloting days. Among these challenges were the disruptions to service provision caused by the presence of the data collection team in the clinic. For example, services in one clinic that were typically provided under a tree were moved by the providers to a neighbouring church in anticipation of the team's visit. In another clinic, HSAs who had been alerted to the data collection team's visit chose to delay the provision of services until the team's arrival. Despite still being useful to the aims of the study, the data captured in these two clinics were not completely accurate representations of the normal service delivery conditions. As such, the team took every precaution to avoid disrupting the service delivery in the clinics they visited. For instance, following the first day of piloting in which the team's cars were parked in front of the clinic and drew a large crowd from the community, the cars were parked far from clinics on the days that followed to avoid calling attention to the team's arrival and presence in the clinic (Box 4).

Box 4. Excerpt from the team coordinator's debriefing notes

Pilot Day 2 – June 2019

There was no interruption to the service provision. Our vehicles were parked way back and the team just walked to the clinic. The clients didn't realise that we were visitors, and it didn't make any difference to the community members.

The timing of the clients' exits from the clinics also represented an important challenge to the recruitment of participants for the structured exit interviews and SSIs. Given the rolling nature of the services, and the fact that most women attended the clinic at the same time, the clients exited the clinic at different times but in quick succession allowing for a narrow window between two and four hours for all recruitment and interviews to take place in each clinic. Often, clients that may have been eligible to take part in the study left the clinic without being recruited because all the interviewers were already engaged in interviews. Although these clients were invited to wait for the next available interviewer, many were unable to wait. This issue impacted the recruitment more severely on rainy days (Box 5), as clients were far less likely on these days to wait to be interviewed. Having a larger team of interviewers to enable a different distribution of the recruitment and interviewing roles among the team members might have proven more effective; however, this was not possible at the time.

Box 5. Excerpt from my field notes

Pilot Day 2 – June 2019

There's no rain today so clients are staying at the clinic after they receive their services. This was not the case on Friday when it rained. They are sitting in the shade and feeding their children. Some clients have brought food that they are selling to the other clients. Rain will clearly affect data collection because women won't want to wait around to be interviewed after receiving the clinic's services.

In three clinics the recruitment of clients was further complicated by a clear hesitancy among clients to be interviewed. According to the interviewers and the team coordinator, this was because women attending these clinics had previously taken part in a different study that had required them to

provide a blood sample – an experience they preferred not to repeat (Box 6). A concerted effort was made by the data collection team to clarify the difference between this study and the previous unrelated research. Nevertheless, clients remained hesitant to take part in the study, which resulted in fewer clients being recruited in these clinics compared to others.

Box 6. Excerpt from the team coordinator's debriefing notes

Data collection day – July 2019

There were a lot of clients at the clinic who came to access the services, but there was a lot of resistance from the women to take part in the study and so the team experienced a lot of refusals. This was because the women were scared to take part in the study due to the experience they had with previous studies by other researchers, which involved getting blood samples from the women. They thought our study was of the same nature, hence we experienced a lot of refusals from the women. Due to this it was really difficult to reach the minimum target of the day.

Moreover, the space used to conduct interviews was less than ideal in some clinics. Although interviews were generally conducted in suitably comfortable and confidential spaces (often under a tree or a shelter away from the clinic), in some clinics the space that was available to conduct confidential interviews was limited. In these clinics, interviewers prioritised confidentiality over comfort. On the second piloting day, this trade-off was believed to impact the quality of interviews. The interviewers remarked in their field notes from that day that the environment was not conducive to good interviews because the clinic bordered agricultural land. Interviews were therefore conducted whilst standing in a field infested with ants. However, the interviewers' field notes from subsequent data collection days did not reveal any issues as significant as these. Nevertheless, the lack of confidential space for the interviews near some clinics may have impacted clients' willingness to take part in the study or the respondents' answers to the interviewers' questions.

DATA MANAGEMENT

Data processing

All forms used during the data collection period by the interviewers and team coordinator (e.g., recruitment forms, consent forms, field notes forms, etc.) were scanned and saved as digital files using the standard naming conventions outlined in the study's data management plan (Appendix E).

Data from the structured exit interviews and clinic audits recorded on paper forms by interviewers were double entered into databases created in EpiData by the process evaluation's statistician. This included the clients' responses to the cognitive interviewing probes from the exit interviews. The data were entered by two members of the data collection team who were experienced in quantitative data entry. Validation rules, controlled vocabulary, code lists and choice lists were used to minimise data entry errors. Once the data were entered in EpiData and validation was performed to ensure that out of range values were not entered in the databases and that missing data were correctly identified and labelled, the data were exported into STATA 16. At this stage, I verified that the data were fit for analysis by checking that 1) all respondents met the study's inclusion criteria; 2) respondents' answers were consistent (e.g., no contradictory responses were given by a respondent across questions); and 3) that all responses to the cognitive interviewing probes had been entered in full and in English.

The data were then cleaned to address any remaining inconsistencies and mislabelling, and to improve their overall readability. Once this was completed, the structured exit interview and clinic audit data were merged into a single dataset, along with data on the clinics' client load from Save the Children's programme monitoring system. The responses to the cognitive interviewing probes were also exported from STATA16 to Nvivo 12 for analysis.

The audio recordings from the SSIs were transcribed *verbatim* and translated into English. The quality of the SSI transcripts was checked through two levels of checks. To start with, the five first transcripts produced by the transcriber were compared to the audio recordings to check whether the transcriptions were *verbatim* and whether they adhered to the guidelines outlined in the study's SOPs. Once this was completed, all other audio recordings were transcribed. Upon receiving the transcriptions of all SSIs, a sample of three transcripts were once again compared to the audio recording to ensure consistency. Following this first step, the accuracy of the translation was verified by comparing the translated transcripts to the original transcript. In this step, particular attention was paid to whether the translated transcript retained the exact meaning of the original transcript. No concerns about the quality of the transcripts were raised during any of these checks.

The translated transcripts were then imported into Nvivo 12 for coding and analysis. Upon import, quotes were anonymized. However, the number assigned to each clinic during the data collection, the type of respondent (client or provider), the respondent's gender and age, and the clinic attributes (e.g., information on the number of HSAs and the type of shelter extracted from the clinic audit data) were included in file classifications to facilitate analyses.

Data storage

Systems for transferring and storing data were developed to preserve participant confidentiality and comply with LSHTM's Information Security Management Policy. During the data collection period, interviewers handed over the audio recorders and all completed paper forms to the team coordinator at the end of each day. The team coordinator scanned these documents and stored them at the Save the Children offices in a locked cabinet, ensuring that completed forms were stored separately from consent forms. The document scans, the data entered into the EpiData database, and the audio recordings were also saved by the team coordinator on encrypted and password-protected

computers each day and uploaded to the study's for-cost cloud service as often as possible. Data transfers over wireless and mobile networks were minimised and private networks were used when needed. All study data held on computers, servers, and hand-held devices were backed-up daily on encrypted external drives, which were stored separately from all other devices.

Following the completion of the data collection, all paper-based forms containing study data were stored in locked cabinets in the Save the Children office in Blantyre, Malawi. Electronic files containing study data were stored on a for-cost cloud service, which could only be accessed by designated study staff with my approval. A second layer of protection was provided through passwords on computers, servers, and networks. In accordance with LSHTM's retention schedule, anonymised data and study materials will be kept for a minimum of 10 years following the completion of the study as research evidence.

DATA ANALYSIS

Clinic and respondent characteristics

Data relating to the clinics' and respondents' characteristics collected through the clinic audit, structured exit interviews, and SSIs were analysed in STATA16 and Excel to supplement and support the interpretation of results from other analyses. More precisely, descriptive statistics (frequency distribution, ranges, percentages and means) were generated to summarise the characteristics listed in Table 10.

Table 10. Clinic and respondent characteristics summarised using descriptive statistics

Clinics
Staffing level
Staff's prior training
Presence and type of shelter
Presence of seating
Number of rooms
Use of space for FP and immunisation services
Availability of FP commodities
Clients
Age
Education level
Socio-economic status
Marital status
Gravidity and parity history
Number of children (of any age and under the age of five years)
Past use of modern contraceptives
Reasons for using contraceptives
Preferred contraceptive method
Husband's support of FP (yes/no)
Travel time to the clinic (measured in self-reported minutes)
Reasons for attending the clinic on the day of the interview
Use of other clinics or health facilities for FP and immunisations
Providers
Age
Gender
Home-base (inside or outside the catchment area they served)
Prior FP training

The percentage of clients who took part in the exit interview and reported receiving key elements of FP counselling on that day was also calculated. These elements included: 1) hearing the group health talk that contained information about FP; 2) being asked how many more children are desired; 3) being asked about past use of contraceptives; 4) being asked about problems with past contraceptive use; 5) being told how different contraceptive methods work; 6) being told about possible contraceptive side effects; 7) being told when to seek follow-up services, and 8) being told where to seek follow-up services.

Responsiveness domain ratings, correlations, and importance

To measure the responsiveness of integrated FP services in the study sites and address the first objective of the thesis, domain-specific responsiveness scores were calculated using a two-step process. First, clients' responses to the Likert questions from the structured exit interview were categorised into 'positive' and 'negative' ratings, with middle point responses (i.e., moderate ratings) added to the negative ratings. The decision to include the middle point responses among negative ratings was informed by the data from the cognitive interviewing probes, which revealed that whilst the Likert scale questions were well understood, the respondents' moderate ratings predominantly represented negative experiences. The decision to dichotomise the 5-point scale and to group the middle point with negative ratings also mirrors the approach used by Njeru *et al*., Van der Kooy *et al*. and Sajjadi *et al*. in their respective assessments of HIV testing responsiveness in Kenya, perinatal service responsiveness in the Netherlands, and diabetes care responsiveness in Tehran [113,124,180]. Second, responsiveness scores were reported as the proportion of clients who rated each domain positively. Although I initially planned to compare proportions of positive ratings between clinic-level clusters, the sample did not allow for this disaggregation. Instead, district-level variation among responsiveness scores was examined and reported.

This two-step process was adopted instead of attaching significance to the magnitude of the ordinal ranking of the Likert scale because I believed this could result in inappropriate inferences. As I could not be certain whether clients interpreted the distance between the response categories on the Likert scale as equal, I chose an approach to analysis that allowed their responses to be treated as ordinal data instead of interval data, as recommended by Jamieson [181]. Also, following Yakob and Ncama's recommendation [108], I opted not to calculate an overall responsiveness score that combined the scores from each domain because the overall score would mask important strengths and weaknesses and provide little insight into which aspect of responsiveness performed well or poorly.

Additionally, Spearman's rank correlation coefficients were calculated to examine the relationships between each set of responsiveness domain ratings (on the five-point scale). The Spearman coefficient was used for this purpose as it provided the means to assess the strength and direction of the monotonic relationship (rather than the more restrictive linear relationship) between the ratings of each set of responsiveness domains, without an assumed normal distribution [182].

Following these analyses, the clients' responses to the structured exit interview question that asked them to rank the eight responsiveness domains from most to least important was analysed. For each client, pairwise comparisons of their rankings across all domain pairs were carried out and then aggregated across individuals to generate an overall ranking of the relative importance of the responsiveness domains [183]. That is, for each client, I discerned whether 'domain A' was ranked more important than 'domain B' or vice versa. These results were then aggregated across all clients. If most clients in the sample ranked 'domain A' more important than 'domain B', then at the sample level 'domain A' was taken to be more important. This was carried out for all possible domain pairs. Using this method, the domain ranked above all other domains in the pairwise comparisons was ranked as the most important domain overall. Then ignoring this 'most important' domain, the domain that was found to be more important than all remaining domains was considered the second most important domain, and so on. Following Van der Kooy *et al*.'s example, the findings from this pairwise comparison were then mapped against the domain-specific responsiveness scores (the proportion of clients' positive ratings) to identify any observable relationships between these two outcomes (domain performance and importance) [184].

Explanation of clients' ratings and perceptions of responsiveness

The clients' responses to the cognitive interviewing probes were analysed to explain clients' ratings of each responsiveness domain and to address the second objective of the thesis. To perform this analysis, an inductive text summary approach was used whereby dominant themes and sub-themes among the clients' responses were described and summarised in detail [185]. These summaries and the client-level data substantiating them were then compared in Excel spreadsheets to the clients' domain ratings to gain a better understanding of the factors influencing clients' perceptions of responsiveness. As Willis highlights, by adopting an inductive text summary approach the analysis was carried out in an efficient manner, whilst retaining the richness of the data through detailed summarisation [185].

Differences in perceptions of responsiveness among client sub-groups were also examined using Pearson's chi-squared test. Specifically, the associations between the clients' ratings of the eight responsiveness domains (dependent variable) and the following characteristics (independent variables) were tested: 1) the shelter (building) type, number of rooms, use of space for FP and immunisations, FP client load, and staffing level of the clinics where clients were served; 2) the elements of FP counselling reportedly received by clients; and 3) the clients' age, education, marital status, number of children, travel time to the clinic, exclusive use of one clinic for FP services, and socio-economic status. The selection of these independent variables was based on the plausibility of associations and informed by the clients' responses to the cognitive interviewing probes. For example, when responding to the cognitive interviewing probes relating to the ease of access domain, some clients explained their rating of this domain by saying that access would have been an issue if the time needed to travel to the clinic exceeded an hour. Thus, the association between ease of access ratings and the time taken by clients to travel to the clinic was tested.

Clients' and providers' perceptions of the factors influencing responsiveness

Thematic and framework analyses of the SSI transcripts were carried out based on the principles of constructivism to address the third objective of the thesis and understand the factors influencing service responsiveness [186]. First, a careful reading of the full SSI transcripts was performed to identify core consistencies and meanings in the data. Second, the data were coded deductively along the eight responsiveness domains, and subsequently inductively to identify the major and minor themes and sub-themes pertaining to each domain [187]. A search for conflicting discourses in the data that contradicted the preliminary findings was also performed to assess the validity of the emerging patterns [188,189]. Third, the providers' and clients' responses were compared to ascertain how they aligned and/or diverged within each theme. Fourth, dominant themes were scrutinized to identify the key factors believed by respondents to influence the responsiveness of FP services in the studied clinics. At this point in the analysis, quotes representing each factor were reviewed again within the context of the full interview transcript to contextualize and confirm the emerging findings. Fifth, the factors identified were classified according to whether they were health system 'hardware' or 'software' factors to further conceptualise and synthesise the findings [72].

Following each step of the analysis, results were discussed with my supervisors to address my assumptions and with the Save the Children team to enhance the trustworthiness of the analysis. Additionally, as recommended by Mays and Pope (2000), detailed notes were kept throughout the analysis process to ensure that a clear exposition of methods was possible at later stages in the study, including during the interpretation of findings [188]. These notes included a mix of the decisions that I made during the coding of transcripts, my thoughts on the emerging patterns and findings, and reflections on my assumptions and inherent biases (Box 7).

Box 7. Excerpts from my analysis notes

Saturday, 23 May 2020 *I'm coding the responses to questions about the relative importance of the responsiveness domains. I'm not convinced that all the respondents understood sufficiently well (or maybe gave enough thought) to the ranking of the domains. It's possible that I am feeling this way because I'm concerned that the interviewers didn't spend enough time on this question. However, it's clear that respondents understood when the interviewer asked them which were the most and least important domains – they provided clear reasons for these two choices. I think I'm going to focus on these two extremes rather than the respondents' full rankings.* *I've added the respondents' unprompted feelings about how important the domains are (when mentioned at any time during the SSI, not just as a response to the question about the domain importance) to the responses that were coded to 'the most/least important domains' nodes in Nvivo.*
Friday, 05 June 2020 *Several respondents commented on how the confidentiality in clinics results from how providers alter the clinic's flow to ensure the confidentiality of unmarried women or of women whose husbands don't agree with FP. This seems interesting. The years I've spent working alongside providers in rural health facilities might bias my thinking around this and lead me to overemphasise the providers' role here – I'll discuss this with my supervisors and the Save the Children team to see what they think of this.* *After coding 17 of the 23 client SSIs, I seem to be reaching saturation in terms of the ideas and issues that are raised by respondents.*
Tuesday, 09 June 2020 *Most providers said that if the right number of staff isn't available at the clinic, it can't be run properly so services aren't offered well. This might be linked to the client flow design that requires at least 3 or 4 HSAs according to providers.*
Monday, 15 June 2020 *A lot of the respondents' views seem to revolve around the temporary nature/setup of the clinic and how this affects the providers' ability to deliver responsive services. Is this relevant to specific responsiveness domains? Might be worth examining.*

Qualitative modelling of system dynamics determining service responsiveness

To address the fourth and fifth objectives of the thesis, a causal loop analysis was carried out through a multi-step process. First, findings from the thematic and text summary analyses of the qualitative data described earlier in this chapter were re-examined and summarised in Excel spreadsheets to identify dominant factors influencing the eight responsiveness domains studied. Factors were considered 'dominant' if they were found in both data sources (structured and semi-structured interviews) and were emphasised by both types of respondents (clients and providers) across several

clinics. Next, causal links between these factors were identified through purposive text analysis by returning to the empirical data and micro-analysing the arguments made by respondents about the system's structure and behaviour [190]. Then, a simple diagram was constructed with unidirectional arrows denoting these causal links. Based on Baugh Littlejohns *et al.*'s example [158], the plausibility of causality was inferred from the empirical data based on the following criteria: temporal precedence (A occurs before B); constant conjunction (when A occurs, B always occurs as well); and/or contiguity of influence (a plausible mechanism links the occurrence of A and B) [191,192]. As Davidson cautions, these criteria were not applied to prove the presence of causality between two variables, but served, instead, as a guide for checking the plausibility of causal relationships between the dominant factors [192]. As such, the fulfilment of all three criteria was not a necessary condition for inferring the plausibility of causality between two or more factors.

Second, building on the simple diagram created in the first step, a CLD was constructed, which included an assumed reciprocal relationship between service utilisation and service responsiveness. This assumption was informed by research that has established a strong link between clients' experiences of health services and service utilisation [25,29,94,193]. Also, reciprocal links between the dominant factors included in the simple diagram were added to the CLD based on the empirical data and the findings from the thematic and text summary analyses. The CLD was further expanded through an iterative process based again on purposive text analysis of the empirical data. This process consisted of introducing exogenous variables into the CLD, and moving back and forth between the coded data, the spreadsheet summaries, and the diagram to add the effect of these variables to the model. To do so, the same criteria adopted to infer plausible causality in the first step were used. Concurrently, intermediate variables that mediate the relationships between exogenous variables and output variables according to the data were also added to the CLD using the same process. By drawing the connections between these variables, feedback loops began to emerge.

Third, the polarity of each causal link in the model was determined based on the empirical data. A positive polarity was noted in the CLD where a change in a cause variable was described by respondents to alter an effect variable in the same direction (e.g., an increase in A causes an increase in B). Whereas a negative polarity was noted where a change in a cause variable was described as having the inverse influence on an effect variable (e.g., an increase in A causes a decrease in B). The variables and causal links were then refined through multiple rounds of discussions with my PhD supervisors and the Save the Children team to enhance the accuracy of the model. Also, plausible time delays between linked cause and effect variables were noted in the CLD where necessary [194].

Fourth, the type of feedback present in the model was identified based on the total number of causal links with a negative polarity in each loop. Loops with an odd total were labelled 'balancing' and loops with an even total were labelled 'reinforcing'. Balancing loops produce an alternating effect on the variables included in the loop with each feedback cycle. For example, if a feedback loop causes an unfavourable effect on a variable in a given cycle, it will have a favourable effect on this same variable in the subsequent cycle. Conversely, reinforcing loops produce a reinforcing effect on the variables included in the loop with each feedback cycle. For example, if a feedback loop has a favourable effect on a variable in a given cycle, it will again have a favourable effect on this same variable in the subsequent cycle.

Finally, the CLD was analysed to identify the fundamental elements of the system driving responsiveness in the studied context and to ascertain leverage points within the system [194,195]. The drivers were inferred by identifying the variables that: 1) were extensively discussed by respondents in the case study; and 2) were contained in multiple feedback loops, implying a key intersection and important influence within the modelled system. Whereas the leverage points were identified by considering the question: how can the system be altered to strengthen balancing loops or slow the growth of reinforcing loops? Higher-level leverage points, including altering the rules of

the system or the paradigms from which the system arose [194,195] were not explored because these extended beyond the sphere of influence held by service designers and implementers and as such were considered external to the research aims.

Summary of analyses

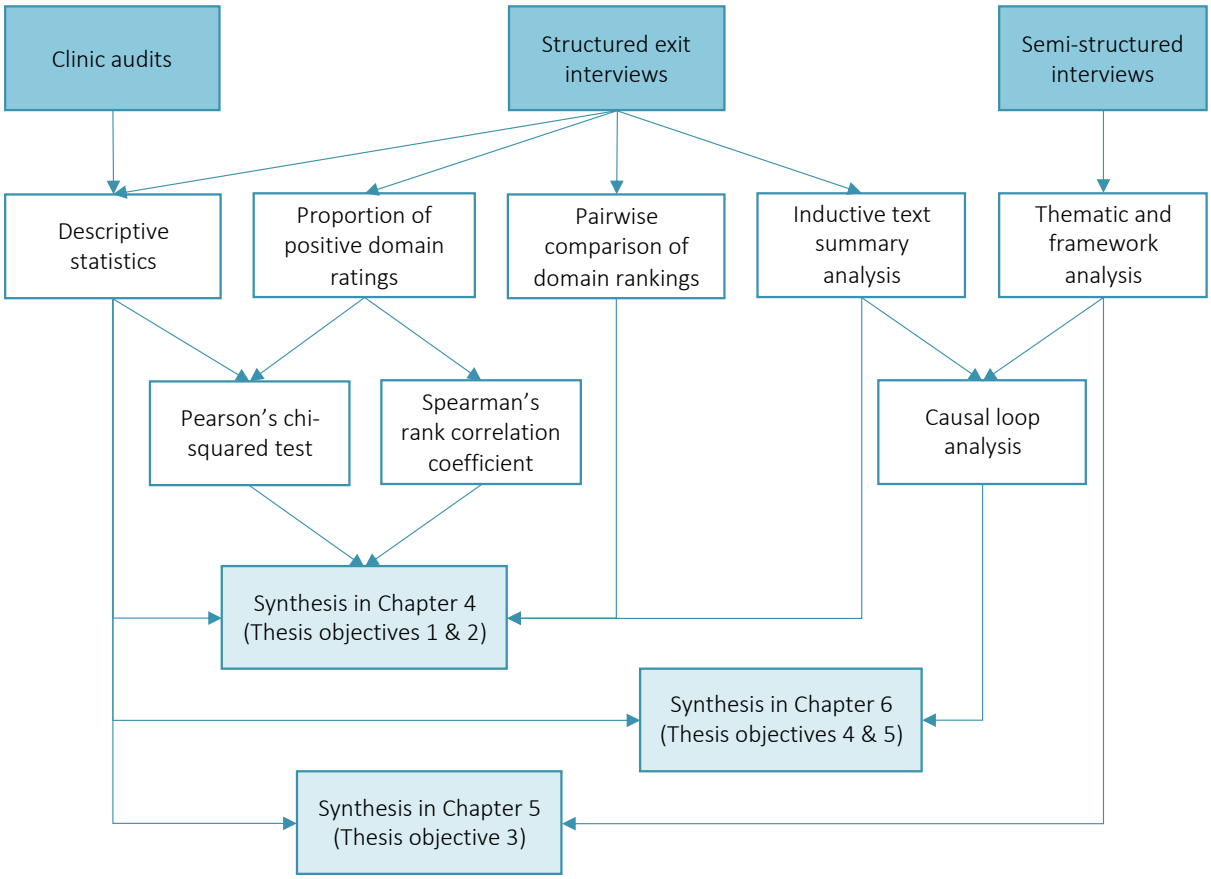

Figure 6. Summary of data analyses performed

METHODOLOGICAL LIMITATIONS

There are a few limitations associated with the design and methods adopted in this case study worth noting. First, the study was constrained methodologically by the boundaries imposed by the intervention being evaluated and by the wider process evaluation, which dictated the use of a cross-

sectional study design. One of the main advantages of using a measure like responsiveness is that it provides the conditions necessary to measure changes in clients' experiences and health systems over time [93]. However, the timeline imposed by the intervention and the wider process evaluation in which this case study was nested prevented multiple rounds of data collection from taking place. Moreover, by collecting data through exit interviews at a single point in time, it is possible that the data were biased by a particular incident experienced by the respondents that may have shaped their views on the day of their interview [184]. Also, the data captured through the structured exit interviews and SSIs may have been influenced by the respondents' desire to complete the interview rapidly following several hours spent in the clinic [113].

Second, the decision to focus exclusively on clinics where FP services were integrated with childhood immunisations for at least 12 months prior to the start of the data collection may have introduced a sampling bias, with higher functioning or better resourced and organised clinics potentially being overrepresented. Similarly, the role played in the recruitment process by community volunteers involved in the provision of services may have caused the sample to be further biased, with volunteers giving preference to some clients over others in their selection of potentially eligible clients. As the case study did not strive to produce generalizable results, but rather aimed to provide insights into the responsiveness experienced by clients in specific contexts, this potential bias does not critically undermine the validity of the results. Importantly, the data captured through the clinic audit provide a thorough account of the contexts from which the results were derived, offering insights into the ways in which the sampled clinics may not be representative and aiding in the interpretation of results.

Third, social desirability and courtesy biases may have been introduced into the data during the interviewing process. Respondents may have answered questions in a way they believed would be viewed favourably by the interviewer. They may have also under-reported negative experiences in

deference towards their health providers and communities, particularly as they were interviewed near the clinics' premises and were ushered through part of the recruitment process by community volunteers [109]. Although some of these biases could have been minimised were a different location for the interviews been available or a different recruitment process been adopted, these alternatives were not feasible given the constraints imposed by the wider process evaluation. Additionally, as the interviewers were well educated Malawians residing mainly in and around Blantyre city, respondents may have perceived a status imbalance between themselves and the interviewers. It is possible that this enhanced the inherent social distance between the interviewers and respondents, which in turn may have further biased the recruitment of respondents and their answers to the interviewers' questions [196–199]. It is important to note that the social distance between interviewers and the clients participating in this study is likely to have been made greater by the fact that several interviewers were men, and all clients were women. Given the potentially sensitive nature of the interviews, the fact that some interviewers were men may have also caused some discomfort to respondents' during the interviewing process and may have resulted in the respondents' answering interview questions differently than if they had been interviewed by women. Several steps were taken to minimise this. For instance, the likely power imbalance between the interviewers and respondents was discussed during the interviewers' training and daily debriefing sessions on several occasions to ensure that the interviewers (especially male interviewers) were conscious of this and knew how to address respondents who exhibited any signs of discomfort or distress during the interviews. Interviewers were also frequently encouraged to remind respondents throughout the interviewing process that they were not required to answer questions that made them feel uncomfortable.

Fourth, the presence of the data collection team in the outreach clinics may have caused a Hawthorne effect. The service providers may have temporarily altered the way they delivered services due to the presence of the data collection team in the clinic, making services more or less responsive than usual on the days when data were captured. As a visible foreigner to Malawi, I believed my

presence in the clinics would increase the likelihood of a Hawthorne effect. This belief was founded on my observation of the piloting days in Malawi and on several years of experience working in rural health facilities in other African countries, which made me aware that my presence (even as a passive observer) could substantially disrupt the routine delivery of health services. For this reason, I opted not to join the data collection team on their visits to the 15 clinics where interviews were carried out following the two piloting days.

Fifth, by reducing the number of Likert questions in the exit interview from three questions per responsiveness domain to one, the conclusions that could be drawn from this study were slightly diminished. For example, even though the pilot data suggested very little variation in clients' choice of contraceptives and nearly all clients in the studied clinics opted to use injectables, directly enquiring about the freedom to choose a contraceptive afforded to clients in the clinics could have been beneficial. Another omission from the exit interview questions was that clients were not directly asked whether the responsiveness of the integrated FP services had influenced their decision to seek services in the clinics. Interestingly, a similar omission was reported by Liabsuetrakul *et al*. in their study of delivery care responsiveness in Southern Thailand [125].

Sixth, given that most of the data were collected in Chichewa and that I do not speak the language, conserving the meaning of responses when data were translated into English for analysis represented a challenge [200]. However, the assistance provided by the bilingual interviewers, the experienced translator, and the quality checks performed when SSI transcripts were translated from Chichewa to English likely helped mitigate this issue. That said, the fact that interviewers noted in English the clients' answers to the cognitive interviewing probes despite responses being provided in Chichewa may have resulted in some loss of meaning and misinterpretation of responses. Still, this approach was considered optimal given the interviewers' bilingualism, their relative proximity to the

respondents (compared to the independent translator), and the fact that the responses provided by clients were short and simple (typically one sentence).

Seventh, although the causal loop analysis enabled an exploration of service responsiveness that extended beyond linear thinking, there are weaknesses inherent to the qualitative modelling of system dynamics. As Wolstenholme highlights, when using a qualitative approach to examine system dynamics, it is difficult to capture the order of magnitude of variables and it is possible to apply inappropriate insights [201]. Then again, a qualitative approach lent itself well to the exploratory nature of this case study as it was not bound by the more rigid frameworks that underpin quantitative modelling.

Finally, similarly to other studies examining system dynamics using CLDs [157,158], testing the model to rule out possible validity threats to the causal explanations inferred from the data was not possible due to time and resource constraints. However, the plausibility of the causal relationships included in the model were corroborated through member checks by local implementers [202]. Equally, systematic biases were minimised through the triangulation provided by the different data sources (structured and semi-structured interviews) and respondents (clients and FP providers).

ETHICAL CONSIDERATIONS

Ethical clearance for this case study was provided under the umbrella of the wider process evaluation by the National Committee on Research in the Social Sciences and Humanities in Malawi and by LSHTM's research ethics committee in the United Kingdom (Appendix F). Permission to conduct the study was also granted by the Blantyre and Thyolo District Health Offices.

Written informed consent was obtained from all respondents who voluntarily agreed to take part in the study through a standardized process (Appendices G, H, and I). The consenting process was

carried out by interviewers in either Chichewa or English depending on the respondent's preference. Literate respondents documented their consent to participate by signing the consent form and non-literate respondents marked the consent forms with a thumbprint in the presence of a literate third party acting as an impartial witness. All participants were given a copy of their signed consent form.

Although there were no direct benefits or risks associated with participating in this study, interviewers were made aware that some clients could feel uncomfortable discussing personal information such as their relationship status, their experience of FP services, and their birth and contraceptive use history. For this reason, the interviewers were instructed to be especially attentive to the respondents' welfare and comfort during the interviews. They were also encouraged to acknowledge the respondents' feelings should they appear uncomfortable answering questions. For example, the interviewers were regularly reminded to ask respondents if the question made them feel uncomfortable and if they preferred to skip the question and return to it later or avoid answering altogether.

Also, several measures were adopted to safeguard the anonymity of participants and the confidentiality of the data. First, all researchers and interviewers involved in the study were trained on how to perform ethical research in accordance with the principles outlined in the Declaration of Helsinki, the WHO's international ethical guidelines for health-related research involving humans, and the benchmarks[24] of ethical research in developing countries defined by LSHTM [203,204]. Likewise, interviewers were taught 1) how to conduct confidential interviews, 2) how to correctly carry out the study's consenting procedures, and 3) how to respond to questions about the research from members of the public in and around the study clinics. Second, personal identifiers (e.g., names) were

[24] The benchmarks defined by LSHTM include collaborative partnerships, social value, scientific validity, fair selection of study population, favourable risk-benefit ratio, independent review, informed consent, and respect for recruited participants.

only collected from participants for consenting purposes and a unique 10-digit identification number was assigned to each respondent to anonymously link and store all sources of data. Third, all paper-based forms (including consent forms) were stored in a locked cabinet in the Save the Children offices in Malawi. Fourth, all electronic files were stored in password protected and encrypted devices only accessible to designated members of the study team. Fifth, the data collection team in Malawi and all individuals involved in the transcription and translations of SSIs signed a confidentiality agreement (Appendix J) and were instructed to delete all study files upon ending their involvement in the study. Also, a mechanism for reporting adverse events, protocol deviations and breaches in confidentiality was developed to ensure that all relevant parties were immediately notified in the event of such issues. However, no breaches or deviations occurred during the study.

DISSEMINATION OF FINDINGS

Findings from this case study were disseminated to academic audiences through peer reviewed journals (Paper 4, 5 and 6). To ensure that the findings are appropriately presented in journals, the good reporting of a mixed methods study (GRAMMS) in health services research guidelines, and the standards for reporting qualitative research (SRQR) checklist were used [205,206]. Additionally, in 2021, results relating to the two first objectives were presented during the LSHTM poster day for research students. A report on the study's main findings was also written as part of the wider process evaluation's final report to the Pfizer Foundation, which funded this work.

Unfortunately, the timing of this study was such that it was carried out near the end of the intervention supported by Save the Children in which FP services were integrated with childhood immunisations in routine outreach clinics. For this reason, opportunities for local dissemination of the findings from this study that could directly inform the delivery of services were limited. Nevertheless, preliminary results were shared with district-level stakeholders in Malawi during project close-out meetings by the Save the Children team. Among these stakeholders were health facility In-Charges,

HSAs, FP and EPI Coordinators, and the District Health Management Teams, including District Administrators.

REFLEXIVITY STATEMENT

As a constructivist researcher, I approached this case study with the aim of constructing new knowledge based upon the respondents' understanding of their experiences [207]. Ensuring that the respondents' understanding of their realities were accurately reflected in the data was central to this. For this reason, I attempted to minimise the social distance between the interviewers and respondents by remotely supervising the data collection process. As a foreign researcher I believed that my presence in the clinics could intensify this distance and consequently influence the respondents' accounts of their experiences. In addition, whilst acknowledging that my personal beliefs and experiences likely influenced the study design and the interpretation of results, I took steps throughout the research process to ensure that my views, and those of the interviewers, did not crowd out the respondents' perspectives. Specifically, I endeavoured to implement the reflexivity practices outlined by Green and Thorogood [208], which included exercising methodological and theoretical openness and paying careful attention to the social setting and wider social contexts that shaped the data. This involved keeping detailed notes throughout the research process to critically reflect upon, and make explicit, my assumptions and decisions. It also involved discussing my impressions of the data and my interpretation of the results that emerged from the analyses I conducted with my supervisors, the Save the Children team, and my colleagues at LSHTM on an on-going basis.

As part of this reflexive process, I examined the ways in which my perception of the clients and providers of integrated FP services evolved as I carried out the case study. Although this was my first time leading research in Malawi, I spent a decade supporting research and interventions focused on the delivery of public health services in rural communities of East and Southern Africa prior to

instigating this research. Given my past experiences, I began this research with a very high level of respect for the providers and clients who delivered and sought services in the studied clinics. However, in analysing the case study data, I came to understand and appreciate in a new way the providers' commitment to their clients and the challenges they face when attempting to deliver client-centred health services in outreach clinics. My understanding of the complexity of the client-provider relationship was similarly enhanced through this analysis. This is reflected, in part, by my deliberate use of the term 'client' in this thesis, which recognises the women seeking services in the clinics as dignified and active consumers of health services rather than powerless or passive patients [209]. It is with this more nuanced understanding of both the clients and providers of integrated FP services that I interpreted the findings from my research and reported the results presented in the subsequent chapters of this thesis.

CHAPTER 4. RESPONSIVENESS EXPERIENCED BY CLIENTS (PAPER 1)

OVERVIEW

This first paper was published in *BMC Health Services Research* [210]. It presents the results from the cross-sectional convergent mixed methods assessment of service responsiveness in Malawi and addresses the first and second objectives of this thesis. It provides important insights into clients' experiences of FP services that are integrated with childhood immunisations in routine outreach clinics. It also highlights the influence of the organisation of services and of providers' individual behaviours on clients' perceptions of service responsiveness. Additionally, this paper establishes the merit of combining cognitive interviewing techniques with Likert questions to assess and explain service responsiveness.

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SECTION A – Student Details

Student ID Number	1704125	**Title**	Ms
First Name(s)	Jessie		
Surname/Family Name	Hamon		
Thesis Title	Health service responsiveness: A case study of integrated family planning and childhood immunisation services in Malawi		
Primary Supervisor	Dr Helen Burchett		

If the Research Paper has previously been published please complete Section B, if not please move to Section C.

SECTION B – Paper already published

Where was the work published?	BMC Health Services Research		
When was the work published?	April 2022		
If the work was published prior to registration for your research degree, give a brief rationale for its inclusion	N/A		
Have you retained the copyright for the work?*	**No**	Was the work subject to academic peer review?	**Yes**

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SECTION D – Multi-authored work

For multi-authored work, give full details of your role in the research included in the paper and in the preparation of the paper. (Attach a further sheet if necessary)	I conceived the idea for this study and developed the study design and tools with inputs from JW, HEDB, MK and SP. I oversaw the data collection activities in Malawi with ASK and with advice from JW, HEDB, MK, EM and SP. I carried out the data analysis with input from JW, HEDB and SHM, and all authors contributed to the interpretation of findings. I drafted the manuscript, managed the feedback and revisions from co-authors, and submitted the manuscript for peer-review with approval from all co-authors.

SECTION E

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Date	29 July 2022

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Date	29 July 2022

BMC Health Services Research

RESEARCH

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Integrated delivery of family planning and childhood immunisation services: a mixed methods assessment of service responsiveness

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Abstract

Background: Postpartum women represent a considerable share of the global unmet need for modern contraceptives. Evidence suggests that the integration of family planning (FP) with childhood immunisation services could help reduce this unmet need by providing repeat opportunities for timely contact with FP services. However, little is known about the clients' experiences of FP services that are integrated with childhood immunisations, despite being crucial to contraceptive uptake and repeat service utilisation.

Methods: The responsiveness of FP services that were integrated with childhood immunisations in Malawi was assessed using cross-sectional convergent mixed methods. Exit interviews with clients (n=146) and audits (n=15) were conducted in routine outreach clinics. Responsiveness scores across eight domains were determined according to the proportion of clients who rated each domain positively. Text summary analyses of qualitative data from cognitive interviewing probes were also conducted to explain responsiveness scores. Additionally, Spearman rank correlation and Pearson's chi-squared test were used to identify correlations between domain ratings and to examine associations between domain ratings and client, service and clinic characteristics.

Results: Responsiveness scores varied across domains: dignity (97.9%); service continuity (90.9%); communication (88.7%); ease of access (77.2%); counselling (66.4%); confidentiality (62.0%); environment (53.9%) and choice of provider (28.4%). Despite some low performing domains, 98.6% of clients said they would recommend the clinic to a friend or family member interested in FP. The choice of provider, communication, confidentiality and counselling ratings were positively associated with clients' exclusive use of one clinic for FP services. Also, the organisation of services in the clinics and the providers' individual behaviours were found to be critical to service responsiveness.

Conclusions: This study establishes that in routine outreach clinics, FP services can be responsive when integrated with childhood immunisations, particularly in terms of the dignity and service continuity afforded to clients, though less so in terms of the choice of provider, environment, and confidentiality experienced. Additionally, it demonstrates the value of combining cognitive interviewing techniques with Likert questions to assess service responsiveness.

Keywords: family planning, childhood immunisations, integration, service delivery, responsiveness

Background

Approximately 218 million women have an unmet need for modern contraceptives in low- and middle-income countries [1], among which postpartum women make up a considerable share [2, 3]. Evidence suggests that

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the integration of family planning (FP) services with childhood immunisations could help reduce the unmet need among postpartum women by providing repeat opportunities for timely contact with FP services [4]. In some settings, studies have demonstrated that the integration of FP services with childhood immunisations is acceptable to clients and providers, and that it can result in increased contraceptive uptake with little to no negative impact on immunisations [5–10]. However, research on the integration of these two services has primarily focused on reproductive and behavioural outcomes and less is known about the client experience. This represents an important gap given the established link between the experiential quality of services and both contraceptive uptake and repeat use of health services [11–16].

A better understanding of the responsiveness of FP services that are integrated with childhood immunisations could help inform the design and implementation of high quality integrated FP services that are client-centred and rights-based [12, 17]. Service responsiveness is concerned with whether the experience of an individual's interaction with a specific health service fulfils a set of 'legitimate' expectations or universally accepted ethical principles and non-clinical service standards [18–22]. In a review of factors determining the quality of FP services, Tessema *et al*. identified several studies investigating the quality of FP services that note the importance of responsiveness [23]. Despite this recognition, only two studies have directly investigated the responsiveness of FP services to date. First, a study in Niger demonstrated that low-cost interventions that improve service responsiveness can increase FP uptake when these services are integrated with curative and under-fives consultations [11]. Second, researchers in Sri Lanka developed an instrument to measure the responsiveness of FP services, assessed their responsiveness, and identified its correlates and determinants [24–26]. According to their research, the domains of responsiveness that are most relevant to FP services are the dignity, environment, choice, communication, confidentiality and ease of access afforded to clients [26].

In 2019, a case study of the responsiveness of FP services that were integrated with childhood immunisations in routine outreach clinics was conducted in Malawi. This case study documented clients' and providers' perspectives using mixed methods. The findings presented here comprise the first part of this study, which aimed to assess clients' experiences of FP services that were integrated with childlhood immunisations and determine the factors associated with perceived responsiveness.

Methods

The case study was conducted within a multi-faceted process evaluation carried out in Malawi, Benin, Kenya and Uganda, which interrogated the pathways to outcomes of an NGO-led intervention integrating the delivery of FP services with childhood immunisations in rural areas. In Malawi, the case study took place between June and July 2019 in routine public outreach clinics where the delivery of FP services was integrated into the existing Expanded Programme on Immunisation (EPI), which included childhood immunisations and growth monitoring services.

A cross-sectional convergent mixed methods design was used through which quantitative and qualitative results were combined to generate a comprehensive understanding of clients' experiences [27]. The selection of this approach was informed by findings from a critical assessment of the WHO's health systems responsiveness tool, which highlighted the importance of using mixed methods in the assessment of clients' experiences of outpatient services [28]. Empirical data were collected through clinic audits and exit interviews with clients. Programme monitoring data were also consulted to identify the clinics' FP client load on the day of the interviews. The methods and results from this study are reported here according to the GRAMMS guidelines for mixed methods studies in health services research [29].

Study setting

A detailed account of the intervention that included the integrated delivery of FP services and childhood immunisations in routine outreach clinics is presented elsewhere [30]. In brief, the intervention was carried out between January 2015 and October 2019 in the Blantyre, Thyolo and Mwanza districts of Malawi. In these districts, childhood immunisation coverage was relatively high, and the unmet need for FP among married women was around 19.0% [31]. Broadly, the intervention intended to: 1) strengthen the capacity of providers to deliver quality integrated FP, childhood immunisation, and growth monitoring services in routine outreach clinics; 2) increase the retention of clients and reduce immunisation defaulters; 3) improve the availability of FP and immunisation supplies in clinics; and 4) improve community engagement around FP and immunisation service utilisation.

The outreach clinics included in the intervention were carried out each month during a single day in existing community buildings or in open spaces (e.g., under a tree). In these clinics, the organisation of services followed a defined client flow, which involved: a group health talk during which information about child development, FP, and immunisations was presented; the screening of clients for immunisation and FP services;

the provision of growth monitoring and immunisations for children under five years of age; and the delivery of FP counselling and contraceptives [30]. This client flow was designed to streamline service delivery and was based on the assumption that clinics would be supported by a team of community volunteers and staffed by a minimum of four health surveillance assistants (HSAs). In Malawi, HSAs are paid community health workers attached to health centres, and are tasked with a wide range of health promotion responsibilities, including community-based delivery of FP services [32].

Empirical data collection

Selection of study sites

At the time of data collection, FP services were integrated with childhood immunisations in 91 routine outreach clinics. Due to logistical and time constraints, clinics in Mwanza were excluded from the case study. Only clinics where FP services were integrated with childhood immunisations for 12 months or more prior to the start of data collection were considered for inclusion in the study based on the assumption that assessing the responsiveness in clinics where providers had delivered integrated services for at least a year would generate better insights. Of the 16 clinics that met this inclusion criterion, one was excluded due to a conflict in the data collection schedule. The study was ultimately carried out in 15 clinics across Blantyre (n=7) and Thyolo (n=8) districts, with data collected in each clinic during a single day.

Exit interviews with clients

Exit interviews were conducted in all 15 clinics by a team of nine experienced interviewers using a structured questionnaire. All eligible clients were recruited upon exit from the clinic based on the availability of interviewers until the sample size needs for the wider process evaluation were met. This sample size was based on an assumed percentage use of modern contraceptive methods of 50%, relative error 0.2, and design effect 3.0. Assuming 95% confidence and 80% power, a total of 192 exit interviews were required, with 13 per clinic as a target. Clients included in the responsiveness case study were those who sought both childhood immunisation and FP services on the day of the interview and were 18 years or older.

The structured questionnaire used to carry out interviews was employed in Chichewa and featured questions that were relevant to both this case study and to the wider process evaluation in which it was nested. Responsiveness-related questions focused on eight structural and behavioural domains (Table 1). Clients were asked to rate their experience of these domains using a five-point Likert scale, with responses ranging from 'very good' to 'very bad'. They were also asked elaborative and hypothetical questions based on cognitive interviewing techniques to explain their ratings and to verify their interpretation of the Likert scale [33, 34]. That is, after each Likert question, the following probes were used: 'can you explain what made you feel this way?' and/or 'what would it have taken for you to answer inversely?'. Responses to these questions were noted in English by the interviewers on the questionnaires. Additionally, clients were asked to rank the eight domains from most to least important and to confirm whether or not they had experienced key elements of FP counselling.

The questionnaire was reviewed in-depth by the team of interviewers and piloted in two clinics to address language and logistical issues. The interviewers' review revealed that 'confidentiality' would likely be interpreted by clients as whether the information they shared with providers was kept private. For this reason, a Chichewa word for 'privacy' was used, which conveyed confidentiality more broadly in terms of the privacy of information shared and the possibility of interacting with providers without others catching sight or overhearing.

Clinic audits

A structured questionnaire was used to perform audits of all 15 clinics on the day of the exit interviews, which

Table 1 Responsiveness domains and related questions included in the exit interviews

Structural domains	**Questions**
Environment	How was the cleanliness and space in the clinic?
Service continuity	How clear was the information about where/when to seek follow-up FP services?
Choice of provider	How was the freedom you had to choose a provider to assist you with FP in the clinic?
Ease of access	How easy was it for you to access this clinic today?
Behavioural domains	**Questions**
Dignity	How was the respect you received from the provider?
Confidentiality	How was the confidentiality provided to you by the FP provider?
Communication	How clear was the information you received from the provider?
Counselling	How was the attention the provider paid to your reproductive preferences?

documented the clinics' resources and characteristics. Questions focused on the clinics' infrastructure, number and cadre of providers, and stocks of FP and immunisation commodities. This questionnaire was piloted alongside the exit interview questionnaire in two clinics.

Data management and analysis

Quantitative data from exit interviews and clinic audits were recorded on paper forms, double entered into EpiData, and exported into STATA 16 for analysis. Descriptive statistics were produced to summarise key clinic, service, and client characteristics. Domain-specific responsiveness scores were then determined using a two-step process. First, clients' responses to the Likert questions were categorised into 'positive' and 'negative' ratings, with the middle point (moderate) of the scale added to the negative ratings. The decision to include the middle response among negative ratings was informed by the data from the cognitive interviewing probes, which revealed that moderate ratings predominantly represented negative experiences. Second, responsiveness scores were calculated as the proportion of clients who rated each domain positively (i.e. 'good' or 'very good'). Spearman rank correlation was used to analyse the extent to which responsiveness ratings were correlated and Pearson's chi-squared test was used to assess the association between responsiveness ratings and clinic-, service- and client-level factors. Additionally, for each respondent, pairwise comparisons of rankings across all domain pairs were carried out and then aggregated across individuals to generate an overall ranking of the relative importance of domains [35].

Qualitative data from the interviewers' notes on the clients' responses to the cognitive interviewing probes were imported into NVivo 12 for analysis. The aim of this analysis was primarily to examine the clients' understanding of the Likert questions and scales; however further analyses were also performed using an inductive text summary approach to identify dominant themes among the clients' responses [36]. These themes were then compared to the domain ratings from the exit interviews to explain the clients' ratings and gain a better understanding of clients' experiences.

Results

Client and clinic characteristics

A total of 146 exit interviews with clients were included in the case study. In all, 36.3% (n=53) were carried out in Blantyre district and 63.7% (n=93) were conducted in Thyolo district.

Of the clients who took part in the exit interviews, 53.1% were 18-24 years old, 91.8% had completed at least a primary education, and 93.8% were married. All were mothers to at least one child, 27.6% had two children or more under the age of five, 64.1% were repeat contraceptive users (i.e., collecting their usual method at the clinic), 95.6% reported having a husband who supported FP, 70.4% lived less than 45 minutes away from the clinic, 34.0% reported that the clinic where they were interviewed was the only one they used for FP services, and 98.6% said they would recommend the clinic to a friend or family member interested in FP.

Additionally, only a small proportion of clients interviewed reported visiting the clinic with the intention to seek both immunisation and FP services, yet 73.6% of clients in Blantyre and 63.4% in Thyolo had intended to seek both growth monitoring and FP services on the day of the interview (Figure 1).

Overall, services were delivered in sites that lacked appropriate infrastructure and where a considerable number of clients sought services at the same time, which rendered the provision of services a challenge. That is, although 87.0% of respondents attended a clinic that met the staffing standards (four HSAs or more), only 60.3% attended a clinic that had a shelter and 31.0% were served in clinics that had more than one room available for the provision of services. Also, 50.0% sought services in a clinic where FP and childhood immunisations were delivered in the same space and 51.4% were served in a clinic that had a FP client load under 30 (range 12-61) on the day of the interview.

Despite NGO-led initiatives (e.g., training and routine supervision of HSAs) to strengthen the quality of FP counselling in the studied clinics, not all clients interviewed experienced comprehensive FP counselling. As summarised in Table 2, most clients reported only experiencing some elements of FP counselling.

Importance of responsiveness domains

The respondents' rankings of the eight responsiveness domains' importance revealed that clients considered the clinic's environment to be the most important domain. This was followed by confidentiality, service continuity, ease of access, dignity, choice of provider, counselling, and lastly, communication.

Responsiveness scores

Responsiveness scores varied across domains (Table 3), with dignity (97.9%) rated most positively and the choice of provider (28.4%) rated least positively by clients. Overall, little variation was found between districts, and results from the Spearman rank correlation revealed no strong correlations between domain ratings.

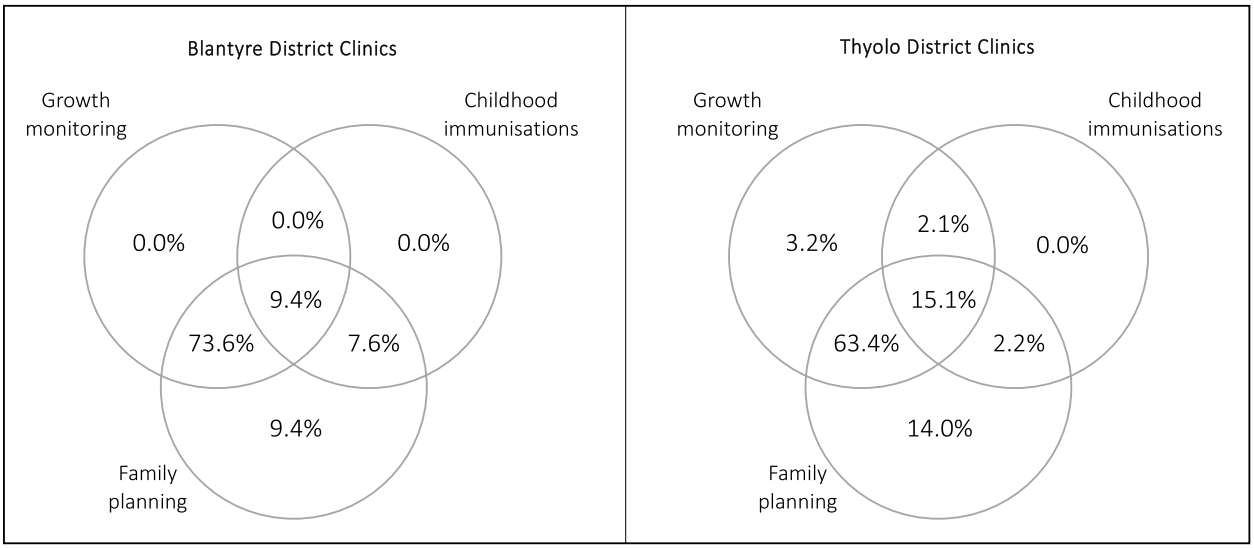

Fig. 1 Reason for visiting the clinic on the day of the interview (*N*=146)

Table 2 Elements of FP counselling reportedly experienced

Elements of FP counselling	Percent of sampled clients (*N*=146)
Heard the group health talk that contained information about FP	64.1%
Was asked how many more children are desired	19.9%
Was asked about past use of contraceptives	30.5%
Was asked about problems with past contraceptive use	43.3%
Was told how different contraceptive methods work	57.5%
Was told about possible contraceptive side effects	53.2%
Was told when to seek follow-up services	86.5%
Was told where to seek follow-up services	82.3%

Table 3 Responsiveness scores

Domains	Blantyre scores	Thyolo scores	Combined scores[a]
Dignity	96.2%	98.9%	97.9% (*N*=144)
Service continuity	92.3%	90.0%	90.9% (*N*=142)
Communication	88.5%	88.8%	88.7% (*N*=141)
Ease of access	73.6%	79.3%	77.2% (*N*=145)
Counselling	61.2%	69.4%	66.4% (*N*=134)
Confidentiality	58.5%	64.0%	62.0% (*N*=142)
Environment	53.9%	53.9%	53.9% (*N*=141)
Choice of provider	25.0%	30.3%	28.4% (*N*=141)

[a] *N* varied from 146 due to missing data

Qualitative explanation of responsiveness scores

The analysis of interviewer notes from the cognitive interviewing probes confirmed that the Likert questions and scales were well understood by all respondents. That is, alignment was found between the intent of the questions and the clients' responses, and the positive/negative nature of the ratings given by clients matched the explanations they provided for these. Additionally, the text summary analysis of this data helped explain the responsiveness scores, whilst revealing important factors influencing the clients' perceptions. These findings are reported here for each domain.

Dignity

Among the many clients who rated dignity positively, several linked their rating to receiving the services or the help they felt they needed. Some specified that services were quick, whilst others said clients were not denied services, even when arriving late. Two clients also said they would have rated dignity less favourably if contraceptives were not available in the clinic. However, this domain's

positive ratings were most commonly explained by examples pertaining to the providers' behaviour. Examples included providers behaving professionally, being kind, greeting clients, not shouting at clients, administering injections gently, and having a positive attitude.

Service continuity

Most clients who rated the service continuity positively said the date of their next visit was either verbally communicated to them or written in their health passport. Among these clients, almost all who reported having the date of their next visit recorded in their health passport rated this domain as 'very good'. Conversely, negative ratings were mainly linked to either not receiving any information about follow-up visits or being told to return within a given period (e.g. after three months) without a specified date.

Communication

Clients who rated the communication positively generally felt the information was clear and the advice provided was practical and helpful. They also said providers covered a wide range of topics, including: the benefits of FP, contraceptive options, and the management of side effects from contraceptives. Examples of providers creating a conducive environment for information sharing were also used to explain positive ratings. Such examples included providers 1) speaking loudly to ensure clients could hear the group health talk, 2) creating a friendly environment, and 3) encouraging clients to ask questions. Among the clients who rated this domain negatively, most reported not hearing the heath talk (e.g., because they reached the clinic late) or not receiving any FP counselling, and several said the information they received was incomplete or lacking details.

Ease of access

Many of the clients who rated their ease of access positively reported living near the clinic. Among these clients, several felt access would be an issue if the time needed to travel to the clinic exceeded an hour. Also, positive and negative ratings alike were linked to concerns about physical and personal obstacles. Physical obstacles included: the challenging terrain (e.g., hills); the lack of good roads and appropriate transport; and the rains. The most common personal obstacle stated was illness (theirs or their child's), which was mentioned by clients who lived at varying distances from the clinic (3-60 minutes). Other personal obstacles mentioned were: 1) caring for a child on the way to the clinic; 2) having other commitments on the day of the clinic; and 3) husbands being unsupportive of FP.

Counselling

Among the clients who rated the counselling positively, several said the provider discussed their reproductive preferences with them. Of these clients, a few mentioned that they would have given a less positive response if the provider had: 1) not demonstrated an interest in their preferences; 2) not asked them about the number of children they wanted; or 3) not provided advice. Similarly, the majority of clients who rated this domain negatively said the provider was not interested in knowing their preferences and did not ask clients about these. However, by far the most common point made by clients who rated this domain positively was that providers allowed them to make their own choices about the number of children they desired and which contraceptive to use.

Confidentiality

Positive ratings of confidentiality were linked to the providers' individual behaviours. For example, clients who gave positive ratings said providers 1) did not disclose their information or choices to others in the clinic, and 2) took steps to facilitate private discussions with clients, such as speaking with lowered voices or isolating FP clients to enhance privacy. Clients also explained their positive ratings by saying that they were counselled individually, which allowed for private interactions with the provider. Conversely, some negative ratings were linked to having received FP services in groups or in pairs. However, most clients who rated this domain negatively explained that the clinic's shelter and use of space undermined confidentiality. They reported receiving FP counselling and contraceptives in an open space where others could overhear or catch sight of their discussions with the FP provider.

Environment

In general, clients' ratings of the clinic's enironment were linked to their views on the appropriateness of the clinics' shelter. Specifically, the absence of a shelter, toilet and water were issues mentioned by clients who rated this domain negatively. Additionally, clients who believed the space in the clinic was adequate and clean (e.g. swept or mopped) mostly rated the clinic's environment positively; whereas, those who believed the space was insufficient gave a negative rating, even if they felt it was clean. However, most clients who perceived the clinic to be unclean rated this domain negatively.

Choice of provider

Many clients who rated the choice of provider negatively said the way services were organised in the clinic prevented the opportunity to choose a provider. Clients

mentioned needing to respect the clinic's client flow and the pre-determined roles assigned to providers. Also, perceived staff shortages were believed to hinder the clients' choice of provider. In contrast, the few clients who rated this domain positively said they could choose the provider that served them in the clinic and that it was their right to do so. Overall, some clients viewed all providers as equals and therefore believed having a choice of provider was not necessary, whilst others felt there were differences among the providers' capacity that justified the need for a choice.

Associations between domain ratings and key factors

Associations between the clients' ratings of the eight responsiveness domains and the following factors were examined: 1) the clinic's shelter, number of rooms, use of space for FP and immunisations, FP client load, and staffing level; 2) the eight elements of FP counselling presented in Table 2; and 3) the client's age, education, marital status, number of children, travel time to the clinic, exclusive use of one clinic for FP services, and socioeconomic status. No significant associations were found between any of these factors and the clients' ratings of the dignity and environment domains. All significant associations found are presented in Table 4.

Discussion

This case study sought to contribute to a deeper understanding of clients' experiences of FP services that are integrated with childhood immunisations by assessing the responsiveness of these services in terms of eight domains. Overall, the results indicate that in routine outreach clinics, FP services can be responsive when integrated with childhood immunisations, particularly in terms of the dignity and service continuity they afford clients, though less so in terms of the confidentiality, environment, and choice of provider that clients experience. Similar findings were reported by the only other assessment of FP service responsiveness, in which clients in Sri Lanka rated most positively the dignity they experienced and least positively the choice of provider and of contraceptive they were afforded [25]. Despite some lower performing domains, clients interviewed in the case study almost unanimously reported that they would recommend the clinic to a family member or friend interested in FP services. Taken together, these results suggest that the services were likely sufficiently responsive to warrant the repeat use of services, and support the call to integrate FP services with childhood immunisations to reduce the unmet need for contraceptives among postpartum women.

Interestingly, despite being considered most important by clients, the environment and confidentiality were found to be among the responsiveness domains that they rated least postively. This is consistent with findings from the WHO's general population surveys of health systems responsiveness in which the importance of the environment generally ranked higher among countries with low health expenditure and human development index scores [37]. However, it is possible that the domains considered by clients to be least responsive were also most salient to them, causing clients to rank these among the most important. A notable exception was the choice of provider, which clients' ranked low both in terms of importance and performance. A possible explanation for this is that clients may not have viewed the choice of provider as a priority given the unmet needs felt in relation to other domains. As De Silva notes, 'the ability to choose between care providers becomes increasingly important as the other aspects of responsiveness are met' [18].

Moreover, six of the eight domains' ratings were found to be significantly associated with several elements of FP counselling and a few client characteristics. Of note, the communication, choice of provider, confidentiality and counselling ratings were positively associated with the exclusive use of one clinic for FP services. This is consistent with findings from Sri Lanka, where clients' positive responsiveness ratings were associated with using only one FP clinic within the past year [25]. This suggests that experiences with other services may serve as a benchmark and consequently affect clients' perceptions of the responsiveness of integrated FP services. The influence of a point of reference on clients' perceptions may also partly explain the unexpected association found in this study between positive ratings of confidentiality and travelling less than 45 minutes to reach the clinic. That is, it is possible that clients who live near a clinic are less likely to seek services elsewhere and thus to have a benchmark, rendering them less critical of the services they experience. Although this is a plausible explanation that is potentially supported by the data, a more conclusive statement cannot be made given the study's sampling limitations. Further research examining the influence of such a benchmark on perceptions of responsiveness could help improve the delivery of services. Also, contrary to expectations, the clinic's shelter, number of rooms, and use of space were not significantly associated with clients' domain ratings, despite results from the cognitive interviewing probes suggesting that infrastructure deficits (e.g., the absence of a suitable shelter) influenced clients' perceptions of the environment and the confidentiality they experienced. Likewise, counselling ratings were not significantly associated with hearing the group health talk, nor being told how different contraceptives work. It is possible that these two elements of counselling were less relevant to respondents' perceptions of the

Table 4 Associations between domain ratings and key factors

Domain	Factor		Positive domain rating		N[a]	*p*-value
			%	n		
Service continuity	***Element of FP counselling***					
	Heard the group health talk	Yes	96.7	88	142	0.012
		No	80.4	41		
	Told how different contraceptive methods work	Yes	96.3	77	137	0.022
		No	84.2	48		
	Told about possible contraceptive side effects	Yes	97.3	72	137	0.004
		No	84.1	53		
	Told when to seek follow-up services	Yes	96.7	116	137	<0.001
		No	52.9	9		
	Told where to seek follow-up services	Yes	96.7	109	137	<0.001
		No	66.7	16		
Communication	***Element of FP counselling***					
	Heard the group health talk	Yes	94.5	86	141	0.001
		No	78.0	39		
	Asked about past use of contraceptives	Yes	100.0	43	136	0.031
		No	82.8	77		
	Told how different contraceptive methods work	Yes	95.0	76	136	0.004
		No	78.6	44		
	Told about possible contraceptive side effects	Yes	96.0	71	136	<0.001
		No	79.0	49		
	Client characteristic					
	Exclusively uses one clinic for FP services	Yes	95.8	46	140	0.021
		No	84.8	78		
Ease of access	***Client characteristic***					
	Travelled less than 45 minutes to reach the clinic	Yes	87.0	87	142	<0.001
		No	52.4	22		
Counselling	***Element of FP counselling***					
	Asked how many more children are desired	Yes	96.3	26	129	<0.001
		No	56.9	58		
	Asked about past use of contraceptives	Yes	86.1	37	129	<0.001
		No	54.7	47		
	Asked about problems with past contraceptive use	Yes	75.9	44	129	0.028
		No	56.3	40		
	Told about possible contraceptive side effects	Yes	76.4	55	129	0.008
		No	50.9	29		
	Client characteristic					
	Exclusively uses one clinic for FP services	Yes	80.4	37	133	0.028
		No	58.6	51		
Confidentiality	***Element of FP counselling***					
	Asked about past use of contraceptives	Yes	74.4	32	137	0.020
		No	55.3	52		
	Asked about problems with past contraceptive use	Yes	72.1	44	137	0.009
		No	52.6	40		
	Client characteristic					
	Travelled less than 45 minutes to reach the clinic	Yes	67.0	65	139	0.016
		No	50.0	21		
	Exclusively uses one clinic for FP services	Yes	81.3	39	141	0.020
		No	52.7	49		

Table 4 (continued)

Domain	Factor		Positive domain rating		N[a]	*p*-value
			%	n		
Choice of provider	***Element of FP counselling***					
	Asked how many more children are desired	Yes	48.2	13	136	0.013
		No	22.9	25		
	Client characteristic					
	Exclusively uses one clinic for FP services	Yes	40.4	19	140	0.027
		No	22.6	21		

[a] *N* varied from 146 due to missing data

counselling domain as the majority of clients interviewed were repeat service users attending the clinics to collect their usual contraceptive method.

The findings also revealed that clients believed that service responsiveness was influenced by the organisation of services in the clinic and the providers' individual behaviours. Specifically, group-based services were perceived to be less responsive to clients' needs than one-on-one services in terms of the confidentiality and counselling afforded to clients. Similarly, due to the client flow adopted in the clinics, clients who missed the health talk because they reached the clinic late were deprived from receiving crucial information. Additionally, the predetermined roles assigned to providers due to the client flow design were believed to prohibit clients' choice of provider. This echoes recent findings from other empirical studies that demonstrate the important influence of organisational elements on the integrated delivery of FP and childhood immunisation services [9, 10]. It also highlights the value of service designers and implementers adopting a client-centred approach to service organisation in delivery sites. Additionally, the clarity and consistency of the information providers shared with clients, their respect of clients' choices, the privacy they facilitated, and the professionalism and kindness they exhibited towards clients were found to be central to clients' experiences. This supports evidence from other studies, including the Integra initiative, which emphasise the crucial role played by providers in the delivery of integrated services and how their individual performance largely determines the success of integration programmes [11, 38–42].

Furthermore, this study corroborates previous research that established the value of combining cognitive interviewing techniques with Likert questions to test whether questions fulfil their intended purpose [33, 34, 36, 43, 44]; and provides an example of its applicability to the assessment of service responsiveness. The cognitive interviewing probes helped to qualitatively validate the tool used in this study and the clients' responsiveness scores by confirming that the Likert questions and scale were well understood and accurately interpreted by respondents. The data derived from these probes also yielded important insights into clients' experiences that would not have otherwise been captured. Using a similar method, Scott *et al*. demonstrated that Likert questions and scales were not well suited to capturing respondents' experiences of respectful maternity care in rural northern India [45]. Specifically, they found that Likert response options were often misunderstood, hypothetical questions were commonly misinterpreted, and the translation of standard terms from the literature did not resonate well with respondents in the studied context. It is possible that the successful use of Likert questions in this case study resulted from the approach adopted to refine and pilot the data collection instrument, which was heavily informed by experienced local interviewers. Futher research is needed to examine the applicability of this combination of methods to the assessment of service responsiveness in different contexts.

Limitations

This study has a few limitations worth noting. First, the exit interviews were susceptible to response biases, such as courtesy and desirability biases. However, the clients' responses to the cognitive interviewing probes suggest that these biases were likely minimal. Second, in some cases, the providers' prior knowledge of the researchers' visit and the presence of the data collection team in the clinics may have prompted providers to alter their delivery of services, rendering them more or less responsive than usual. Third, sub-group analyses and the inferences that could be derived from the quantitative data were restricted by the small sample of clients interviewed. Nonetheless, the findings from the cognitive interviewing probes offer important

insights that help mitigate this limitation. And finally, since the study's primary aim was to assess clients' experiences of FP services that were integrated with childhood immunisations, comprehensive data were not captured on the growth monitoring services delivered in the studied clinics. This represents an important limitation as the results show that the majority of clients had the intention to seek both growth monitoring and FP services on the day of the exit interviews, which was likely due to the more frequent need for these services compared to scheduled immunisations.

Conclusions

This case study set out to investigate clients' experiences of FP services that were integrated with childhood immunisations in routine outreach clinics. In doing so, it also demonstrated the value of combining cognitive interviewing techniques with Likert questions to assess service responsiveness. The results from this study establish that in routine outreach clinics, FP services can be responsive when integrated with childhood immunisations, particularly in terms of the dignity and service continuity they afford clients, though to a lesser extent in terms of the confidentiality, environment and choice of provider experienced. The clients' views of the choice of provider, communication, confidentiality and counselling they experienced were found to be positively associated with the exclusive use of one clinic for FP services, suggesting that having a benchmark may have an important influence on perceptions of responsiveness. The findings also highlight the influence of the organisation of services and of the providers' individual behaviours on service responsiveness. Further research is therefore needed to interrogate the views of providers and their influence on the responsiveness of FP services that are integrated with childhood immunisations.

Abbreviations

EPI: Expanded Programme on Immunisation; FP: Family planning; HSA: Health surveillance assistant.

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Authors' contributions

The study was conceived by JKH with inputs from JW, HEDB, MK and SP. ASK and JKH oversaw the data collection activities in Malawi with advice from JW, HEDB, MK, EM and SP. The data analysis was carried out by JKH with the involvement of JW, HEDB and SHM. JKH drafted the manuscript. All authors made substantial contributions to revising the manuscript and provided final approval of the version to be published.

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Availability of data and materials

The datasets used and/or analysed in the current study, as well as the data collection instruments, are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

Ethics approval was obtained from the National Committee on Research in the Social Sciences and Humanities, Malawi (reference NCST/RTT/2/6) and the ethics committee of the London School of Hygiene & Tropical Medicine, UK (reference 16188). All methods were performed in accordance with the relevant guidelines and regulations of the Declaration of Helsinki, and written informed consent was obtained from all respondents prior to their participation in the study.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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Publisher's Note

CHAPTER 5. INFLUENTIAL FACTORS (PAPER 2)

OVERVIEW

This second paper was published in *Health Policy and Planning* [211] and conveys the findings from the qualitative study of factors influencing service responsiveness in routine outreach clinics. In doing so, it addresses the third objective of this thesis. Overall, it demonstrates that the responsiveness experienced by clients in the studied context is determined by the organisational arrangement of resources, the process involved in the provision of services, and the characteristics and behaviours of the actors interacting at the point of care. It also highlights the importance of considering software (or relational) elements of the health system in the design and delivery of FP services that are integrated with childhood immunisations to optimise the responsiveness of these services.

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First Name(s)	Jessie		
Surname/Family Name	Hamon		
Thesis Title	Health service responsiveness: A case study of integrated family planning and childhood immunisation services in Malawi		
Primary Supervisor	Dr Helen Burchett		

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Where was the work published?	Health Policy and Planning		
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SECTION D – Multi-authored work

For multi-authored work, give full details of your role in the research included in the paper and in the preparation of the paper. (Attach a further sheet if necessary)	I conceived the idea for this study and developed the study design and tools with inputs from HEDB, JW, MK and SP. I oversaw the data collection activities in Malawi with ASK and with advice from HEDB, JW, MK, EM and SP. I carried out the data analysis with input from HEDB, JW and SHM, and all authors contributed to the interpretation of findings. I drafted the manuscript, managed the feedback and revisions from co-authors, and submitted the manuscript for peer-review with approval from all co-authors.

SECTION E

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Integrated delivery of family planning and childhood immunization services: a qualitative study of factors influencing service responsiveness in Malawi

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Abstract

Evidence from several countries in sub-Saharan Africa suggests that the integration of family planning (FP) with childhood immunization services can help reduce the unmet need for FP among postpartum women without undermining the uptake of immunizations. However, the quality and responsiveness of FP services that are integrated with childhood immunizations remain understudied. A qualitative study was conducted in two districts of Malawi, which examined the factors influencing the responsiveness of FP services that were integrated with childhood immunizations in monthly public outreach clinics. Semi-structured interviews with clients ($n = 23$) and FP providers ($n = 10$) and a clinic audit were carried out in six clinics. Hardware (material) and software (relational) factors influencing service responsiveness were identified through thematic and framework analyses of interview transcripts, and clinic characteristics were summarized from the audit data to contextualize the qualitative findings. Overall, 13 factors were found to influence service responsiveness in terms of the ease of access, choice of provider, environment, service continuity, confidentiality, communication, dignity and FP counselling afforded to clients. Among these factors, hardware deficiencies, including the absence of a dedicated building for the provision of FP services and the lack of FP commodities in clinics, were perceived to negatively affect service responsiveness. Crucially, the providers' use of their agency to alter the delivery of services was found to mitigate the negative effects of some hardware deficits on the ease of access, choice of provider, environment and confidentiality experienced by clients. This study contributes to an emerging recognition that providers can offset the effect of hardware deficiencies when services are integrated if they are afforded sufficient flexibility to make independent decisions. Consideration of software elements in the design and delivery of FP services that are integrated with childhood immunizations is therefore critical to optimize the responsiveness of these services.

Keywords: Family planning, immunization, integration, service delivery, responsiveness, hardware, software, Malawi

Introduction

The integration of family planning (FP) with childhood immunization services is recognized as a promising approach to reduce the unmet need for FP among postpartum women, prevent unintended pregnancies and facilitate healthy birth spacing by creating repeat opportunities for FP services to reach underserved women (High Impact Practices in Family Planning (HIP), 2021). Although FP is more commonly integrated with HIV services in sub-Saharan Africa, there is mounting evidence from several countries to suggest that the integration of FP with childhood immunizations can increase FP without undermining the uptake of immunizations (Huntington and Aplogan, 1994; Cooper *et al.*, 2015; 2020; Dulli *et al.*, 2016; Nelson *et al.*, 2019). However, the experiential quality and responsiveness of FP services that are integrated with childhood immunizations remain understudied.

Service responsiveness is conceptualized as the extent to which an individual's interaction with a specific health service fulfils a set of universally accepted ethical principles and non-clinical service standards (de Silva, 2000; Murray and Frenk, 2000; World Health Organization, 2000; Darby *et al.*, 2003; Khan *et al.*, 2021). According to the literature on the responsiveness and quality of FP services (Perera *et al.*, 2011; 2012a; 2012b; RamaRao and Jain, 2016; Tessema *et al.*, 2016; 2017; Jain and Hardee, 2018), both structural and behavioural domains of responsiveness are relevant to the integrated delivery of FP services. Structural domains include the ease of access, choice of provider, environment and the service continuity experienced by clients, whereas behavioural domains include the confidentiality, communication, dignity and the counselling afforded to clients. Although these domains are not critical to the clinical quality of FP services, they shape

Key messages

- According to FP clients and providers, hardware deficiencies, such as the absence of a suitable building, inappropriate service structure and insufficient commodities, undermine the responsiveness experienced by clients utilizing FP services that are integrated with childhood immunizations in routine outreach clinics. This is concerning because the responsiveness of services is critical to the uptake and continuous use of contraceptives given the sensitive and repeat nature of FP services.
- Crucially, FP providers can mitigate the negative effect of some hardware deficits by applying their agency to alter the delivery of services so long as the hardware in question does not relate to providers themselves (e.g. staffing shortages or knowledge gaps). Consideration of software elements such as the providers' agency in the design and delivery of integrated FP services is therefore pivotal to the responsiveness of services.
- Programme designers and implementers looking to improve the responsiveness of FP services that are integrated with childhood immunizations should not only create the conditions under which providers can apply their agency to pragmatically deliver services but should also provide the tools for them to adapt services in a way that ensures clients' legitimate expectations are met. However, it is equally paramount to address hardware gaps so that providers' efforts are not dominated by attempts to mitigate the negative effects of these deficiencies.

clients' perceptions of health services and determine their willingness to repeat their use (Hanefeld *et al.*, 2017), which is central to FP services given their sensitive and often repeat nature (e.g. for users of short-acting contraceptives) (Bossyns *et al.*, 2002; Harris *et al.*, 2016; Fruhauf *et al.*, 2018; Jain and Hardee, 2018; Senderowicz, 2020).

In 2019, a case study of the responsiveness of FP services that were integrated with childhood immunizations was carried out in Malawi. Findings from the first part of this case study demonstrated that when delivered with childhood immunizations in routine outreach clinics, FP services can be responsive in terms of dignity, service continuity, communication and access to services afforded to clients (Hamon *et al.*, 2022). It also revealed that the choice of provider, environment and confidentiality that clients experienced in this context was less than ideal. However, the factors influencing the responsiveness of integrated FP services remain unclear.

This article reports findings from the second part of the case study, which involved a qualitative investigation of clients' and providers' views and experiences and aimed to identify the factors influencing the responsiveness of FP services that were integrated with childhood immunizations. A secondary aim was to ascertain the effect of people's values, beliefs and relations on service responsiveness, as few studies on the integration of FP services have examined these (Phiri *et al.*, 2016; Mutisya *et al.*, 2019; Mayhew *et al.*, 2020). In fact, research to date has almost exclusively focused on the influence of material factors such as the infrastructure and resources (staff and commodities) at the point of care (Huntington and Aplogan, 1994; FHI 360, 2012; Cooper *et al.*, 2015; 2020; Dulli *et al.*, 2016; Nelson *et al.*, 2019; Sheahan *et al.*, 2021).

Methods

Study setting

The study was conducted in non-static public outreach clinics delivering the Expanded Programme on Immunization, in which FP services were integrated with childhood immunizations and growth monitoring services. Although these clinics were organized and provided by administrators and health workers operating in the public sector, the design and monitoring of the integration of FP services into these clinics were supported by a non-governmental organization (NGO).

The clinics included in this study were carried out during a single day each month in several rural communities across Malawi's Blantyre and Thyolo districts where childhood immunization rates, modern contraceptive use rates and the unmet need for FP among married women were relatively similar to national averages (Table 1) (National Statistical Office (NSO) [Malawi] and ICF, 2017).

In the studied clinics, services were organized using a standardized client flow (Hamon *et al.*, 2020). At the start of each clinic day, a group health talk was held, which covered topics such as child health and the benefits of FP and immunizations. Clients were then screened, and growth monitoring and childhood immunizations were carried out. Subsequently, women who were interested in FP services were counselled, short-acting contraceptives were offered and referrals to the nearest health centre were given to women seeking long-acting reversible contraceptives (LARCs). This client flow was designed to function with a minimum of four health surveillance assistants (HSAs) and support from community volunteers. In Malawi, HSAs are paid community health workers who provide health promotion and prevention services through health centres and community outreach activities (Kok *et al.*, 2020). Typically, they possess a secondary school level education and receive 12 weeks of pre-service education (Nyirenda *et al.*, 2014).

Empirical data collection and analysis

Empirical data were collected between June and July 2019 by two trained local interviewers who were led by an experienced research coordinator and supervised by the lead researcher. Ethics approval was obtained for this study from the National Committee on Research in the Social Sciences and Humanities

Table 1. National and district FP and immunization rates

	Blantyre district (%)	Thyolo district (%)	National average (%)
Rate of modern contraceptive use among married women age 15–49	60.3	58.7	58.1
Rate of unmet need for FP among married women age 15–49	18.7	18.9	18.7
Rate of children 12–23 months with all basic vaccinations	63.1	82.4	75.8
Rate of children 12–23 months with 3rd dose of DPT-HepB-Hib vaccine	85.7	91.4	93.0

in Malawi and from the London School of Hygiene & Tropical Medicine ethics committee in the UK. Written informed consent was obtained from all respondents prior to their involvement in the study.

Only routine outreach clinics where FP services were integrated with childhood immunizations for at least 12 months were considered for inclusion in the study. Among the 16 clinics that met this inclusion criterion across the two districts, six were selected (three in each district). Sites were selected based on the NGO's routine monitoring data and impressions of the clinics' functioning during the previous 12 months to ensure that a range of clinics were included in the study. Indicators considered in the selection of sites were (1) the clinics' average fulfilment of staffing standards (four HSAs or more), (2) the clinics' average FP client load and (3) the level of involvement (high/low) from community members in the clinics as reported by the NGO team.

In each of the selected clinics, semi-structured interviews (SSIs) were conducted with clients and their FP providers. A convenience sampling approach was used to recruit all providers who delivered FP services in the six clinics on the day of the interviews and to recruit clients exiting the clinics, with the aim of interviewing four clients and one provider per clinic. Eligible clients were 18 years or older, had a child under the age of three years and sought both FP and childhood immunization services on the day of the interview. Clients who reported having a sick child or who had already been interviewed for other parts of the study were excluded.

The interview guides used to conduct the SSIs combined scripted open-ended and probing questions to facilitate discussion between the interviewer and respondent. The guide used to interview clients focused on their experiences receiving FP services in the outreach clinics, and the changes that they felt were needed to improve these experiences. Similarly, the guide used to interview providers focused on their experiences delivering FP services in outreach clinics, the improvements they felt were needed and the factors they believed influenced the providers' and clinics' ability to meet clients' needs. Clients and providers were also prompted to share their thoughts on the integration of FP services with childhood immunizations. Additionally, clients were asked to explain which responsiveness domains they felt were most and least important, and providers were asked what they believed was most and least important to their clients. Both interview guides were piloted in two clinics to determine the suitability of the language and questions they contained. All interviews were conducted in either Chichewa or English, and detailed interview logs were kept by the interviewers to facilitate reflexivity during the data collection.

Additionally, an audit was carried out in each clinic to contextualize findings from the SSIs. The audit was completed by a trained data collector using a structured questionnaire with support from an HSA working in each clinic. The questionnaire included questions based on the WHO's Service Availability and Readiness Assessment and the Quick Investigation of Quality tool developed by MEASURE Evaluation (World Health Organization, 2015; MEASURE Evaluation, 2016). It captured information on the clinic's infrastructure, staffing and the availability of contraceptive and immunization commodities on the day of the SSIs. As with the SSI guides, the audit questionnaire was piloted in two clinics prior to its use in the studied clinics.

Following each data collection day, a debriefing session was held, in which the interviewers shared their impressions of the SSIs and the interviewer–respondent dynamics they experienced. Notes taken by the team coordinator and the lead researcher during these sessions helped ensure that emerging themes were carefully explored during subsequent interviews.

Audio recordings from the SSIs were transcribed *verbatim*, translated into English and imported into Nvivo 12 for coding and analysis by the lead researcher. Upon import, quotes were anonymized; however, the number assigned to each clinic during data collection and the type of respondent (client or provider) were retained to facilitate analyses. Thematic and framework analyses of the SSI transcripts were performed based on the principles of constructivism. First, the data were coded deductively along the eight responsiveness domains to identify the themes and sub-themes pertaining to each domain. Second, the clients' and providers' responses within each theme were compared to ascertain how they aligned/diverged. Third, dominant themes were scrutinized to identify the key factors believed by respondents to influence service responsiveness. Fourth, the factors were classified according to whether they were 'hardware' (material) or 'software' (relational) elements of the health system. As defined by Sheikh et al., hardware referred to the tangible elements of the health system, such as the resources, structures and forms of service delivery, whereas software included the attitudes, values, practices and power dynamics that defined the relationships between system actors, elements and contexts (Sheikh *et al.*, 2011). This framework was chosen because it applies to micro-level health systems, such as outreach clinics, and because it recognizes health systems as open, dynamic and fundamentally driven by human actions, beliefs and norms. It also provided a foundation for examining the influence of context on service responsiveness.

Throughout this analysis, detailed notes were recorded by the lead researcher to inform the interpretation of results. These included decisions made in the coding of transcripts, thoughts on emerging patterns and reflections on possible biases. Additionally, results were discussed among the researchers following each step of the analysis to address assumptions. The findings that emerged from the analysis were also validated through discussions with the NGO team that supported the integration of FP services in Malawi to enhance the trustworthiness of the analysis. Once the analysis was completed, example quotes were extracted for illustrative purposes, and the standards for reporting qualitative research checklist was used to improve the quality of reporting (O'Brien *et al.*, 2014).

Furthermore, quantitative data from the clinic audits were double entered from paper forms into EpiData and exported into STATA 16 to generate descriptive statistics summarizing the clinics' characteristics. These are reported here along with a description of the respondents' characteristics and a detailed explanation of the factors found to influence service responsiveness.

Results

Overall, 23 clients and 10 HSAs who provided FP services across six clinics were interviewed. The clients interviewed had an average age of 23.5 years (ranging from 18 to 39), and most had one or two children (with older clients having up to

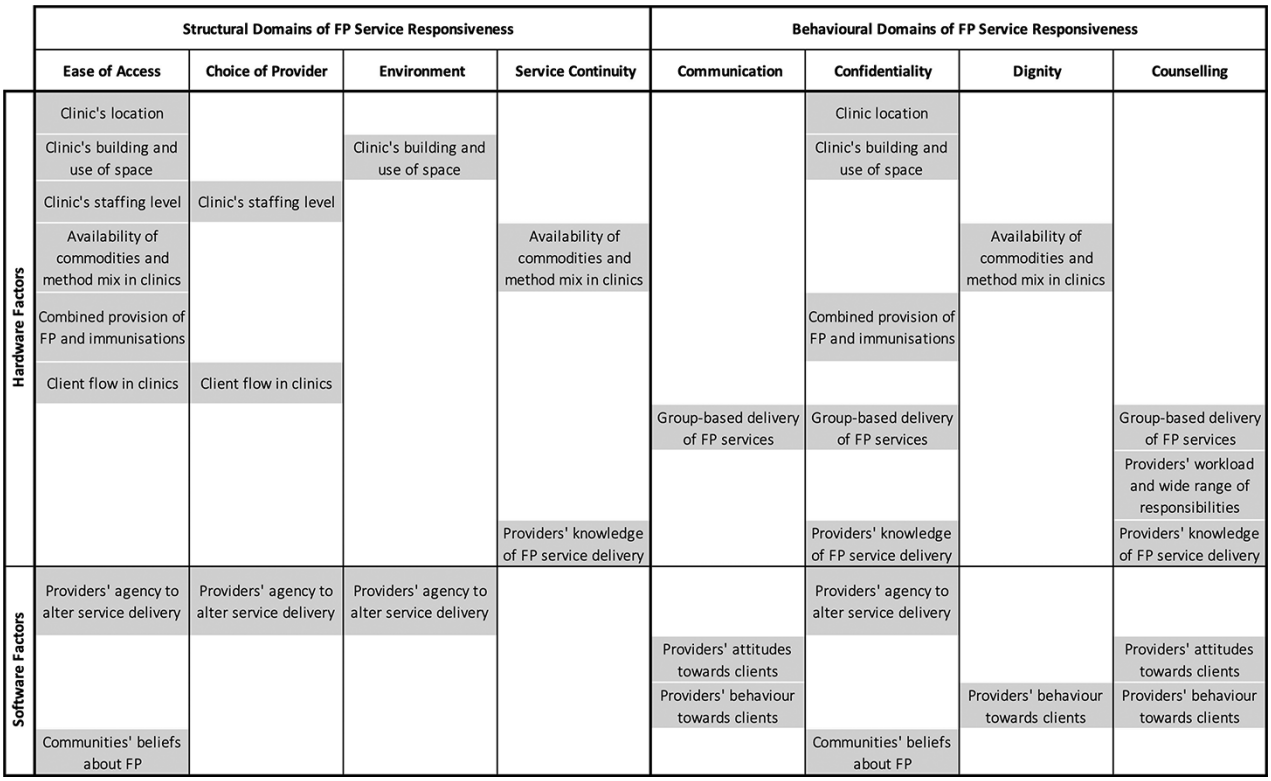

Figure 1. Factors influencing the responsiveness of integrated FP services in routine outreach clinics

six children). These clients included a mix of new and repeat contraceptive users, and almost all sought injectable contraceptives. Clients with one or two children reported using contraceptives for child spacing purposes, whereas clients with more than two children reported wanting to avoid additional pregnancies.

Of the six clinics selected for the SSIs, on the day of the interviews, four had a shelter and seating, one had multiple rooms, five met staffing standards (at least four HSAs) and five were staffed by HSAs who received FP training within the previous two years. Injectables were available in all clinics. However, in some clinics, demand exceeded available stocks, resulting in a few clients receiving pills or condoms as a stopgap. The average age of the 10 providers interviewed in these clinics was 39.3 years (ranging from 32 to 49). Among these providers, eight were male, and some lived in or around the communities they served whilst others resided further away.

In their accounts of the integrated FP services, respondents mentioned a total of 13 factors that they believed influenced service responsiveness. Among these factors, nine were hardware elements of the health system and four were software elements. As illustrated in Figure 1, almost all factors were perceived to influence service responsiveness via multiple domains.

Hardware factors

The clinic's location

According to both types of respondents (clients and providers), the clinic's location influenced the responsiveness experienced by clients. Most clients believed that the clinics were well located because, by being community-based, they were closer than the nearest health facilities, which improved clients' access to FP services. However, clients and providers noted that the providers struggled to reach the more remote clinics on time, which prolonged clients' wait time for services. Additionally, the confidentiality offered to clients was believed to be undermined when clinics were located near main roads because community members could observe women seeking services.

> *I think we have been respected because in the past we used to walk a very long distance to the clinic before this clinic was set up. It was very far* (Client_01).

> *Contraception is very significant in such remote areas. For instance, in the first-place people were travelling long distances to access family planning methods…But now, people can access family planning methods in this place, so I think it is a great achievement that we have minimized the distance people have to travel* (Provider_09).

The clinic's building

The delivery of services in an open space or in a building not suited to FP services (e.g. school or church) was cited as problematic. Both types of respondents felt strongly that a building with multiple rooms dedicated to the exclusive use of the clinic was crucial to avoid being seen or overheard whilst seeking FP services. However, opinions between clients and providers differed as to the importance of the clinic environment. On one hand, clients felt the clinic environment was the most important domain of responsiveness, and they believed an inappropriate environment raised doubts about the quality of the clinic's services. On the other hand, providers believed that despite hindering service responsiveness, the environment was

least important to clients and that clients would seek services in outreach clinics regardless of the environment given the clinics' proximity to their homes.

> *I don't think there is order because there is no building; we are meeting under a tree. It shows a lack of development. Also, if there was a building, we would be accessing services without other people looking* (Client_01).

> *…there is inadequate infrastructure and equipment, and this makes our job tough. You can see that we are actually using church buildings for shelter most of the time. So sometimes the church programmes overlap with ours and we have no choice but to go outside and conduct our clinic there. We do not have our own shelter where we can be free to offer these services, that's the main challenge that we face* (Provider_04).

The clinic's staffing level

Providers believed that responsiveness was compromized by staff shortages in clinics, which they attributed to off-site trainings, competing tasks and a lack of commitment among providers. Specifically, understaffing was seen as undermining the standardized client flow that providers relied on to integrate the delivery of services and consequently slowing the provision of services and increasing clients' wait time. Providers also reported that it was impossible to give clients the opportunity to choose a provider when staffing levels were low but that it was an option when clinics were properly staffed.

> *I think we need more staff here so that we divide our tasks well. When this is done, we will assist them* [the clients] *quickly and they won't get tired of waiting…Some HSAs do not show up…We sometimes behave as if we have just realised that we should go to an outreach clinic. So, we begin preparations late and arrive late at the outreach and we bring few supplies…* (Provider_06).

The availability of commodities

In addition to preventing clients' access to the contraceptives they required, pervasive commodity shortages in clinics were perceived to subvert the dignity afforded to clients. This is because, according to both types of respondents, clients equated accessing the services they needed and the contraceptive method they preferred to being respected. Providers explained that commodity shortages in clinics were commonly due to supplies originating from a single health centre with limited stocks being shared between multiple clinics.

> *I am only complaining that I have pills and not the injection that I wanted because it is not available…With the injection, I take it once in 3 months. However, with pills then I need to take them once every day. I need to learn how to do this every day. I am not used to that* (Client_18).

Clients and providers also believed that the mix of contraceptive methods available in clinics influenced the service continuity experienced by clients. That is, both types of respondents suggested that referrals to distant health centres could be reduced by expanding the services provided in clinics to include the administration of LARCs (e.g. implants). Providers felt that clinics should be staffed with a nurse capable of providing these contraceptives, and they stressed that referring clients to health centres for LARCs was futile as few women followed through with the referral, opting instead for the short-acting contraceptives available in the clinics.

> *There are long term methods which are not provided at this clinic. Methods like implants should be integrated and HSAs should be trained so that when we provide pills and injectables women can also access implants…Sometimes women consider the distance it will take them to reach the health facility to access a long-term method and eventually they do not go* (Provider_02).

The combination of FP and childhood immunization services

The combined provision of services was also perceived to influence service responsiveness. Both types of respondents emphasized that the combined provision of FP and childhood immunizations improved access to FP services by creating the opportunity to seek several services at once and reducing the direct and indirect costs associated with multiple visits. Clients and providers also felt that it facilitated confidentiality by making it less obvious to passers-by which women were seeking FP services in the clinic.

> *…initially women would acquire immunization only here and get contraceptives somewhere else that was far away. As a result, most women opted not to go there. Some even bought expired contraception. But now it's good that we are providing these services simultaneously as such we have more women coming and benefiting* (Provider_10).

The flow of clients in the clinic

Clients and providers reported that the standardized client flow adopted in clinics resulted in long wait times for FP clients (particularly when client loads were high) as FP services were provided after growth monitoring and immunization services. Providers suggested that wait times could be reduced by altering the client flow. Proposed alterations included (1) using a single provider to administer contraceptives and immunizations to clients seeking both services and (2) prioritizing these clients ahead of others. Clients also felt that the standardized client flow in clinics limited their choice of provider as each HSA was assigned to a specific service.

> *Maybe we can improve on time so that women don't stay long periods when they come here. Those coming for immunization and family planning stay in the same queue, so maybe we can split them so that those coming for family planning are treated first* (Provider_07).

> *There is only one person who gives the [injections] so there is no chance of choosing* (Client_03).

The group-based delivery of FP services

The group-based provision of FP counselling (a common provider-led deviation from the standard operating procedure) was perceived to negatively influence responsiveness. Several clients also reported having difficulty hearing the group health talk at the start of the clinic day, which providers acknowledged was an issue when client loads were high. Clients explained that asking questions about FP in a group

setting was not appropriate and that FP counselling should be provided individually instead of in groups to conserve women's confidentiality.

> *We were being taught as a group…Most of us wanted to take the injection but were shy to do so because we were told as a group…I was embarrassed to go and get the injection because everyone would see me…I would have taken the injection but because it was difficult to do so, I have just taken pills…The injection is what I normally use but today I have taken the pills. But I really would like to use the implant, Jadelle* (Client_16).

The providers' workload

A common view among providers was that their workload also influenced service responsiveness. Several providers reported feeling overwhelmed by their workload given the many responsibilities they held in the health centres, clinics and community. They believed that the wide range of responsibilities they were tasked with compromized the services they delivered, especially the FP counselling they provided to clients in clinics.

> *The workload that we normally have. We have to go and work in the communities and then go back and work at the clinic too. Because we are overwhelmed, we don't perform our best…I have tasks in my area as well as at the facility. I get so overwhelmed and sometimes I just perform the tasks to fulfil duty* (Provider_03).

The providers' knowledge

Providers believed they possessed the knowledge needed to deliver confidential services to clients. However, they expressed a need for additional and refresher training to strengthen their capacity to provide FP counselling and to answer clients' questions. They also felt they should be trained to provide LARCs to make these available in clinics and improve the service continuity afforded to clients. Clients, however, commented very little on the providers' knowledge and its effect on service responsiveness.

> *That confidentiality is there because when we were starting integration, we were told about that during training. We were told to emphasize that whatever happens at the outreach is purely confidential and should not be revealed to husbands at home in anyway* (Provider_07).

> *Sometimes a new method is introduced, or new drugs are introduced and as a provider we are usually just told to start providing without proper training. When new things are coming in, it is important to train us so that we are able to answer the questions coming from clients* (Provider_02).

Software factors

The providers' agency

Clients and providers reported multiple instances where the providers' agency, or capacity to act independently, had a positive influence on responsiveness. This included identifying HSAs to fill team absences to ensure clients could access services quickly and choose a provider, altering the client flow to overcome issues associated with the lack of appropriate shelter and improving the confidentiality of services. For example, providers reportedly improved the confidentiality of services by (1) bringing clients behind the clinic or away from others to counsel them privately, (2) prioritizing clients requiring additional privacy (e.g. unmarried women) and (3) delivering services after clinic hours or in their own homes.

> *No there is no privacy here. We can all see what method the other is taking…We should have one on one sessions with the health workers…The health worker who was coming for the past few months would tell us that if we want family planning, we should meet him by ourselves and we would have a health talk. It was good because nobody knew about your method* (Client_16).

> *Also, there are people who do not want others to see them accessing family planning services for fear that they will tell their husband about it. For such women, we wait for everyone to go home, and they are the last to receive a service. They receive the service when everyone is gone including the relations of their husband* (Provider_05).

The providers' attitude toward clients

The providers' attitude toward clients was also key to the responsiveness experienced by clients. Providers believed the clients' limited educational opportunities and knowledge about health services and FP impeded the counselling they delivered. Specifically, the providers felt that they needed to adopt a suboptimal approach when communicating information to clients to build their understanding slowly over time.

> *This place is under development. I think communicating with people must be done in steps. You are educated but they are not…Bearing in mind that it is not simple to change a person, I think we have to take them slowly up until they are able to learn things faster* (Provider_09).

Equally, the providers viewed some clients' behaviour as problematic. For example, providers perceived clients who sought services elsewhere (particularly during the farming season) or delayed follow-up visits as destabilizing service continuity. Similarly, providers felt that clients who interrupted the flow of services in the clinic hindered access to services by increasing other clients' wait time. Providers also believed that clients who reached the clinic late or did not move quickly through the clinic's different stations posed a challenge, as they missed the group health talk and/or FP counselling and were subsequently more likely to adopt a contraceptive with little understanding.

> *The challenges are there. In this area, people are very mobile so when they take a method this month, the next month they move to the farming lands. They end up missing their appointment dates. They come back to this area when the farming season is over* (Provider_02).

> *Another challenge is that some women pass their clinic cards to their friends whilst they stay back at home to come later, this holds us up, as we end up having to wait for them before we can start our sessions* (Provider_04).

The providers' behaviour towards clients

In general, clients reported feeling respected by providers whom they viewed as professional and helpful. However, some clients' remarks revealed that the providers' attitudes towards clients sometimes resulted in disrespectful behaviour. Clients felt this undermined the dignity and counselling they experienced. And although providers mostly viewed their own behaviour towards clients positively, they acknowledged that clinic utilization rates would likely improve if they adopted a better attitude, greeted clients carefully and communicated more respectfully.

> *…there are some* [clients] *that are shouted at for coming on a wrong date. The* [provider] *shouts and blames them for not checking their date properly in their book. I feel this is very disrespectful since most of the women are illiterate and do not know how to read. They are supposed to tell them in a polite manner because even if they are illiterate, they are still wise on other things* (Client_18).

The communities' beliefs about FP

Finally, a common view among both types of respondents was that FP was generally perceived favourably by the communities in which the clinics operated. Clients and providers mentioned that community members believed FP was helpful to prevent unplanned pregnancies, to free up women's time for other tasks and to limit population growth in a context of depleting natural resources and rising poverty. This favourable outlook was believed to aid clients' access to FP services. However, both types of respondents also said FP was not openly discussed in communities because it was viewed as a private matter and that some women feared being bewitched for using contraceptives, which put pressure on providers to ensure the confidentiality of FP services. Also, most clients reported feeling supported by their husbands to use contraceptives. However, several clients mentioned that not all husbands were equally supportive, which was perceived to hinder women's access to services and drive the need for confidentiality. The lack of support among some husbands was believed to be due to misconceptions about contraceptive side effects, such as infertility, reduced sex drive, erectile dysfunction and women no longer 'being sweet in bed'. Providers highlighted that these misconceptions were in part the result of FP services not reaching men in the communities.

> *People are afraid to disclose when they have accessed a family planning method because others will perform some magic on them causing them to have prolonged menses* (Client_12).

> *I have been visited by such women* [who seek FP services in secret against their husband's wishes] *because people are cognizant of the advantages of a small family. Many people in this area suffer from famine so they struggle to make ends meet. This can be exacerbated by having large families with four or more children* (Provider_09).

Discussion

This study set out to identify the factors influencing the responsiveness of FP services that were integrated with childhood immunizations in routine outreach clinics by exploring the perceptions and experiences of clients and FP providers. In general, clients' perceptions aligned with those of their FP providers. However, a notable exception was their contradicting opinions on the importance of the clinic environment. A possible explanation for this difference was that the providers overestimated the value of the improved access afforded to clients through the outreach nature of the clinics and consequently failed to recognize how important the environment was to their clients. Interestingly, no noteworthy differences were found among the views of respondents across clinic sites.

In all, nine hardware and four software factors were found to influence the eight domains of responsiveness studied. Taken together, these factors highlight that, in the studied clinics, responsiveness was a product of not only the organizational arrangement of resources but also the process involved in the provision of services and of the characteristics and behaviours of the actors interacting at the point of care. This corroborates Mirzoev and Kane's conceptualization of responsiveness, which places the interaction between clients and their service providers at its centre (Mirzoev and Kane, 2017).

Among the hardware factors identified in this study, the clinic's (1) inappropriate building and use of space, (2) group-based delivery of FP services, (3) staffing shortages and (4) lack of commodities were all perceived to negatively affect service responsiveness. These findings mirror the views expressed by clients of integrated FP and childhood immunization services in Benin, India, Liberia and in the Dowa and Ntchisi districts of Malawi (FHI 360, 2012; Cooper *et al.*, 2015; 2020; Nelson *et al.*, 2019; Erhardt-Ohren *et al.*, 2020). Of note, the absence of a dedicated and private space for the provision of confidential and dignified FP services was found to be especially detrimental to the responsiveness experienced by clients. This highlights the importance of identifying a fixed space that is appropriate for the delivery of FP services when these are integrated with childhood immunizations through community outreach platforms. Conversely, the combined provision of FP and childhood immunization services was mostly viewed by respondents to have a positive effect on service responsiveness. This is likely because the combination of these two services helped enhance the ease of access and confidentiality afforded to clients in a community context where health services were hard to reach and where myths and misconceptions about contraceptives rendered confidentiality paramount. These results are consistent with research from rural Liberia in which health facility clients who received bidirectional referrals between FP and childhood immunizations reported appreciating the chance to receive information about a service they did not originally intend to seek and the opportunity to access two services on the same day (Nelson *et al.*, 2019).

In contrast, the effect of software factors on service responsiveness was generally viewed more favourably. Among these, the providers' agency emerged as a critical factor and was perceived to influence half of the responsiveness domains. That is, the providers' use of their agency to overcome hardware shortfalls by altering the delivery of services was perceived to improve the ease of access, choice of provider, environment and confidentiality experienced by clients. This finding contributes to the emerging recognition that providers can offset the effect of some hardware deficiencies when services are integrated if they are afforded sufficient flexibility to make independent decisions (Mayhew *et al.*, 2017; 2020). However, these responses to hardware deficiencies are less likely to be effective when the hardware in question relates

to the providers themselves (e.g. staffing shortages or knowledge gaps). Also, it is worth noting that despite this positive use of agency, some decisions made by providers were perceived to have the opposite effect on service responsiveness. For instance, the providers' decision to deliver group-based counselling to streamline services instead of counselling clients individually per the standard operating procedures was believed to undermine the confidentiality, communication and counselling experienced by clients. Similar provider-led modifications were reported in Zambia where high demand for immunization visits limited the time allotted to the provision of FP services, which resulted in providers perceiving group-based services as more practical than individualized FP messaging (Vance *et al.*, 2014). Such trade-offs between the practicalities of delivering services and the responsiveness afforded to clients are to some extent unavoidable in practice (World Health Organization, 2000), particularly in resource-constrained settings. In fact, as established by Lipsky (1980) and further explained by Erasmus (2014), frontline health workers, at times referred to as 'street-level bureaucrats', commonly reinterpret policies and alter the delivery of services as a coping strategy to overcome resource constraints or heavy workloads by invoking their 'discretionary power'. In doing so, these actors are likely to redefine or even contradict the aims of the policies and programmes they are tasked with implementing (Lipsky, 1980; Erasmus, 2014). Therefore, programme designers looking to improve the responsiveness of FP services that are integrated with childhood immunizations should not only create the conditions under which providers can apply their agency to pragmatically deliver services, but they should also provide the tools for them to adapt the provision of these services in a way that ensures responsiveness goals are achieved. To do so, it is essential for programme monitoring systems to capture clients' experiences across all responsiveness domains and for feedback mechanisms to be implemented that enable providers to make data-driven decisions. However, it is equally vital to address broader structural determinants so that providers' efforts are not dominated by attempts to mitigate the negative effects of hardware deficiencies (Topp and Sheikh, 2018). Additionally, examining provider behaviour and identifying behaviour change opportunities could also help improve service responsiveness as the findings from this study underline that providers' attitudes towards clients can be biased and negatively impact the services they deliver (Breakthrough ACTION, 2020).

Overall, this study documented the effect of key factors on the responsiveness of FP services that are integrated with childhood immunizations and highlighted the critical influence of software factors. However, given the dynamic nature of health systems (de Savigny and Adam, 2009) and the complexity of service responsiveness, understanding the interrelationships between hardware and software factors represents an important next step to inform the design and delivery of responsive FP services that are integrated with childhood immunizations.

Limitations

The findings from this study are somewhat limited by the small number of interviews. However, this is less concerning as the respondents volunteered a substantial amount and depth of information during the interviews, and the data captured across clinics indicated saturation was achieved. Also, by using a convenience sampling strategy instead of a purposive or systematic approach to recruit clients into the study, it is possible that important perspectives were missed. For example, a different sampling strategy could have provided the opportunity to interview clients who were interested in, or normally used, contraceptives other than injectables. Additionally, interviews with women opting not to seek clinic services and actors operating beyond the boundaries of the clinics could have provided additional insights, including the effect of upstream factors on service responsiveness. Further studies should aim to capture these complementary perspectives to enrich the findings reported here.

Conclusions

The study investigated the factors influencing the responsiveness of FP services that were integrated with childhood immunizations in routine outreach clinics by examining the perceptions of clients and providers. Findings revealed that hardware factors, including the non-static nature of the clinics characterized by the absence of a dedicated and private space for the delivery of services, undermined the responsiveness experienced by clients. However, crucially, providers can mitigate the negative effect of such hardware deficiencies by applying their agency to alter service delivery. Consideration of software elements in the design and delivery of integrated FP services is therefore critical to optimize the responsiveness of these services.

List of abbreviations

FP: family planning, HSA: health surveillance assistant, LARC: long-acting reversible contraceptive, NGO: non-governmental organization, SSI: semi-structured interview.

Data availability

The datasets used and/or analysed in the current study are available from the corresponding author upon reasonable request.

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Authors' contributions

J.K.H. conceived the idea for this research and developed the study design and tools with inputs from H.E.D.B., J.W., M.K. and S.P. A.S.K. and J.K.H. oversaw the data collection activities in Malawi with advice from H.E.D.B., J.W., M.K., E.M. and S.P. The data analysis was carried out by J.K.H. with input from H.E.D.B., J.W. and S.H.M., and all authors contributed to the interpretation of findings. J.K.H. drafted the manuscript. All authors made substantial contributions to revising the manuscript and provided final approval of the version to be published.

Reflexivity statement

The authors include seven females and one male and span multiple levels of seniority. Three of the authors specialize in the delivery of public health interventions in Malawi, one is a family planning and reproductive health expert and the other four are researchers based in the UK with expertise in the evaluation of complex health interventions and quality of care. All authors have extensive experience conducting qualitative fieldwork in Malawi and other countries in sub-Saharan Africa.

Ethics approval and consent to participate. Ethics approval was obtained for this study from the National Committee on Research in the Social Sciences and Humanities in Malawi (reference NCST/RTT/2/6) and from the ethics committee of the London School of Hygiene & Tropical Medicine in the UK (reference 16188). Written informed consent was obtained from all respondents prior to their involvement in the study.

Conflict of interest statement. The authors declare that they have no competing interests.

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CHAPTER 6. SYSTEM DYNAMICS (PAPER 3)

OVERVIEW

This third paper was published in *SSM - Qualitative Research in Health* [212] and reports the findings from a causal loop analysis of qualitative data. It addresses the fourth and fifth objectives of this thesis by modelling and describing the system dynamics determining the responsiveness of FP services in the studied context. It also provides practical recommendations for decision-makers aiming to strengthen the responsiveness of FP services that are integrated with childhood immunisations in routine outreach clinics, and in other similar settings. Furthermore, this paper demonstrates the value of using systems thinking and of carrying out a causal loop analysis to study the responsiveness of health services.

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Thesis Title	Health service responsiveness: A case study of integrated family planning and childhood immunisation services in Malawi		
Primary Supervisor	Dr Helen Burchett		

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For multi-authored work, give full details of your role in the research included in the paper and in the preparation of the paper. (Attach a further sheet if necessary)	I conceived the idea for this study and developed the study design and tools with inputs from HEDB, JW, MK and SP. I oversaw the data collection activities in Malawi with ASK and with advice from HEDB, JW, MK, EM and SP. I carried out the data analysis with input from HEDB, JW and SHM, and all authors contributed to the interpretation of findings. I drafted the manuscript, managed the feedback and revisions from co-authors, and submitted the manuscript for peer-review with approval from all co-authors.

SECTION E

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Integrated delivery of family planning and childhood immunisation services: A causal loop analysis of service responsiveness in Malawi

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ABSTRACT

Evidence suggests that integrating family planning (FP) services with childhood immunisations can increase postpartum contraceptive use by providing timely contact with FP services during the year following childbirth. However, little is known about clients' experiences of FP services within this context. Systems thinking was applied to examine the responsiveness of FP services that were integrated with childhood immunisations in routine outreach clinics across two districts of Malawi. A causal loop analysis of qualitative data captured through 1) structured exit interviews with clients (n=146) and 2) semi-structured interviews with clients (n=23) and their FP providers (n=10) was carried out to explain the system dynamics influencing the responsiveness of integrated FP services. Through this analysis, six feedback loops were identified as having a balancing effect on service responsiveness. Importantly, the clinic's client load was found to drive the responsiveness experienced by clients in the studied context. Overall, the results suggest that efforts to enhance the responsiveness of integrated FP services in outreach clinics should focus on 1) enhancing the providers' ability to alter the client flow in response to fluctuations in the clinic's client load, and 2) ensuring that an appropriate buffer of FP supplies is available in clinics to enable clients to consistently receive their preferred contraceptive irrespective of surges in demand. This study represents the first attempt at modelling the responsiveness of integrated FP services and its findings can be used to inform the design and delivery of FP services that are integrated with childhood immunisations in different settings.

1. Background

In recent years, the integrated delivery of family planning (FP) services with childhood immunisations has garnered attention among policy makers and implementers. It is increasingly recognised as a promising approach to improve timely access to FP services among postpartum women and to minimise their unmet need for modern contraceptives (Dev et al., 2019; High-Impact Practices in Family Planning, 2013; Moore et al., 2015). Importantly, studies conducted in Togo, Ghana, Zambia, Rwanda, Liberia and Malawi have revealed that the combined delivery of these two services can improve the use of FP services and contraceptives among postpartum women without negatively impacting childhood immunisation uptake (Cooper et al., 2015, 2020; Dulli et al., 2016; Huntington & Aplogan, 1994; Nelson et al., 2019; Vance et al., 2014). These same studies have also concluded that this approach to service delivery is largely acceptable to health providers and their clients. Yet, clients' experiences of FP services that are integrated with childhood immunisations remain less clear. Although Nelson et al. reported that clients generally held a positive perception of their experience in Liberia, and that service integration was perceived to substantially improve clients' ease of access to FP services (Nelson et al., 2019), to date, little attention has been paid to the responsiveness of FP services that are integrated with childhood immunisations. Further research is warranted given the sensitive and repeat nature of FP services and the important

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link between clients' experiences, their perceptions of the quality of care, and their willingness to repeat the use of services (Fruhauf et al., 2018; Hanefeld et al., 2017; Harris et al., 2016; Jain & Hardee, 2018; Kruk et al., 2018).

There are multiple definitions of responsiveness in the field of health systems and policy research. Here, responsiveness is understood as an indicator of service performance and taken to mean the degree to which a given service meets people's legitimate expectations based on universally accepted ethical principles and service standards (Darby et al., 2003; de Silva, 2000; Khan et al., 2021; Murray & Frenk, 2000; World Health Organization, 2000). In accordance with the literature on the responsiveness of health services and the quality of FP services, the legitimate expectations (or responsiveness domains) most relevant to FP services include the 1) ease of access; 2) environment; 3) freedom of choice; 4) dignity; 5) confidentiality; 6) communication; 7) counselling; and 8) service continuity experienced by clients (Jain & Hardee, 2018; Perera et al., 2011, 2012a, 2012b; RamaRao & Jain, 2016; Tessema et al., 2016, 2017). As described by Mirzoev and Kane, responsiveness is shaped by the actors, processes, and organisational arrangements involved in the delivery of health services (Mirzoev & Kane, 2017). As such, understanding this complex dimension of services would benefit from the use of systems thinking; however, this approach has yet to be employed to study the responsiveness of FP services.

Systems thinking proposes that interpreting the interrelationships between the elements of a system can generate a holistic understanding of complex issues, situations, and interventions (Adam, 2014; Adam & De Savigny, 2012; de Savigny and Adam, 2009). One way of applying systems thinking to the analysis of empirical data is through the use of causal loop diagrams (CLDs). A CLD is a common systems thinking tool that enables the visualisation of causal linkages, including reciprocal relationships and feedback, between elements of a system (Wolstenholme, 1999). CLDs also help to model the influence of exogenous variables (i.e., variables whose value is determined outside the system) on the system's functioning, which is critical to understanding service responsiveness in different contexts (Mirzoev & Kane, 2017). Past applications of CLDs within the field of public health have focused on questions related to: trust in vaccinations; immunisation systems; neonatal health and mortality; gatekeeping; emergency presentation in cancer patients; health promotion; prevention of mother-to-child transmission of HIV; and pay for performance programmes (Baugh Littlejohns et al., 2018; Cassidy et al., 2021; Chen et al., 2019; Ozawa et al., 2016; Rwashana et al., 2009, 2014; Semwanga et al., 2016; Singh et al., 2021; Xu & Mills, 2017; Yourkavitch et al., 2018). These applications have demonstrated that CLDs can provide important insights into the influence of system dynamics on health issues and health services, including the unintended or unfavourable effects of certain interventions. However, to date, CLDs have not been used to study the responsiveness of health services nor the delivery of FP services.

In 2019, a mixed methods case study of the responsiveness of FP services that were integrated with childhood immunisations in routine outreach clinics was conducted across two districts of Malawi. The primary purpose of this case study was to assess and explain the responsiveness of integrated FP services (Hamon et al., 2022a, 2022b). A central aim was to model and describe the system dynamics influencing the responsiveness of integrated FP services in the studied context, and in turn, identify changes that service designers and implementers should prioritise to optimise the responsiveness of these services. To achieve this aim, a causal loop analysis of qualitative data from the case study was carried out. Results from this analysis are reported in this article.

2. Study setting

The setting and contexts in which the FP services were integrated with childhood immunisations are explained in detail elsewhere (Hamon et al., 2020). Briefly, the delivery of FP services was deliberately integrated into the Expanded Programme on Immunisation (EPI) in monthly public outreach clinics, which offered childhood immunisations and growth monitoring services. All services in these clinics were provided by Health Surveillance Assistants (HSAs) with support from community volunteers. In Malawi, HSAs are paid community health workers tasked with the provision of health promotion and prevention services in health centres and communities (Kok et al., 2020).This integrated delivery of services was supported by a non-governmental organisation (NGO) across three districts of Malawi: Blantyre, Thyolo and Mwanza. However, due to logistical and time constraints, data were only collected in Blantyre (rural) and Thyolo districts for the purposes of the case study.

The integrated services were delivered in routine outreach clinics using a standardised client flow (Hamon et al., 2020). According to the client flow's design, clients received information about child development and the benefits of immunisations, nutrition, exclusive breastfeeding, and FP (including an explanation of the contraceptive methods on offer at the clinic and their side effects) through a group health talk led by HSAs at the start of each clinic. Following the health talk, growth monitoring and childhood immunisations were made available to all clients, and FP counselling and short-term contraceptives were offered to clients interested in FP services. Additionally, referrals to the nearest health facility were provided to clients wishing to take up long-acting reversible contraceptives or permanent methods. Although staffing standards were not consistently achieved in all clinics, a minimum of four HSAs were expected to staff each clinic to ensure adherence to the client flow design and effective service delivery.

These services were provided in districts where childhood immunisation and contraceptive use rates were relatively high, and where the unmet need for FP among married women was approximately 20% (National Statistical Office, 2017). In general, FP was well perceived by the communities where these services were delivered. However, a lack of support from some husbands, driven by myths and misconceptions about modern contraceptives, was believed to undermine some women's access to FP services (Hamon et al., 2022a).

3. Methods

3.1. Empirical data collection

Qualitative data were captured in outreach clinics through 1) questions based on cognitive interviewing techniques asked during structured exit interviews with clients and 2) semi-structured interviews (SSIs) with clients and their FP providers. Both types of interviews sought to explain clients' experiences of the FP services in terms of the eight responsiveness domains mentioned earlier: 1) ease of access; 2) environment; 3) freedom of choice; 4) dignity; 5) confidentiality; 6) communication; 7) counselling; and 8) service continuity. SSIs also captured clients' and FP providers' thoughts on the software (e.g., beliefs, behaviours, and norms) and hardware (e.g., human resources, infrastructure and organisational structures) factors influencing service responsiveness (Sheikh et al., 2011). The combination of these two complementary sources of data, and in particular the mix of client and provider perspectives (two types of respondents with expert knowledge of the services), helped enhance the rigor and completeness of the model. Interviews were conducted in Chichewa and English by experienced and trained local interviewers. Prior to importing data into Nvivo12 for coding and analysis, data from the structured interviews were double entered from paper forms into EpiData and exported into STATA16. Audio recordings from the SSIs were also transcribed *verbatim* and where needed translated into English.

Structured exit interviews were conducted in 15 clinics, and a subset of six clinics was selected for SSIs. Routine monitoring data were consulted to select a range of clinics with different staffing levels, client loads and community involvement among the clinics where FP services were integrated with childhood immunisations. Clients and providers were recruited using convenience sampling. All providers who delivered FP services on the day of the interview were recruited and clients were approached upon exit from the clinics. All eligible clients were invited to

participate in the study with the aim of recruiting at least four clients per clinic for the SSIs and as many clients as possible in a single day in each clinic for the structured interviews. Eligible clients were 18 years or older and had received FP services on the day of the interviews.

3.2. Causal loop analysis

To model the system dynamics influencing FP service responsiveness in the studied context, a CLD was developed and analysed through a multi-step process. First, thematic and text summary analyses of the qualitative data that were previously carried out in Nvivo (Hamon et al., 2022a, 2022b) were re-examined and summarised in Excel spreadsheets to identify dominant factors influencing the eight responsiveness domains identified from the literature. Factors were considered 'dominant' if they were found in both data sources (structured and semi-structured interviews) and were emphasised by both types of respondents (clients and providers) across several clinics. The causal links between these factors were then identified through purposive text analysis by returning to the empirical data and micro-analysing the arguments made by respondents about the system's structure and behaviour (Kim & Andersen, 2012). A simple diagram was subsequently constructed with unidirectional arrows denoting these causal links. Based on Baugh Littlejohns et al.'s example (Baugh Littlejohns et al., 2018), causality was inferred from the empirical data according to the following criteria: temporal precedence; constant conjunction; and the contiguity of influence (Davidson, 2000; Huberman et al., 1994).

Second, building on the simple diagram created in the first step, a CLD was constructed, which included an assumed reciprocal relationship between service utilisation and service responsiveness. This assumption was informed by research that has established a strong link between clients' experiences of health services and service utilisation (Ensor & Cooper, 2004; Hanefeld et al., 2017; Kruk et al., 2018; Valentine et al., 2003). Also, reciprocal links between the dominant factors included in the simple diagram were added to the CLD based on the empirical data and the findings from the thematic and text summary analyses. For example, a reciprocal relationship was identified in the data between service responsiveness and the clinic's client load (with each influencing the other). The CLD was further expanded through an iterative process based once more on purposive text analysis of the empirical data. This process consisted of introducing exogenous variables into the CLD, and then going back and forth between the coded data, the spreadsheet summaries, and the diagram to add the effect of these variables to the model. To do so, the same criteria adopted to infer causality in the first step were used. Concurrently, intermediate variables that mediate the relationships between exogenous variables and output variables according to the data were also added to the CLD using the same process. By drawing the connections between these variables, feedback loops began to emerge.

Third, the polarity of each causal link in the model was determined based on the empirical data. A positive polarity was noted in the CLD where a change in a cause variable was described by respondents to alter an effect variable in the same direction (e.g., an increase in A causes an increase in B), and a negative polarity was noted where a change in a cause variable was described as having the inverse influence on an effect variable (e.g., an increase in A causes a decrease in B). The variables and causal links were then refined through multiple rounds of discussions with the research team to enhance the accuracy of the model. Also, plausible time delays between linked cause and effect variables were marked in the CLD where necessary (De Pïnho, 2015).

Fourth, the type of feedback present in the model was identified based on the total number of causal links with a negative polarity in each loop. Loops with an odd total were labelled as 'balancing' and loops with an even total were labelled as 'reinforcing'. Balancing loops produce an alternating effect on the variables included in the loop with each feedback cycle. For example, if a feedback loop causes an unfavourable effect on a variable in a given cycle, it will have a favourable effect on this same variable in the subsequent cycle. Conversely, reinforcing loops produce a reinforcing effect on the variables included in the loop with each feedback cycle. For example, if a feedback loop has a favourable effect on a variable in a given cycle, it will again have a favourable effect on this same variable in the subsequent cycle. It is important to note that whilst the model was developed using data collected at a single point in time, the dynamics of the system implied by the model are discussed with reference to the passage of time because feedback cycles occur over time. Also, the model and data do not provide a forecast of future developments but rather represent how the system operated at the time of data collection.

Finally, the CLD was analysed to identify the fundamental elements of the system driving responsiveness in the studied context (i.e., drivers), and to ascertain leverage points (i.e., places within the system where a small modification can produce a big change in the rest of the system) (De Pïnho, 2015; Meadows, 1999). Drivers were inferred by identifying the variables that: 1) were extensively discussed by respondents in the case study; and 2) were contained in multiple feedback loops, implying a key intersection and important influence within the modelled system. Leverage points within the system were identified by considering the question: how can the system be altered to strengthen balancing loops or slow the growth of reinforcing loops? Higher-level leverage points, including altering the rules of the system or the paradigms from which the system arose (De Pïnho, 2015; Meadows, 1999), were not explored because these extended beyond the sphere of influence held by service designers and implementers and as such, were external to the study's aim.

The CLD was created with Vensim® Personal Learning Edition Version 8.2.1 and was illustrated using the standardised notations (Sterman, 2002) presented in Table 1. Additionally, feedback loops were numbered for referencing and the path of each loop was listed in a table for ease of tracing.

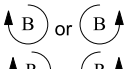
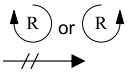
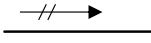
4. Results

In total, 146 clients across 15 routine outreach clinics were asked questions using cognitive interviewing techniques during structured interviews and 33 semi-structured interviews were conducted with clients (n=23) and FP providers (n=10) in a subset of six clinics. Results from the causal loop analysis of data derived from these two sources are reported here.

4.1. Relationships between dominant factors

In all, seven dominant factors that were perceived to have the most influence on the responsiveness of integrated FP services were retained from the thematic and text summary analyses. These were: 1) the providers' management of the clinic's client flow; 2) the opportunity to choose a provider; 3) the client's ease of access to services; 4) the receipt of clear information; 5) the client load in the clinic (i.e., client volume

Table 1
Notation used in the CLD.

Notation	Meaning
Green label	Exogenous variables
Black label	Intermediate variables
Black bold label	Output variables
Purple bold label	Outcome variable
→	Direction of causal link between cause variables and effect variables
+	Positive polarity of causal link
–	Negative polarity of causal link
	Balancing feedback loop
	Reinforcing feedback loop
	Time delay

and characteristics); 6) the client's choice of contraceptive method; 7) and the confidentiality of services. As presented in the simple diagram (Fig. 1), 12 causal links were identified in the data between these seven factors and the outcome of 'responsive FP services'.

4.2. Causal loop model

As illustrated in the CLD (Fig. 2), the ultimate model encompassed 32 variables (described in Appendix A), of which 13 were exogenous and 19 were endogenous to the system. Among endogenous variables, 13 were intermediate variables (black labels), 5 were output variables (black bold labels), and one was the outcome variable (purple bold label) of 'responsive FP services'. Outputs corresponded to several responsiveness domains: 1) the client's receipt of their preferred contraceptive method; 2) the client's ease of access to services; 3) the clients' opportunity to choose a provider; 4) the FP counselling; and 5) the confidentiality of services.

Additionally, a time delay was noted in the CLD between the outcome variable (responsive FP services) and the 'service utilisation' variable to illustrate: 1) the delay involved in the forming of clients' perception of the responsiveness of services; 2) the delay between repeat use of services by a client; and 3) the delay between a client's experience of the services and the use of services by women to whom they recommended the clinic.

4.3. Feedback loops

A total of six feedback loops emerged from the empirical data (Table 2), all of which were found to have a balancing effect on service responsiveness via at least one of the system's outputs. That is, no feedback loops with a reinforcing effect were found.

A clear pattern emerged among the loops. In general, when any of the five system outputs improve, the utilisation of services increases, resulting in a higher clinic client load, which puts pressure on the system, in turn causing a deterioration of outputs and ultimately a decrease in service utilisation. Thus, the initial effect of any intervention to improve service responsiveness would be reduced, though not fully offset, by this feedback. For example, in loop B1, an intervention that directly strengthens the client's receipt of their preferred contraceptive method may initially improve service responsiveness. However, this improvement would increase the repeat use of services among existing clients and new service utilisation among the friends/family members to whom they recommended the clinic, resulting in a rise in the clinic's client load. Consequently, this would elevate the demand for contraceptives and diminish the availability of contraceptives in the clinic. This decline in clients' receipt of their preferred contraceptive method would undermine clients' perceptions of responsiveness, resulting in lower service utilisation rates, thus launching the opposite effect on the variables in the loop in the subsequent feedback cycle. Similarly, the feedback present in loop B2 follows the same pattern. According to respondents, an increase in the clinic client load impedes clients' ease of access to services by lengthening wait times in the clinic, ultimately decreasing service responsiveness, which the CLD highlights would prompt the opposite effect in the ensuing cycle.

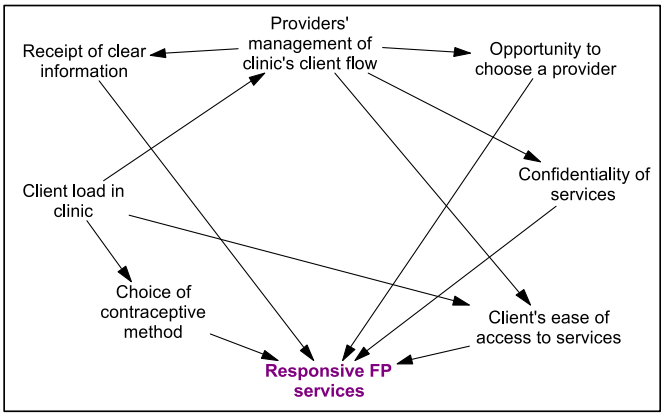


Fig. 1. Simple diagram illustrating causal links between dominant factors.

The pattern present in loops B1 and B2 was also found in loops B3–B6. However, in these four latter loops, the feedback is mediated by the fact that a surge in the clinic's client load resulting from an increase in service utilisation impedes the providers' management of the clinic's client flow. This in turn was believed by respondents to undermine: 1) the clients' ease of access to services (B3); 2) the clients' opportunity to choose a provider (B4); the FP counselling (B5); and the confidentiality of services (B6). For instance, in the case studied, high client loads in some clinics reportedly forced providers to deliver group-based FP services. Due to this absence of private interactions between clients and providers, clients experienced a lack of confidentiality, which ultimately reduced the responsiveness they experienced. This was considered particularly detrimental in clinics where the client load was predominantly composed of clients requiring either highly confidential or covert FP services. Conversely, according to respondents, in clinics where client loads were lower, providers were better able to cater to clients' individual needs by managing the clinic's client flow in a way that: 1) reduced wait times for FP clients (e.g., by prioritising clients seeking multiple services) (B3); 2) enabled providers to switch roles if FP clients voiced a preference for a different provider (B4); 3) improved their counselling (e.g., by spending more time answering clients' questions and tailoring their advice to the clients' needs) (B5); and 4) catered to individuals' confidentiality needs (e.g., by counselling some clients behind the clinic's building for added privacy) (B6).

4.4. Leverage points in the system

Overall, the CLD revealed that a driver common to all six feedback loops was the clinic client load. That is, the responsiveness of integrated FP services in the studied context was found to be heavily influenced by not only the volume but also the complexity of needs among clients attending the clinic at one time. Bearing in mind this driver and the balancing feedback loops found in the system, two leverage points where a small change could have a substantial impact on the responsiveness of FP services were identified (Meadows, 1999).

First, the providers' ability to alter, or indeed correct, the client flow in the clinic to ensure an acceptable level of responsiveness is achieved and maintained regardless of fluctuations in the client load was identified as a leverage point in the system. The CLD suggests that targeting this leverage point could improve: 1) the clients' ease of access to services; 2) the opportunity to choose a provider; 3) the FP counselling; and 4) the confidentiality experienced by clients in the clinic. According to the data from the case study, enhancing the providers' ability to alter the client flow could be achieved, in part, by strengthening their agency.

Second, the buffer of FP supplies that is available in the clinics was also identified as a leverage point in system. A greater buffer would help stabilise the system and improve the responsiveness of services by ensuring that clients can consistently have a choice of contraceptives and receive their preferred method irrespective of surges in demand. According to the clients and providers interviewed, this could be achieved by enhancing the providers' management of the clinic's supplies (assuming the absence of upstream constraints such as national stock-outs of essential commodities).

5. Discussion

A causal loop analysis, anchored on the creation of a CLD, was carried out to model and explain the system dynamics influencing the responsiveness of FP services that were integrated with childhood immunisations in routine outreach clinics across two districts of Malawi. In interpreting the results from this analysis, it is essential to consider the

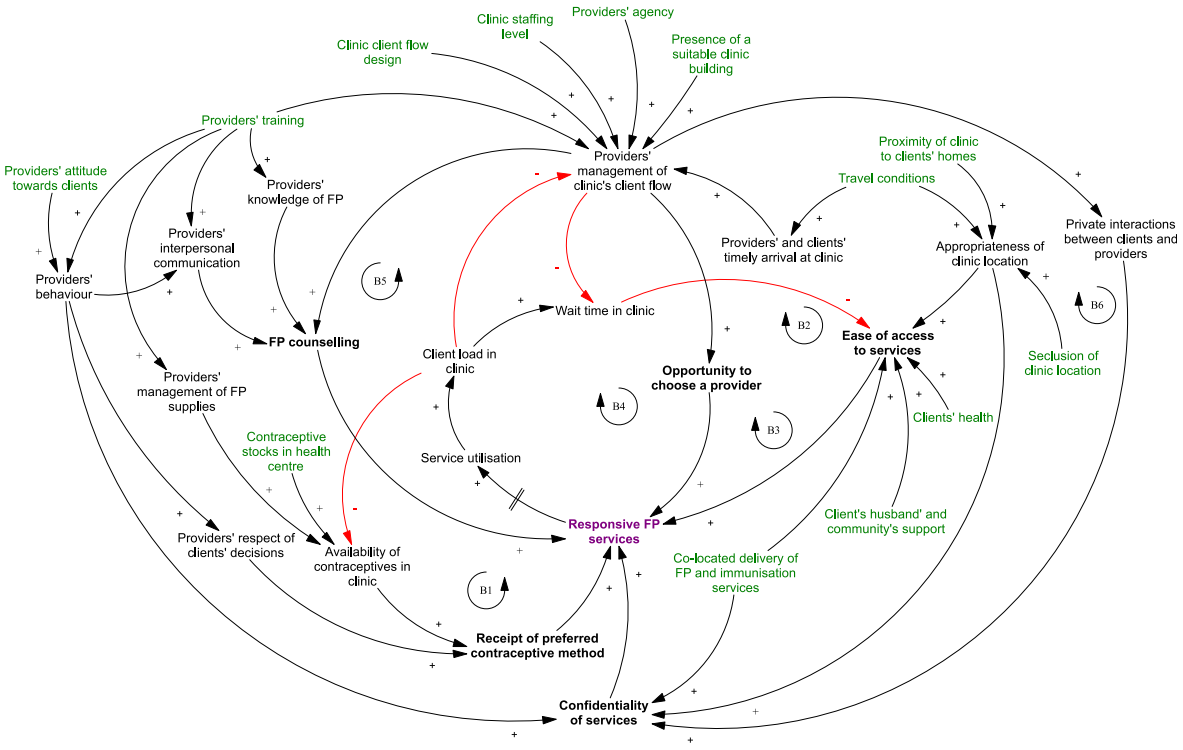


Fig. 2. CLD of the system dynamics influencing FP service responsiveness in the studied context (notation provided in Table 1).

Table 2
Summary of feedback loops.

Loop label	Feedback loop	Feedback effect
B1	**Receipt of preferred contraceptive method** (+) → responsive FP services (+) → service utilisation (+) → client load in clinic (−) → availability of contraceptives in clinic (+) → **Receipt of preferred contraceptive method**	Balancing
B2	**Ease of access to services** (+) → responsive FP services (+) → service utilisation (+) → client load in clinic (+) → wait time in clinic (−) → **Ease of access to services**	Balancing
B3	**Ease of access to services** (+) → responsive FP services (+) → service utilisation (+) → client load in clinic (−) → providers' management of clinic's client flow (−) → wait time in clinic (−) → **Ease of access to services**	Balancing
B4	**Opportunity to choose a provider** (+) → responsive FP services (+) → service utilisation (+) → client load in clinic (−) → providers' management of clinic's client flow (+) → **Opportunity to choose a provider**	Balancing
B5	**FP counselling** (+) → responsive FP services (+) → service utilisation (+) → client load in clinic (−) → providers' management of clinic's client flow (+) → **FP counselling**	Balancing
B6	**Confidentiality of services** (+) → responsive FP services (+) → service utilisation (+) → client load in clinic (−) → providers' management of clinic's client flow (+) → private interactions between clients and providers (+) → **Confidentiality of services**	Balancing

boundaries of the systemic enquiry as they frame the way in which we understand the interrelationships within the studied system and may impose artificial limits to these relationships (Cabrera et al., 2008; Williams, 2015). With the boundaries defined by the perspectives of clients and FP providers who participated in the case study, the CLD illustrates the dynamics influencing service responsiveness at the micro-level of the health system (i.e., at the point of care). As such, it provides insights into the delivery of responsive services that can be used by service designers and implementers operating at this level, whose decisions are constrained by factors at the meso- and macro-levels of the health system.

Overall, six balancing feedback loops were found to affect the responsiveness of integrated FP services via five outputs (ease of access, choice of provider, receipt of preferred contraceptives, confidentiality, and the FP counselling). Despite being among the responsiveness domains initially studied, the dignity, communication, clinic environment and service continuity experienced by clients were not among the outputs included in the CLD. This is because these domains were perceived by respondents to be either other types of variables or embedded within other outputs, such as the ease of access and confidentiality. For instance, communication emerged as an intermediate variable (i.e., the providers' interpersonal communication). Likewise, the clinic's environment was not among the system's outputs as its value was considered to be determined outside of the system's boundaries and was therefore in the CLD as an exogenous variable (i.e., the presence of a suitable clinic building).

An examination of the feedback loops in the CLD revealed that the clinic's client load was a driver of service responsiveness. Importantly, the manner in which this driver played out in the studied context suggests that although outreach clinics may be able to provide responsive services at a small scale, the level of responsiveness is likely to fall when demand increases. This phenomenon may be less of an issue in fixed health facilities. This is because 1) demand is generally easier to forecast at higher levels of client aggregation, and 2) there is more scope for resource reallocation to meet unanticipated demand for specific services in larger service delivery sites. It is therefore possible that the negative effect of high client loads on service responsiveness could be minimised if FP services were integrated with childhood immunisations in fixed health facilities (e.g., health centres) rather than being delivered through outreach clinics.

However, outreach clinics are a vital part of providing equitable access to FP services in the many settings where access to fixed health facilities is limited (High-Impact Practices in Family Planning, 2014). Crucially, this case study provides important insights into how the responsiveness of integrated FP services can be improved in outreach clinics. Specifically, findings from the causal loop analysis suggest that service designers and implementers aiming to enhance the

responsiveness of integrated FP services in this setting should focus on 1) enhancing the providers' ability to alter the client flow in response to fluctuations in the clinic's client load, and 2) ensuring that an appropriate buffer of FP supplies is available at all times in outreach clinics. According to the data, this could be achieved, in part, through interventions that improve the providers' agency and their management of the clinic's supplies. Further research is needed to determine exactly which interventions, such as in-service training, peer-support, supportive supervision, or devolved decision-making, could and should be adopted to achieve these improvements (Avortri et al., 2019; Mayhew et al., 2017, 2020; Milford et al., 2018, 2019; Topp et al., 2018; Watt et al., 2017). Also, given the dynamic nature of the system, interventions such as these are likely to modify the system's structure or lead to the formation of new sub-systems. For this reason, examining the interrelationships between the system's variables on an ongoing basis once an intervention is introduced is paramount. As evidenced by this study and others like it, causal loop analysis can facilitate this process (Kwamie et al., 2014; Paina et al., 2014; Rwashana et al., 2014; Sarriot et al., 2015; Varghese et al., 2014; Xu & Mills, 2017). In particular, by rendering the complexities of system dynamics and causal pathways more tangible (26), CLDs can help decision-makers identify crucial points in the system where small changes could substantially improve the responsiveness of services.

Furthermore, as the model assumes a reciprocal relationship between service responsiveness and service utilisation (Ensor & Cooper, 2004; Hanefeld et al., 2017; Kruk et al., 2018), the sources of delay noted in the CLD between these two variables would benefit from some consideration. In particular, it is important to note that clients' perceptions of the responsiveness of services may take time to form, especially as the relationships between clients and providers develop over several visits (Hanefeld et al., 2017). Thus, interventions that improve the responsiveness experienced by clients may not result in immediate changes in service utilisation, but rather lead to a gradual shift. For this reason, a cautious and iterative approach to intervention that takes into account the length of delay in the system would help decision-makers make appropriate changes to the system whilst avoiding irreversible damage (Meadows, 1999). Likewise, given the recurrent nature of FP services, the aim of interventions seeking to improve the responsiveness of these services should be to sustain positive change rather than to merely strive for immediate gains.

6. Limitations

Although systems thinking and causal loop analysis enabled an exploration of service responsiveness that extended beyond linear thinking, there are weaknesses inherent to qualitative modelling and to the study design worth noting. First, as Wolstenholme points out, when using a qualitative approach to examine system dynamics, it is challenging to capture the order of magnitude of variables and it is possible to apply inappropriate insights (Wolstenholme, 1999). However, a qualitative approach lends itself well to exploratory research as it is not bound by the more rigid frameworks that underpin quantitative modelling. In addition, it provides a crucial empirical foundation for quantitative work. For example, elements from a CLD can be quantitatively examined to further describe the relationships between individual variables (Peters, 2014). To facilitate the integration between qualitative and quantitative modelling of system dynamics, it may be beneficial to refine the terminology used to describe CLDs. In particular, although the term 'balancing loop' is used in this article for consistency with the existing literature, it is important to note that this terminology is potentially misleading. There are two distinct properties of causal loops: 1) whether the sum of the negative causal links contained in the loop is odd or even and 2) whether the magnitude of the effects in the loop is amplified or attenuated with each feedback cycle. Using the term 'balancing' to refer to causal loops with an odd sum of negative causal links may give the impression that these loops are inherently stable. In reality, it is possible to have a loop with an odd number of negative causal links (i.e., a 'balancing' loop) in which the magnitude of the feedback effect is amplified with each cycle. This type of loop is not stable and referring to it as 'balancing' potentially obscures this fact. This precision in terminology is not crucial to this article given its aims but could benefit future research. Second, given the cross-sectional nature of the case-study, it was not possible to account for system changes over time. These could be examined either qualitatively or quantitatively with a different study design. Third, as the system's boundaries were dictated by the empirical data, it is possible that critical factors were omitted from the model. The inclusion of a wider variety of stakeholders' perspectives (e.g., national, and sub-national decision-makers) in the case study would have extended the boundaries of the systemic enquiry, which may have exposed important upstream factors and strengthened the model. Finally, similar to other studies examining system dynamics using CLDs (Baugh Littlejohns et al., 2018; Xu & Mills, 2017), testing the model to rule out possible validity threats to the causal explanations inferred from the data was not possible due to time and resource constraints. However, the causal relationships included in the model were corroborated through member checks by local implementers and systematic biases were minimised through the triangulation provided by the different data sources (structured and semi-structured interviews) and respondents (clients and FP providers) (Maxwell, 2004). Nevertheless, further research in different contexts is needed to refine and validate the model.

7. Conclusion

In this study, a causal loop analysis of cross-sectional qualitative case study data generated new insights about the responsiveness of integrated FP service in routine outreach clinics. Importantly, the CLD produced in this study revealed that to improve the responsiveness experienced by clients, service designers and implementers should strengthen providers' ability to alter the client flow in response to changes in the clinic's client load and they should maintain a buffer of FP supplies in clinics that can accommodate fluctuations in the demand for preferred contraceptives. This study represents the first attempt at modelling the responsiveness of integrated FP services and its findings can be used to inform the design and delivery of FP services that are integrated with childhood immunisations in different settings.

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Availability of data and materials

The datasets used and/or analysed in the current study are available from the corresponding author upon reasonable request.

Ethics approval and consent to participate

Ethics approval was obtained from the National Committee on Research in the Social Sciences and Humanities, Malawi and the ethics committee of the London School of Hygiene & Tropical Medicine, UK. Written informed consent was obtained from all respondents prior to their participation in the study.

CRediT authorship contribution statement

Jessie K. Hamon: Conceptualization, Methodology, Formal analysis, Investigation, Project administration, Supervision, Funding acquisition, Writing – original draft, Visualization. **Misozi Kambanje:** Methodology, Investigation, Resources, Validation, Writing – review & editing.

Shannon Pryor: Methodology, Resources, Validation, Writing – review & editing. **Alice S. Kaponda:** Investigation, Resources, Project administration, Validation, Writing – review & editing. **Erick Mwale:** Investigation, Resources, Validation, Writing – review & editing. **Jayne Webster:** Methodology, Formal analysis, Supervision, Writing – review & editing, Funding acquisition. **Helen E.D. Burchett:** Methodology, Formal analysis, Supervision, Writing – review & editing. **Susannah H. Mayhew:** Methodology, Formal analysis, Supervision, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Description of variables included in the causal loop diagram

Variable	Type	Description
Appropriateness of clinic location	Intermediate	The extent to which the physical location of the clinic where integrated services are provided is deemed appropriate by clients.
Availability of contraceptives in clinic	Intermediate	The extent to which different types of contraceptive methods are available in the clinic.
Client's husband' and community's support	Exogenous	The extent to which clients' husbands and communities support the use of modern contraceptive methods to space and/or limit births.
Client load in clinic	Intermediate	The number of clients and the complexity of needs among clients attending the clinic at one time.
Clients' health	Exogenous	The extent to which clients are healthy (i.e., no impairing illness or injury).
Clinic client flow design	Exogenous	The extent to which the client flow is designed to optimise the way clients move through the clinic's different services/ stations.
Clinic staffing level	Exogenous	The extent to which the number of HSAs providing services in the clinic is sufficient.
Co-located delivery of FP and immunisation services	Exogenous	The extent to which both services are delivered in the same location on the same day.
Confidentiality of services	Output	The extent to which clients are free from being seen or overheard seeking services and the information they share with providers is kept private.
Contraceptive stocks in health centre	Exogenous	The extent to which the quantity and variety of contraceptive methods available in the health centre is sufficient to supply the clinic.
Ease of access to services	Output	The extent to which clients can easily access the services they need.
Opportunity to choose a provider	Output	The extent to which clients have the opportunity to choose a provider from whom to receive FP services in the clinic.
Presence of a suitable clinic building	Exogenous	The extent to which the building housing the clinic services has the space and rooms needed for the delivery of integrated FP services.
Private interactions between clients and providers	Intermediate	The extent to which clients can individually discuss private matters with providers.
Providers' agency	Exogenous	The extent to which providers have the authority and ability to act independently to produce a desired effect on the provision of services.
Providers' and clients' timely arrival at clinic	Intermediate	The extent to which providers and clients arrive on time to deliver/seek clinic services.
Providers' attitude towards clients	Exogenous	The extent to which providers have an accurate (i.e., free from biases) and favourable attitude about their clients.
Providers' behaviour	Intermediate	The extent to which providers act professionally towards clients.
Providers' interpersonal communication	Intermediate	The extent to which the way providers communicate information to clients is appropriate given the context.
Providers' knowledge of FP	Intermediate	The extent to which providers possess the knowledge needed to effectively counsel clients on FP.
Providers' management of clinic's client flow	Intermediate	The extent to which the approach used by providers to facilitate the flow of clients through the clinic's services/ stations is optimised.
Providers' management of FP supplies	Intermediate	The extent to which providers take the steps needed to ensure the necessary FP supplies are available in the clinic.
Providers' respect of clients' decisions	Intermediate	The extent to which providers comply with the decisions made by clients.
Providers' training	Exogenous	The extent to which providers have received the pre-service or in-service education needed.
Proximity of clinic to clients' homes	Exogenous	The distance between the clinic and clients' home.
FP counselling	Output	The extent to which the provider paid attention to the clients' reproductive preferences and tailored the counselling to their individual needs.
Receipt of preferred contraceptive method	Output	The extent to which clients can choose and receive their preferred contraceptive method.
Responsive FP services	Outcome	The extent to which the experience of an individual's interaction with the integrated FP services fulfils legitimate expectations.
Seclusion of clinic location	Exogenous	The extent to which the clinic is located in a private area, away from onlookers.
Service utilisation	Intermediate	The extent to which individuals make use of the available services.
Travel conditions	Exogenous	The extent to which the terrain, weather, roads, and transport conditions are suitable for travel.
Wait time in clinic	Intermediate	The time spent by clients waiting for services in the clinic.

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CHAPTER 7. DISCUSSION AND CONCLUSION

INTRODUCTION

In this thesis, I set out to contribute to a deeper understanding of the responsiveness experienced by clients of FP services that are integrated with childhood immunisations in resource limited settings. To do so, I reviewed the literature most relevant to the integration of FP services with childhood immunisations and to the responsiveness of health services. And I then carried out a case study of the responsiveness of integrated FP services in routine outreach clinics across two districts of Malawi using mixed methods.

By adopting a case study design that involved the collection of both quantitative and qualitative data, an in-depth account of the complex realities and processes surrounding the delivery of responsive integrated FP services was achieved [42]. First, I assessed and explained the responsiveness experienced by clients in terms of eight domains (ease of access, environment, service continuity, choice of provider, dignity, confidentiality, communication, and counselling) using convergent mixed methods through structured exit interviews with clients. Second, I identified the factors influencing the responsiveness of integrated FP services by exploring the perceptions and experiences of clients and their FP providers through semi-structured interviews. And finally, I modelled and described the system dynamics determining the responsiveness experienced by clients through a causal loop analysis of qualitative data derived from the structured and semi-structured interviews.

The results, implications, and limitations specific to each method and analysis carried out within this thesis are discussed in previous chapters (chapters 3-6). Thus, in this chapter I provide a broad summary of the principal findings, highlight the overall contributions of the thesis to the field of study, present the implications for policy and practice, and make suggestions for future research. It is

important to note that this discussion is somewhat limited by the lack of literature on clients' experiences of integrated FP services available for comparison.

PRINCIPAL FINDINGS

In reviewing the literature pertaining to service integration and responsiveness (chapter 3), several knowledge gaps were found, especially with regards to research from LMICs and services delivered through outreach or community-based platforms. Of note, a paucity of evidence was uncovered around the clients' experiences of FP services that are integrated with other health services, including childhood immunisations. A lack of information relating to the dynamics and causal relationships between the factors known to influence the implementation and outcomes of integrated FP services also came to light. Similarly, little research was found on the responsiveness of FP services and the need for a more comprehensive understanding of the determinants of service responsiveness at the micro level of the health system was evident. Nevertheless, building on existing theoretical frameworks and on evidence from sources that explored the integration of FP services and the responsiveness of health services, I developed a conceptual framework for understanding the responsiveness of integrated FP services to guide my empirical case study.

Overall, the results from the case study indicate that in routine outreach clinics FP services can be responsive when integrated with childhood immunisations in terms of the dignity and service continuity they afford clients, though less so in terms of the counselling, confidentiality, environment, and choice of provider that clients experience (chapter 4). Despite some lower performing domains, almost all clients who participated in the study reported that they would recommend the clinic where they sought services to a family member or friend interested in FP. Together, these results suggest that the responsiveness experienced by clients is likely to have been sufficiently acceptable to warrant the repeat use of services, or at the very least may not have deterred it. Interestingly, the ratings of four domains (communication, choice of provider, confidentiality, and counselling) were found to be

positively associated with the clients' exclusive use of one clinic for FP services. However, this case study did not encompass a counterfactual that could help determine whether responsiveness is higher or lower when FP services are organised or provided differently (e.g., without being integrated or through fixed health facilities) in a similar setting, and as such, the conclusions presented here should be interpreted with caution. It is also important to bear in mind Malawi's relatively high contraceptive prevalence and the socio-cultural contexts in which the empirical data were captured when interpreting these results. For instance, it is possible that the experiences of women receiving FP services that are integrated with childhood immunisations through routine outreach clinics in a country or setting with a different socio-cultural context or contraceptive prevalence would be more favourable than those reported by women in this case study. Bearing this in mind, a comparison with the only other assessment of FP service responsiveness reported in the literature revealed noteworthy similarities. That is, my findings largely mirror those found by Perera *et al*. in Sri Lanka where the dignity and choice experienced by clients were respectively rated most and least favourably by clients, and where positive responsiveness ratings were associated with using only one FP clinic within the past year [106].

Additionally, a mix of hardware and software factors were found to influence the responsiveness of integrated FP services in the studied clinics (chapter 5). These factors demonstrate that clients' experiences were a product of the organisational arrangement of resources, the process involved in the provision of services, and the characteristics and behaviours of the actors interacting at the point of care. In accordance with findings from other studies, the influence of hardware factors was perceived to negatively affect the delivery of integrated FP services [18,22,24,77,90] and to consequently undermine the responsiveness afforded to clients. Among these factors, the absence of a dedicated and private space for the provision of confidential and dignified FP services in several clinics emerged as being particularly damaging to clients' experiences. However, the combined provision of FP and immunisation services was perceived to enhance the ease of access and

confidentiality experienced by clients, which reflects the views of clients, providers, managers and community members interviewed in other studies [18,22,43]. Crucially, software factors were generally found to have a positive influence on responsiveness. Among these factors, the providers' agency emerged as perhaps the most pivotal. In applying their agency, providers could overcome key hardware deficiencies by altering the delivery of services. For example, some providers led clients away from the clinic to counsel them privately when a separate room was not available for FP services to enhance the confidentiality afforded to clients. Although this was mostly perceived to improve service responsiveness (i.e., the ease of access, choice of provider, environment and confidentiality experienced by clients), provider-led modifications of the delivery of services were also found to have the opposite effect in some cases. In particular, mirroring findings from a trial in Zambia [17], the providers' deviation from individual to group-based FP counselling in the studied clinics was perceived to substantially undermine the responsiveness experienced by clients.

Ultimately, a causal loop analysis of the system dynamics determining the responsiveness of integrated FP services in the studied context revealed that responsiveness was driven by the client load that the clinics catered to on a given day (chapter 6). Importantly, the findings from this analysis also suggest that given the balancing feedback loops in the system, 1) enhancing the providers' ability to alter the client flow in response to fluctuations in the clinic's client load, and 2) ensuring that an appropriate buffer of FP supplies is available in clinics to accommodate surges in the demand for preferred contraceptives, would enhance the responsiveness experienced by clients. According to the findings from the case study, this could be achieved in part by strengthening the providers' agency and by enhancing their management of the clinic's supplies.

OVERALL CONTRIBUTIONS OF THE THESIS TO THE FIELD OF STUDY

As the first comprehensive study of the responsiveness of integrated FP services in SSA, this thesis makes several valuable contributions to the field of study. As summarised below, it addresses

significant gaps in the literature and establishes a new understanding of the responsiveness achieved when FP services are integrated with childhood immunisations. It also provides novel insights into both the interaction between hardware and software factors and the system dynamics that determine the responsiveness of FP services. Moreover, despite its focus on integrated FP services, it advances our understanding of the responsiveness of health services more generally by carefully examining the providers' perspectives. And finally, it makes conceptual and methodological contributions that can be used to help guide and enhance the robustness of future research.

Contributions to the state of knowledge on the responsiveness of integrated FP services

This thesis sheds light on clients' experiences of FP services that are integrated with childhood immunisations in resource limited settings by focusing on the responsiveness achieved in this context, which addresses a critical gap in the literature. It also raises salient questions about the suitability of outreach clinics for the integrated delivery of FP services with childhood immunisations. Nonetheless, recognising that in many settings outreach clinics are the optimal means of ensuring equitable access to FP services, it offers a new understanding of how to improve responsiveness within this particular setting. For example, it highlights the importance of identifying a suitable space, strengthening the providers' agency, and ensuring that an appropriate buffer of contraceptives is available at all times when FP services are integrated with childhood immunisations in outreach platforms.

This thesis also highlights the hardware and software factors influencing the responsiveness of integrated FP services and provides a novel understanding of the interaction between these. In doing so, it establishes that several of the health system capabilities that are known to influence the delivery of frontline service integration [52] (e.g., the providers' decision-making power to adapt services to the local context and the availability of adequate equipment and space for the delivery of services) are similarly relevant to the eight domains of responsiveness examined in this thesis.

Likewise, the factors identified in this research are among those that are understood to determine the FP quality of care in several African countries [30]. This includes the clients' waiting time, individualised counselling, the stock of FP commodities available at the point of care, and the providers' workload and behaviour. This commonality suggests that understanding and enhancing the factors facilitating the responsiveness of integrated FP services is likely to yield important gains in the quality of FP services as well.

Additionally, the case study's findings corroborate the emerging call for further attention to be paid to the software elements of the health system to improve the delivery of integrated FP services [49,73]. In particular, the findings advance our understanding of the role played by providers' attitudes and behaviours in determining the success of integration programmes and underscores the providers' ability to offset the effect of hardware deficiencies when services are integrated [73,76,134,213–215].

Furthermore, the model generated in the form of a causal loop diagram represents a particularly important contribution to the field of study. Although the model illustrates the system dynamics determining the responsiveness of FP services in the studied clinics, the causal relationships between hardware and software factors and the feedback loops it portrays are likely to be relevant to other contexts. Empirical evidence from prior studies indicates that several of the factors found to influence responsiveness in the case study have a similar effect on the successful delivery of integrated FP services in other countries and districts of Malawi [22,24,89]. For example, findings from studies carried out in Nigeria [89] and in the Dowa and Ntchisi districts of Malawi [22] revealed that the quality of care and the wait time experienced by clients seeking integrated FP services were negatively impacted when client loads at the point of care were elevated. As the relationship between client loads and service responsiveness is a core component of the model presented in this thesis, the insights afforded by the model could be used to identify ways through which to overcome the challenges imposed by high client loads in these other settings.

Contributions to the state of knowledge on the responsiveness of health services

Despite being focused on the responsiveness of integrated FP services, this thesis also contributes to a deeper understanding of the responsiveness of health services in general by taking a closer look at the health providers' perspective than previous research. Prior studies that have investigated the responsiveness of health services in SSA have mainly sought input from providers as a way of contextualising the experiences reported by clients (e.g., by painting a picture of the availability of resources at the point of care) [113,127,130]. In contrast, this thesis examined the providers' perspectives to understand their experiences of delivering FP services in outreach clinics and their thoughts on their ability to meet clients' legitimate expectations within this context. This facilitated a comparison of client and provider perspectives, which uncovered considerable alignment between these two types of respondents' views and suggested that providers understood fairly well what was important to their clients. This is encouraging as the providers' understanding of their clients' needs is fundamental to the delivery of responsive health services and very little was found in the literature around this topic [90].

The more thorough examination of providers' views and experiences also advanced our understanding of the challenges that providers face when attempting to deliver responsive health services in resource limited settings. In the studied case, the primary goal of integrating FP with childhood immunisations was to improve the accessibility of FP services. Thus, the systems underpinning the delivery of these services were structured to enhance clients' access to FP services, and the providers were trained and encouraged to take the necessary steps to achieve this goal. The findings from the case study revealed that this resulted in providers facing difficult trade-offs between delivering the integrated services as planned (i.e., working within the rules of the system) and providing responsive services. For example, by adhering to the clinic's standardised client flow (designed to help with the integration of FP services), providers commonly prolonged the time spent

by clients waiting for services in the clinic. These trade-offs are inevitable to some extent, especially in many rural SSA settings where the ability of providers to deliver responsive services is further compromised by substantial resource constraints [32]. However, very little attention has been granted to this topic in the literature as few studies on service responsiveness have considered the providers' experiences and perspectives in these settings. The findings relating to the providers' role presented in this thesis therefore lay the groundwork upon which further service responsiveness research can build.

Contributions to the conceptualisation of service responsiveness

The conceptual framework produced from a review of the literature on service integration and responsiveness represents a key contribution of this thesis as it supplements the few responsiveness-related frameworks currently found in the literature [34,35,96,141,216]. By focusing exclusively on service responsiveness rather than health system responsiveness, this new framework provides a clearer basis for understanding the responsiveness of a particular service at the point of care. Although I did not directly use the framework to analyse the data from the case study, it proved useful in helping me to develop and organise the ideas that underpin this thesis as it provided a more comprehensive guide for understanding FP service responsiveness than previously available. Additionally, the data from the case study largely corroborated the framework as all of its components were found to be central to understanding the responsiveness achieved in the studied context. As such, I believe the framework could be of similar value to future research and interventions focused on the delivery of responsive FP services in different contexts.

Contributions to the methodology employed to study service responsiveness

This thesis makes two noteworthy methodological contributions to the study of service responsiveness. First, it responds to a call for mixed and qualitative methods to be used in the study of health service responsiveness [113,126,132]. In particular, it demonstrates the value of using

convergent mixed methods to measure and explain the level of responsiveness achieved by a given health service. That is, by combining cognitive interviewing probes with Likert scale questions a deeper understanding of clients' experiences was achieved in this thesis compared to similar studies that adopted a purely quantitative approach [100,101,107,108,126–129,132,133]. This combination of methods also enabled a qualitative validation of the tool used to assess service responsiveness in this thesis. Despite the use of an arguably more cognitively demanding probe (i.e., what would it have taken for you to answer inversely?), the two probes that were used alongside the Likert questions provided insights that would have otherwise been missed and ultimately enriched the data that were captured through the case study. On this basis, I would argue that combining Likert scale questions with cognitive interviewing probes provides a strong alternative to the approach of adding an open-ended question to a quantitative questionnaire put forth by Njeru *et al.* in their study of the responsiveness of HIV testing and counselling services in Kenya [113].

Second, this thesis represents the first application of causal loop analysis to the study of both the responsiveness of health services and the delivery of FP services. In using this method to analyse qualitative data derived from interviews with clients and FP providers, it was possible to move beyond linear thinking and capture the system dynamics determining the responsiveness of services in the studied context. Although other complementary and widely adopted tools, such as a theory of change, can be similarly used to formalise and explain pathways to outcomes, these tools mostly serve to depict linear relationships, and are therefore limited in their applicability to the study of system dynamics. In contrast, and as demonstrated in this thesis, causal loop diagrams can be used to portray and explain the feedback effect that exists within a system and thus are especially valuable when aiming to inform policy and practice. As mentioned earlier, the causal loop analysis carried out in this thesis also generated new knowledge that is likely to be transferable to other settings. This represents an important advancement as the application of systems thinking has largely been omitted from the study of responsiveness to date [97].

IMPLICATIONS FOR POLICY AND PRACTICE

In considering the contributions made by this thesis, it is worth noting that the findings from the case study may be considered, to some extent, common sense – a general criticism of heavily qualitative research. However, as Sarriot *et al*. point out, scientists and politicians are "not immune to forgetting common sense (and ignoring feedback loops) in their pursuit of perfectly rational strategies" [216, p.154]. Thus, part of the value of this thesis, and especially the findings from the causal loop analysis, lies in its implications for policy and practice, which extend beyond the broad conjectures made by previous studies. These implications are summarised and presented here as six messages for policymakers and implementers pursuing the delivery of responsive FP services that are integrated with childhood immunisations.

Recognise the importance of clients' experiences in the delivery of integrated FP services:

The importance and benefits of enhancing responsiveness, both as an intrinsic goal of the health system and as a pathway towards improving service utilisation are well established [34,94,95,99,129,130,133,134,218]. Yet, findings from the literature review carried out in this thesis highlight that very little attention has been paid to clients' experiences of integrated FP services and to service responsiveness more generally in LMICs. Also, empirical studies that have examined the quality of FP services that are integrated with childhood immunisations have revealed concerning gaps [18,21,24,57,75–77]. It is therefore critical for policymakers and implementers to recognise and consider the value of improving clients' experiences as a first step towards achieving greater responsiveness.

Invest in understanding and strengthening relevant software elements of the health system:

Software, or relational, elements of the health system can be easily overlooked by policymakers and implementers striving to integrate health services. As Topp *et al*. suggest, this may be because the tangible aspects of the health system (or hardware elements), such as infrastructure, are more visible

and perceived to be simpler to improve [52]. Although the findings presented in this thesis highlight that addressing hardware gaps is crucial to the delivery of responsive integrated FP services and it is clear that these must not be overlooked [219], they also suggest that it is perhaps equally important to understand the context-specific effects of software elements and to strengthen these factors. In particular, the case study revealed that boosting the agency of health providers who deliver integrated FP services could have a meaningful impact on improving clients' experiences. Of note, the study demonstrates that in some cases the inevitable tension between the providers' agency, the objectives of policies and service delivery strategies, and the contexts in which providers operate can result in sub-optimal trade-offs. To minimise trade-offs with unfavourable outcomes, policymakers and implementers should not only support providers to use their 'discretionary power' [220,221], but should also equip them with the knowledge and tools needed to make practical decisions that safeguard the responsiveness of services. Equally, careful attention should be granted to the upstream factors influencing providers' behaviours, which are commonly outside of their individual control. This includes the constraints imposed on providers' agency and ability to act by the wider health system in which they operate. Thorough consideration of these factors is especially important in settings where resources are severely limited and in turn where the constraints faced by providers are likely to be most restrictive.

Build responsiveness indicators into routine monitoring systems:

As evidenced by the findings presented in this thesis, choosing the right combination of policies and service provision strategies to enhance the responsiveness of integrated FP services requires a comprehensive understanding of local contexts. Central to understanding these contexts is the availability of robust monitoring data. It therefore follows that building responsiveness-related indicators into formative assessments and routine monitoring systems should be prioritised by policymakers and implementers. Monitoring clients' experiences in terms of the eight responsiveness domains studied in this thesis could offer decision-makers, including health providers, the information

needed to appropriately design and adapt the delivery of FP services that are integrated with childhood immunisations. In particular, by capturing clients' experiences as part of routine monitoring activities, policymakers and implementers would be able to observe whether the strategies in place improve the clients' welfare alongside health-enhancing outcomes such as contraceptive uptake. Facility- or community-based health information systems, such as the district health information system (DHIS-2), that are already in use in many countries could provide an appropriate platform for this type of data capture.

Listen to clients' voices through formal and informal channels:

In addition to capturing clients' experiences through routine monitoring systems as described above, policymakers and implementers should identify other formal and informal channels to allow clients' voices to be heard and considered in the design and delivery of integrated FP services. In the case studied in this thesis, the clients' and communities' voices were somewhat stifled because the strategy for delivering integrated FP services was largely based on what Liao labelled an 'expert-driven' model and lacked a mechanism to capture feedback from clients about their experiences [222]. However, according to the literature, by creating opportunities for clients to share their thoughts on the services they experience, the level of responsiveness achieved could be raised assuming that decision-makers are receptive to the feedback that is collected [97,99,223]. Examples of channels that could be used to facilitate this process include client experience surveys, complaint reporting systems, social audits, and social media platforms.

Prioritise interventions that target the drivers and the leverage points within the system:

A common pitfall of intervention strategies aimed at improving the integrated delivery of health services in LMICs is their tendency to target the most salient issues or address the lowest-hanging fruit first given substantial resource constraints. This is mirrored in much of the service responsiveness literature from SSA where recommendations have focused on improving the poorest

performing domains with little consideration granted to the wider context and systemic issues. As the results from my case study indicate, a strategy informed by an understanding of both the drivers and leverage points of the system determining the responsiveness experienced by clients is likely to be more effective. The construction and analysis of a CLD can help service designers and implementers identify these leverage points by making explicit the complexities of system dynamics and causal pathways. For example, based on the assessment of responsiveness presented in chapter 4, it might seem reasonable to invest in targeted interventions that could improve the low level of confidentiality experienced by clients in the studied context (e.g., by introducing privacy screens in clinics). Yet, the results from the causal loop analysis (chapter 6) revealed that by focusing on enhancing the providers' ability to alter the client flow in response to fluctuations in the clinic's client load (a leverage point in the system), considerable improvements to several responsiveness domains could be achieved simultaneously.

Target long-term gains whilst being mindful of feedback loops:

The system dynamics modelled in this thesis not only highlight the importance of understanding the drivers and leverage points of the system, but they also underscore the need to target long-term gains when aiming to enhance service responsiveness. This is in part due to the fact that clients' perceptions of service responsiveness may take time to form and involve a gradual shift, particularly as the relationships between clients and health providers develop over several visits [25]. Policymakers and implementers should therefore heed the WHO's note of caution on the subject: "quick fixes designed to 'bump up' responsiveness scores without an effort to realise long term change, will not result in sustained improvement" [93, p.4]. Furthermore, the results from the case study suggest that an improvement in service responsiveness is likely to increase the demand for services, which in turn may undermine responsiveness. This type of feedback loop must be carefully monitored and considered over time so that its full effect can be discerned, allowing for the right

adaptations to service provision strategies to be adopted. Crucially, as demonstrated in this thesis, and in similar studies [155,157,217,224–226], the use of CLDs can facilitate this task.

SUGGESTIONS FOR FUTURE RESEARCH

In carrying out this thesis, a few suggestions for further research came to light. In the case study, responsiveness was assessed based on clients' perceptions of their experiences. The findings revealed that these perceptions were likely influenced by clients' expectations. Darby *et al*. touched on this when they wrote in 2003 that respondents' answers are likely to be shaped to some extent by their expectations [93]. However, assessing clients' expectations was not among the primary objectives of the case study, and thus these expectations are not explicitly discussed in the thesis. Nevertheless, by interrogating clients' conceptualisation of the different domains of responsiveness (as reported in chapter 4), clients' expectations were generally found to align with the objective standards of legitimate expectations set by the WHO (outlined in Table 3 in chapter 2). For example, when explaining their perception of the dignity they experienced, clients spoke about respectful treatment and the absence of discrimination. Further research focusing on the relationship between clients' expectations and reported responsiveness is needed, in part to determine whether responsiveness is best approached as an absolute or relative concept. This is especially relevant to policy as there are potential merits to both approaches. Given the constraints faced by policy makers, focusing on the attainment of normative standards may be of importance, and thus aiming for an absolute measure of responsiveness may be optimal. However, defining what constitutes a legitimate expectation is likely to vary across different settings, and therefore responsiveness is potentially better represented through a relative measure, rooted in clients' perspectives.

Also, as this thesis focused primarily on assessing and understanding the level of responsiveness attained in the studied case, it provides limited insight into whether responsiveness was equitably experienced by different groups of individuals [32]. The case study findings indicate that clients were

at times served by providers according to their individual needs (e.g., extra privacy was provided to clients with a need for covert access to contraceptives) and similar experiences were reported by clients of different ages, education, and socio-economic backgrounds. However, the data collected were insufficient to properly examine questions around equity. Future studies should thus endeavour to investigate not only the level of responsiveness attained, but also the degree to which equitable responsiveness is achieved when FP services are integrated with childhood immunisations.

Furthermore, although this research produced a new understanding of service responsiveness and of the integrated delivery of FP services by considering the providers' beliefs and experiences, examining additional perspectives would certainly broaden this understanding further. Future studies should aim to incorporate the views of 1) community members (including husbands); 2) women in communities opting not to seek FP services that are integrated with childhood immunisations; 3) women choosing to seek childhood immunisations but refusing FP services where these two services are integrated; and 4) women under the age of 18 (who may have special needs, particularly around confidentiality). Capturing these viewpoints would likely generate a more thorough understanding of the effect of expected and/or experienced responsiveness on a woman's decision to seek integrated FP services. Likewise, given the micro-level focus of this thesis, the perspectives of actors operating beyond the boundaries of the point of care (e.g., providers in referral health facilities, administrators, and policymakers) were not included in this research. Further research that considers these perspectives could shed some light on the influence of upstream factors on service responsiveness, including the wider economic, political, and historical contexts. That said, collecting some of these additional views would require a different methodology than the one adopted in this thesis. For instance, a discrete choice experiment, similar to the one conducted by Michaels-Igbokwe *et al.* to study young people's preferences for integrated FP and HIV services in Malawi [227], could be carried out in communities to understand how integrated FP services could be designed and delivered to meet the needs of women who currently choose not to seek these services.

When contemplating further research in this area, where possible, researchers should also consider adopting a longitudinal or repeated cross-sectional study design to complement the findings from this thesis and other one-off cross-sectional studies. As mentioned in chapter 3, a benefit of using a measure like responsiveness is that it provides the conditions needed to capture changes in clients' experiences and the fluidity of health systems across time [93,97]. However, due to the constraints imposed by the monthly occurrence of outreach clinics and by the wider process evaluation in which my research was nested, I was unable to collect data more than once in each clinic. Also, as Nelson *et al.* point out, it may take longer observation periods to understand the full effect of service integration on key outcomes [18]. For these reasons, adopting a longitudinal or repeated cross-sectional study design in the future would be worthwhile.

Several questions also remain unanswered regarding the optimal strategy for delivering and maintaining responsive FP services that are integrated with other health services in resource-constrained settings. As such, further research should examine the delivery of integrated FP services in different facility and community-based platforms to establish which strategy, given a particular context, achieves the best responsiveness (level and equity). A realist approach could lend itself well to this exploration as it would anchor findings in defined contexts. This would help address the call for research on how context determines the integrated delivery of FP services with childhood immunisations [18]. Equally, it could serve as an opportunity to refine and validate the model produced in this thesis.

CONCLUSION

Overall, this thesis establishes for the first time that in routine outreach clinics, FP services can, to some extent, be responsive when integrated with childhood immunisations. Additionally, it demonstrates that the responsiveness of integrated FP services is heavily influenced by the interaction between hardware and software elements of the health system and largely determined by the client load and the providers' management of the client flow at the point of care. Furthermore, as this research represents the first attempt at modelling the responsiveness of integrated FP services, it offers new insights that can be used by policymakers and implementers to inform the design and delivery of responsive FP services that are integrated with childhood immunisations in Malawi and elsewhere. There is still much work to be done to fully understand how to optimise and maintain the responsiveness experienced by clients of integrated FP services in resource constrained settings; however, this thesis represents an important step forward.

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APPENDICES

Appendix A - Structured questionnaire for exit interviews with clients

Section 0 - ELIGIBILITY

Q1. Do you have a child under the age of 3?
Yes / No

Q2. What is the reason for your visit to the health facility today?
Immunisation services / family planning services / child growth services / woman ill / child ill / other specify

Q3. Have you been to the immunisation services today with a child?
Yes / No

Q4. Have you been to the family planning services today?
Yes / No

Q5. Are you going to the family planning services today?
Yes / No

Q6. What is your age (in years)?
[*Write age*]

Q7. Were you accompanied by anyone today?
Yes / No

Section 1 - RESPONDENTS' BACKGROUND

I would like to start by asking you a few questions about you and your home.

Q8. Have you ever attended school?
Yes / No

Q9. What is the highest level of education you completed?
Primary / Secondary / Higher than secondary

Q10. What is your religion?
Christian / Muslim / Ancestral worship / Unknown / None / Other, specify

Q11. What tribe do you belong to?
Lomwe / Chewa / Yawo / Ngoni / Sena / Other, specify

Q12. What is your marital status?
Married (monogamous) / Married (polygamous) / Cohabiting / Separated/divorced/widowed / Single/never married

Q13. How long have you been in this relationship?
<1 year / 1 to <3 years / 3 to <7 years / 7 years or more

Section 2 - BIRTH HISTORY

Now, I would like to ask you a few questions about your pregnancies and children.

Q14. How many children do you have?
[write 99 if unknown]

Q15. How many of your children are under the age of 5 years?
[write 99 if unknown]

Q16. I would like to ask you about each of your children under the age of 5 years. How old is your youngest? How old is your second youngest? How old is your third youngest? Etc...
[write 99 if unknown]

Q17. How many times have you been pregnant?
[write 99 if unknown]

Section 3 - CHILD IMMUNISATIONS
Can I just confirm, did you bring your child to the immunisation services today. If NO, skip to Q24.

Q18. How old is the child who you brought to the immunisation services today?
[write 99 if unknown]

Q19. What is your relationship to this child?
Mother / Aunt / Grandmother / Other, specify

Q20. Why did you bring the child to the immunisation services today?
Due immunisation / Missed immunisation / Other, specify

Q21. Did the child receive an immunisation?
Yes / No

Section 4 - FAMILY PLANNING HISTORY
Now, I would like to ask you a few questions about your experience with family planning.

Q22. Have you ever used any methods to prevent a pregnancy?
Yes / No

Q23. Why have you never used any FP methods?
Against religion / Husband will not allow / Wants more children / Fear of side effects / Other, specify

Q24. Which family planning methods have you ever used? *[tick all that apply, multiple answers allowed]*
Contraceptive pill / Injectable / Self injection / Male condom / Female condom / IUD / Implant / Emergency contraception / Natural methods / Male sterilisation / Female sterilisation / Other, specify

Q25. Prior to your visit today, were you already using a FP method?
Yes / No

Q26. Which method(s) are you currently using? *[tick all that apply, multiple answers allowed]*
Contraceptive pill / Injectable / Self injection / Male condom / Female condom / IUD / Implant / Emergency contraception / Natural methods / Male sterilisation / Female sterilisation / Other, specify

Q27. What is it about this method that made you choose it? *[circle all that apply, multiple answers allowed]*
Most effective method / Low risk of side effects / Easy to use / Easy to conceal / Other, specify

Q28. Who helped you decide to use this method? *[circle all that apply, multiple answers allowed]*
Mother/grandmother / Other female family member / Friend / Community health worker / Myself/no one / Health worker (not from community) / Other, specify

Q29. Have you experienced any side effects while using this method?
Yes / No

Q30. What side effects have you experienced while using this method? *[circle all that apply, multiple answers allowed]*
Bleeding / Pain / Change in woman's sex drive / Change in partner's sex drive / Nausea / Other, specify

Q31. For the last method you used can you tell me why you stopped using it?
Experienced side effects / Wanted to get pregnant / Got pregnant / Had been too long on the method / Fear of side effects / Other, specify

Q32. For the last method you used can you tell me when you stopped using it?
Under 6 months / 6 months to <1 year / 1 year to <2 years / More than 2 years

Q33. For the last method you used, did you experience any side effects?
Yes / No

Q34. What side effects did you experienced while using this method? *[circle all that apply, multiple answers allowed]*
Bleeding / Pain / Change in woman's sex drive / Change in partner's sex drive / Nausea / Other, specify

Q35. Did you use a family planning method prior to your last pregnancy?
Yes / No

Section 5 - FAMILY PLANNING COUNSELLING AND METHOD RECEIVED TODAY

Q36. Can you please remind me, did you go to the family planning services today? If NO, skip to Q68.
Yes / No

Next, I would like to ask you a few questions about your visit to the family planning services today.

Q37. Who counselled you about family planning in this clinic today? *[read out all response options, multiple answers allowed]*
Nurse / Health Surveillance Assistant / Volunteer / Other, specify

Q38. During your time with the provider today, did they:
a. ask you how many more children you want? Yes / No
b. ask you about your past use of contraceptive methods? Yes / No
c. ask whether you have experienced any problems with a contraception method? Yes / No
d. explain how the different methods that are available work? Yes / No
e. tell you about possible side effects of the different methods? Yes / No
f. tell you when to return for a follow-up visit? Yes / No
g. tell you where to go for a follow-up visit? Yes / No

For some of the next questions, you can either answer by pointing to the appropriate answer on the scale *[visual aid]* or by telling me if your experience was very bad, bad, moderate, good, or very good.

Q39. How easy was it for you to access this clinic today?
Very bad / Bad / Moderate / Good / Very good

Q40. a. How much time did it take you to travel to the clinic today? [*take notes in English*]
b. What would it have taken for you to answer *[state inverse answer given]*?

Q41. How was the respect you received from the provider?
Very bad / Bad / Moderate / Good / Very good

Q42. a. Can you explain what made you feel this way? [*take notes in English*]
b. What would it have taken for you to answer *[state inverse answer given]?*

Q43. How was the cleanliness and space in the clinic?
Very bad / Bad / Moderate / Good / Very good

Q44. Can you explain what made you feel this way? [*take notes in English*]

Q45. How was the confidentiality provided to you by the family planning provider?
Very bad / Bad / Moderate / Good / Very good

Q46. a. Can you explain what made you feel this way? [*take notes in English*]
b. What would it have taken for you to answer [*state inverse answer given*]?

Q47. How was the freedom you had to choose the provider to assist you with FP in the clinic?
Very bad / Bad / Moderate / Good / Very good

Q48. Can you explain what made you feel this way? [*take notes in English*]

Q49. How clear was the information you received from the provider?
Very bad / Bad / Moderate / Good / Very good

Q50. Can you explain what made you feel this way? [*take notes in English*]

Q51. How was the attention the provider paid to your reproductive preferences? (For example, how long you wish to wait before having another child and the total number of children you wish to have)
Very bad / Bad / Moderate / Good / Very good

Q52. a. Can you explain what made you feel this way? [*take notes in English*]
b. What would it have taken for you to answer [*state inverse answer given*]?

Q53. How clear was the information about where and when to seek follow-up family planning services?
Very bad / Bad / Moderate / Good / Very good

Q54. Can you explain what made you feel this way? [*take notes in English*]

Q55. How likely are you to recommend this clinic to a family member or friend who is interested in family planning?
Not likely / Somewhat likely / Very likely

Q56. When you visit the clinic, how important are the following things to you? Can you order them from most important to least important?
A. The ease of accessing the services / B. The respect you receive from providers / C. The cleanliness of the clinic / D. The confidentiality of the information you share / E. The freedom you have to choose a provider / F. The way the provider explains things / G. The family planning counselling you receive / H. How easy it is to access follow-up services

Q57. Did you want a family planning method today?
Yes / No

Q58. Why didn't you want a family planning method today?
Need to speak to husband/partner / Haven't decided which method / Do not want to use a method / Already using a method / Other, specify

Q59. Which method did you want? *[tick all that apply, multiple answers allowed]*
Contraceptive pill / Injectable / Self injection / Male condom / Female condom / IUD / Implant / Emergency contraception / Natural methods / Male sterilisation / Female sterilisation / Other, specify

Q60. What is it about this method that made you want it? *[circle all that apply, multiple answers allowed]*
Most effective method / Low risk of side effects / Easy to use / Easy to conceal / Other, specify

Q61. When did you decide you wanted this method?
Before today / Today, at the clinic / Continued use

Q62. Who helped you decide you wanted this method? *[circle all that apply, multiple answers allowed]*
Mother/grandmother / Other female family member / Friend / Community health worker / Nurse midwife / Health Surveillance Assistant / Volunteer / Other, specify

Q63. Was the ability to conceal the method important to you?
Yes / No

Q64. Did you receive the method you chose before leaving the family planning provider?
Yes / No

Q65. Why didn't you receive the method you chose before you left the family provider?
Not available at clinic / Referred to another clinic / Other, specify

Q66. Did you get a prescription or referral for this method before you left the family planning provider?
Yes / No

Q67. Where will you take your prescription or referral to obtain this method?
Will return here / Another clinic / Hospital / Pharmacy / Other, specify

Q68. Did you discuss using a method with your husband/partner before coming to the clinic today?
Yes / No

Q69. Is your partner supportive of you using a family planning method?
Yes / No

Section 6 - FAMILY PLANNING KNOWLEDGE

Now, I would like to ask you some questions about family planning in general.

Q70. Can you tell me which family planning methods you know about? *[tick all that apply, multiple answers allowed]*
Contraceptive pill / Injectable / Self injection / Male condom / Female condom / IUD / Implant / Emergency contraception / Natural methods / Male sterilisation / Female sterilisation / Other, specify

Q71. What are some of the benefits of using family planning methods that you know of? *[circle all that apply, multiple answers allowed]*
Delay pregnancies / Space pregnancies/births / Woman's health / Post-abortion/miscarriage recovery / Limit total number of pregnancies / Other, specify

Q72. How long should a woman wait before attempting the next pregnancy after a live birth (number of years)? *[write 99 if unknown]*

Q73. What are the health benefits of birth spacing (spacing pregnancies)? *[circle all that apply, multiple answers allowed]*
Mother less likely to die / Lower risk of miscarriage / Lower risk of baby death / Baby less likely to be premature / Other, specify

Section 7 - EXPOSURE TO FAMILY PLANNING MESSAGES IN THE COMMUNITY

Next, I would like to ask you a few questions about the information you have heard and seen about family planning in your community.

Q74. Did you hear about family planning from anyone in the community?
Yes / No

Q75. From whom did you hear about family planning in your community? *[circle all answers that apply, multiple answers allowed]*
Community health worker / Community leader / Religious leader / Friend / Family member / Other, specify

Q76. Was a specific family planning method suggested for you to use?
Yes / No

Q77. Which method was suggested for you to use? *[tick all that apply, multiple answers allowed]*
Contraceptive pill / Injectable / Self-injection / Male condom / Female condom / IUD / Implant / Emergency contraception / Natural methods / Male sterilisation / Female sterilisation / Other, specify

Q78. Did you see any posters/leaflets about family planning in the community?
Yes / No

Q79. Was there a specific family planning method mentioned in these materials?
Yes / No

Q80. Which method was mentioned?
Contraceptive pill / Injectable / Self injection / Male condom / Female condom / IUD / Implant / Emergency contraception / Natural methods / Male sterilisation / Female sterilisation / Other, specify

Q81. Did you hear any messages about family planning on the radio?
Yes / No

Q82. Was there a specific family planning method mentioned on the radio?
Yes / No

Q83. Which method was mentioned? *[tick all that apply, multiple answers allowed]*
Contraceptive pill / Injectable / Self injection / Male condom / Female condom / IUD / Implant / Emergency contraception / Natural methods / Male sterilisation / Female sterilisation / Other, specify

Section 8 - EXPOSURE TO FAMILY PLANNING MESSAGES IN THE OUTREACH CLINIC
Now, I would like to ask you a few questions about the information you heard and saw about family planning in the clinic today.

Q84. Did you hear a group health talk about family planning and growth monitoring while at the clinic today?
Yes / No

Q85. Who led the group health talk? *[circle all that apply, multiple answers allowed]*
Immunisation provider / Family planning provider / Other nurse / Health volunteer / Other, specify

Q86. Was a specific family planning method suggested during the health talk?
Yes / No

Q87. Which method was suggested during the health talk? *[tick all that apply, multiple answers allowed]*
Contraceptive pill / Injectable / Self injection / Male condom / Female condom / IUD / Implant / Emergency contraception / Natural methods / Male sterilisation / Female sterilisation / Other, specify

Q88. Did you see any posters/leaflets about family planning in the clinic?
Yes / No

Q89. Was there a specific family planning method mentioned in these poster/leaflets?
Yes / No

Q90. Which method was mentioned? *[tick all that apply, multiple answers allowed]*
Combined oral pill / Progestin only pill (mini pill) / Combined injectable (monthly) / Progestin only injectable / Self injection / Male condom / Female condom / IUD / Implant / Emergency contraception / Natural methods / Male sterilisation / Female sterilisation / Other, specify

Section 9 - ACCESS TO THE OUTREACH CLINIC

Next, I would like to ask you about your visit to this clinic today.

Q91. Is this the clinic that you come to most often for health services?
Yes / No

Q92. Do you ever go to any other clinics for immunisation and/or family planning services?
Yes / No

Section 10 - DETAILS OF RESPONDENT'S RESIDENCE

I would like to ask you a few questions about the type of home you live in.

Q93. Do you or your family own or rent the dwelling you live in?
Own / Rent / Other, specify

Q94. What is the main material of the walls of your home?
Mud / Wood / Cement / Brick / Stone / Tiles / Other, specify

Q95. What material is the roof of your home?
Thatch / Tin/iron / Tiles / Other, specify

Q96. Which is the main material used for the floor of your home?
Mud / Wood / Cement / Tiles / Other, specify

Q97. What is your main source of drinking water at home?
Piped water into dwelling/yard/plot / Piped to neighbour / Public tap/standpipe / Tube well or borehole / Protected dug well / Protected spring / Rainwater/ Sachet water / Bottled water / Unprotected dug well / Unprotected spring / Truck/cart/bicycle with drum/jerrycans / Surface water / Other, specify

Q98. What is the main fuel used in your home for cooking?
Electricity / Gas / Kerosene / Coal / Charcoal / Firewood / Other, specify

Q99. Do you have a toilet in your dwelling?
Yes / No

Q100. What type of toilet facility do you use when you are home?
Flush latrine / Covered pit latrine / Open pit latrine / Other type of toilet / No toilet

Q101. Do you own any livestock?
Yes / No

Q102. Do you own any of the following types of livestock? Please specify how many of each you own. *[write 0 if none are owned and write 99 if unknown]*
Cattle / Pig / Sheep / Goat / Chicken

Q103. Does your household own any of the following items?
Bicycle / Moto / Motor vehicle (car, truck, tractor) / Mobile phone / Radio / TV / Sofa / Table / Chair / Foam mattress / Sewing machine / Clock

Section 11 - IMMUNISATION CARD

Q104. Can I have a look at the child's immunisation card so that I can record the immunisations that have been received since birth?
[tick all the immunisation(s) the child has received to date (YES) and which immunisation(s) has not yet been received (NO)]
BCG / Polio 0 / Polio 1 / PCV 1 / Rota 1 / DPT 1 / Polio 2 / DPT 2 / PCV 2 / Rota 2 / Polio 3 / DPT 3 / PCV 3 / Measles / IPV / Vitamin A

Q105. Can I check the card to see what type of immunisation did the child you are accompanying receive today?
[tick all the immunisation(s) the child has received to date (YES) and which immunisation(s) has not yet been received (NO)]
BCG / Polio 0 / Polio 1 / PCV 1 / Rota 1 / DPT 1 / Polio 2 / DPT 2 / PCV 2 / Rota 2 / Polio 3 / DPT 3 / PCV 3 / Measles / IPV / Vitamin A

Appendix B - Structured questionnaire for clinic audits

Section 1 - STAFFING

Q1. What is your position in the outreach clinic?
In-charge / Medical doctor / Nurse / Midwife / HSA / Senior HSA (SHSA) / Other, specify

Q2. How many HSAs work at the health facility associated with this clinic? *[write 99 if unknown]*

Q3. How many senior HSAs work at the health centre associated with this clinic? *[write 99 if unknown]*

Q4. How many health workers are working in the clinic today? *[write 99 if unknown]*

Q5. How many health workers provide immunisation services in this clinic? *[write 99 if unknown]*

Q6. Have any health workers in this clinic, including yourself, received any immunisation training in the last 2 years?
Yes / No

Q7. How many health workers provide family planning services in this clinic? *[write 99 if unknown]*

Q8. Have any health workers in this clinic, including yourself, received any family planning training in the last 2 years?
Yes / No

Q9. Have any health workers in this clinic, including yourself, received any adolescent sexual and reproductive health training in the last 2 years?
Yes / No

Section 2 – IMMUNISATIONS

Q10. How often are immunisation services offered at the clinic?
Every day / More than 1 day each week / 1 day each week / More than 1 day each month / 1 day each month / Less than one day each month

Q11. How often are FP services offered at the clinic?
Every day / More than 1 day each week / 1 day each week / More than 1 day each month / 1 day each month / Less than one day each month

Q12. Are family planning and immunisation services delivered together?
Yes / No

Q13. Are family planning and immunisation services delivered by the same person in this clinic?
Yes / No

Q14. Are family planning and immunisation services delivered in the same space?
Yes / No

Q15. Is there an area with seating that is sheltered from sun and rain where immunisation service users can wait for their turn?
Yes / No

Q16. Is there an area with seating that is sheltered from sun and rain where family planning service users can wait for their turn?
Yes / No

Q17. Are the following vaccines provided at the clinic?
BCG / Polio 0 / Polio 1 / PCV 1 / Rota 1 / DPT 1 / Polio 2 / DPT 2 / PCV 2 / Rota 2 / Polio 3 / DPT 3 / PCV 3 / Measles vaccine / IPV / Vitamin A

Q18. Are the following items in-stock at the clinic today? [check through observation]
BCG vaccine / DPT/Penta vaccine / Measles vaccine / Rotavirus vaccine / Yellow fever vaccine / Vitamin A / Needles and syringes

Specify the reason for stock-out:
1: Break in national supply
2: Break in sub-national supply
3: Stock-out at source of facility's supply
4: Unable to collect from the health facility (if applicable)
5: Forgotten to fetch from the health centre
6: Not provided in the district
7: Not provided in the clinic
8. Unknown

Q19. In the last 3 months, have any of these items been out of stock?
BCG vaccine / DPT/Penta vaccine / Measles vaccine / Rotavirus vaccine / Yellow fever vaccine / Vitamin A / Needles and syringes

Specify the reason for stock-out:
1: Break in national supply
2: Break in sub-national supply
3: Stock-out at source of facility's supply
4: Unable to collect from the health facility (if applicable)
5: Forgotten to fetch from the health centre
6: Not provided in the district
7: Not provided in the clinic
8. Unknown

Section 3 - FAMILY PLANNING METHODS

Q20. Are the following family planning methods prescribed in this clinic?
Contraceptive pill / Injection / Self-injection / Male condom / Female condom / IUD / Implant / Emergency contraception / Male sterilisation / Female sterilisation / Other, specify

Q21. Are the following items in-stock at the clinic today? *[check through observation]*
Contraceptive pill / Injectable / Self-injectable / Male condom / Female condom / IUD / Implant / Emergency contraception / Sterile gloves / Sharps container / Autoclave (or sterilizer) / Vaginal speculum

Specify the reason for stock-out:
1: Break in national supply
2: Break in sub-national supply
3: Stock-out at source of facility's supply
4: Unable to collect from the health facility (if applicable)
5: Forgotten to fetch from the health centre
6: Not provided in the district
7: Not provided in the clinic
8. Unknown

Q22. In the last 3 months, have any of these items been out of stock?
Contraceptive pill / Injectable / Self-injectable / Male condom / Female condom / IUD / Implant / Emergency contraception / Sterile gloves / Sharps container / Autoclave (or sterilizer) / Vaginal speculum

Specify the reason for stock-out:

1: Break in national supply
2: Break in sub-national supply
3: Stock-out at source of facility's supply
4: Unable to collect from the health facility (if applicable)
5: Forgotten to fetch from the health centre
6: Not provided in the district
7: Not provided in the clinic
8. Unknown

Q23. Are there national FP guidelines available in the clinic today? *[must be observed]*
Yes / No

Q24. Are there any FP checklists or FP job aids available in the clinic today? *[must be observed]*
Yes / No

Section 4 – INFRASTRUCTURE

Q25. What material are the walls of the clinic?
Mud / Wood / Cement / Brick / Stone / Tiles / Open space / Other, specify

Q26. What material is the roof of the clinic?
Thatch / Tin/iron / Tiles / Other, specify

Q27. What material is the floor of the clinic?
Mud / Wood / Cement / Tiles / Other, specify

Q28. How many separate rooms does the clinic have? *[write 99 if unknown]*

Q29. Does the clinic have electricity at the moment? *[check through observation]*
Yes / No

Q30. What source(s) of electricity does the clinic have? *[circle all that apply, multiple answers allowed]*
Electrical lines / Solar / Generator / Other, specify

Q31. What is the source of water for the clinic?
Piped water into dwelling/ yard/plot / Piped to neighbour / Public tap/standpipe / Tube well or borehole / Protected dug well / Protected spring / Rainwater / Sachet water / Bottled water / Unprotected dug well / Unprotected spring / Truck/cart/bicycle with drum/jerrycans / Surface water. / Other, specify

Q32. What is the source of drinking water for the clinic?
Piped water into dwelling/ yard/plot / Piped to neighbour / Public tap/standpipe / Tube well or borehole / Protected dug well / Protected spring / Rainwater / Sachet water / Bottled water / Unprotected dug well / Unprotected spring / Truck/cart/bicycle with drum/jerrycans / Surface water. / Other, specify

Q33. What type of toilet does the clinic have?
Flush latrine / Covered pit latrine / Open pit latrine / Other type of toilet / No toilet

Q34. Does the clinic have a functioning EPI fridge? *[check through observation]*
Yes / No

Q35. Is there a back-up generator or gas cylinder to maintain the cold chain in the event power is cut or you run out of gas?
Yes / No

Q36. Is there a daily log kept of temperatures in the fridge where vaccines are stored?
Yes / No

Appendix C - Guide for semi-structured interviews with clients

I would like to ask you a few questions about your experience in the outreach clinic today and what you feel could improve the services.

1. Can you tell me a bit about your experience in the clinic today?
   - Prompt: How many hours did you spend here?
   - Prompts: Who did you come here with?
   - Prompt: What services did you receive?
   - Prompt: Who did you speak to?
2. How do you feel about your experience in the clinic today?
   - Prompt: What did you like and not like about your experience?
3. Did you feel respected by the providers?
   - Prompt: What made you feel this way?
4. How do you feel about controlling when you become pregnant and how many children you have?
   - Prompt: Do you think it's a good thing? Why or why not?
5. How did you feel about speaking to the provider about family planning today and about what you need or want?
6. What did the provider tell you about the family planning choices you can make?
   - Prompt: Did they recommend a family planning method to you?
   - Prompt: Did they tell you about different methods you could choose?
7. What would have made your interaction with the family planning provider feel better?
   - Prompt: Behavioural (e.g., respect from the provider, clarity of information)
   - Prompt: Structural (e.g., ease of access, clinic environment)

In this clinic, the immunisation and family planning services are connected. This is what made it possible for you to receive both services today.

8. Before coming to the clinic today, were you planning to attend both services?
   - Prompt: Why did you come to the clinic today?
9. How do you feel about receiving both immunisation and family planning services at the same time?
   - Prompt: Is it a good thing or not a good thing? What makes you feel this way?
   - Prompt: How could this be improved?
10. Would you recommend this clinic to a family member or friend who is interested in finding out about, or using, family planning?
    - Prompt: Why or why not?
11. Of the aspects below, what do you think are the most and least important aspects of family planning services? Can you order them from most to least important?

Aspects of services	Rank	Response *[Insert letter]*
A. The ease with which you can access the FP services	Most important:	
B. The respect that you receive from providers	Second:	
C. The cleanliness of the clinic environment	Third:	
D. The confidentiality of the information you share with the FP provider	Fourth:	
E. The freedom you have to choose a provider	Fifth:	
F. The way the provider explains things to you	Sixth:	
G. The family planning counselling you receive from the provider	Seventh:	
H. The ease with which you can access follow-up services	Least important:	

12. Can you tell me why you feel _____ is the most important?
13. Can you tell me why you feel _____ is the least important?
14. Those are all the questions I wanted to ask you. Do you have any questions you would like to ask me?

Thank you very much for your time and for participating in this study.

Appendix D - Guide for semi-structured interviews with FP providers

I would like to ask you a few questions about your experience providing family planning services in this outreach clinic.

1. Can you tell me a little about the responsibilities you have in this clinic?
2. Which of your responsibilities do you feel are most important in your role?
   - Prompt: What makes you feel this way?
3. How do you feel about family planning?
   - Prompt: Do you think it's a good thing? Why or why not?
4. When women come to the clinic for family planning services, what is needed to make sure their needs are met?
   - Prompt: What is needed from the clinic?
   - Prompt: What is needed from the providers?
5. What challenges do you face when trying to do these things?
   - Prompt: Is there anything about the clinic that is challenging?
   - Prompt: Is there anything about the community that is challenging?
   - Prompt: Is there anything about your role or your team that is challenging?
   - Prompt: Is there anything about providing family planning services in particular that is challenging?
6. What do you think could improve the experience that women have in this clinic?
   - Prompt: What could improve their experience of the family planning services here?
   - Prompt: Is there anything else you or the other providers could do?

In this clinic, the immunisation and family planning services are connected, which makes it possible for women to receive both services on the same day.

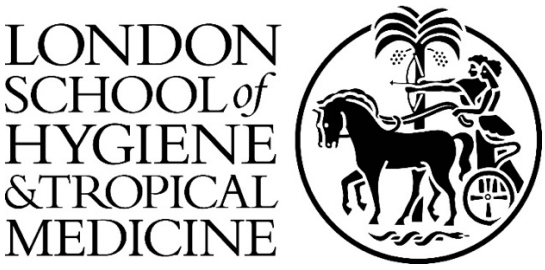
7. What do you think about the integration of these two services?
8. Do you think the integration of these two services allows you to better meet the needs of women who attend the clinic? Why or why not?
9. What changes are needed to improve the experience of women who receive both immunisation and family planning services on the same day?
10. Of the aspects below, what do your clients think are the most and least important aspects of family planning services? Can you order them from most to least important?

Aspects of services	Rank	Response *[Insert letter]*
A. The ease with which women can access the FP services	Most important:	
B. The respect that women receive from providers	Second:	
C. The cleanliness of the clinic environment	Third:	
D. The confidentiality of the information that women share with providers	Fourth:	
E. The freedom women have to choose a provider	Fifth:	
F. The way information is explained to women	Sixth:	
G. The FP counselling provided to women	Seventh:	
H. The ease with which women can access follow-up services	Least important:	

11. Can you tell me why you feel _____ is the most important?
12. Can you tell me why you feel _____ is the least important?
13. Those are all the questions I wanted to ask you. Do you have any questions you would like to ask me?

Thank you very much for your time and for participating in this study.

Appendix E - Data management plan



Data Management Plan for Research Students

Project title	Health service responsiveness: A case study of integrated family planning and childhood immunisation services in Malawi
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Date of last edit	01 June 2019

Guidance on writing a Data Management Plan can be found at

https://lshtm.sharepoint.com/Research/Research-data-management/

and http://servicedesk.lshtm.ac.uk

Advice and feedback can be obtained from:

DESCRIBE YOUR RESEARCH

1. What digital resources – data, code, collection tools, etc. - will you collect/obtain and use?

An exit interview will be administered to clients in routine outreach clinics in two districts of Malawi using a structured questionnaire. Information on the respondents' socio-demographic characteristics and experience receiving integrated family planning (FP) services in the study clinics will be collected during this interview. A little under 200 clients will be interviewed across 15 clinics The exit interview will be administered by trained and experienced interviewers using paper-based questionnaire.

Semi-structured interviews (SSIs) with clients and health providers will be conducted in a sub-set of six clinics where the exit interview will be administered. These interviews will capture respondents' views on service responsiveness and the changes they believe are needed to improve the responsiveness of integrated family planning services. Between 20 and 40 interviews will be conducted with clients and 6-10 with providers, with flexibility for more/less interviews depending on findings. These interviews will be administered by experienced and trained local interviewers. All interviews will be audio recorded. Transcripts of the audio recordings will be translated into English for analysis. Interviewers will also complete field notes to provide additional details on each SSI.

A clinic audit will be conducted using a structured questionnaire in all study clinics to record the availability of immunisation and FP resources and the human resource context of the clinics on the day of the interviews. Data will be collected on the characteristics of the clinic including its: infrastructure, cadres of health providers, and stocks of FP methods and childhood immunisation supplies. This data will be collected by a trained and experienced local interviewer using a paper-based questionnaire.

2. What hardware and software will be used in your research?

- Paper copies of signed study participant consent forms
- Paper copies of completed recruitment forms, exit interview questionnaires and clinic audit questionnaires
- Paper copies of field notes and interviewer notes
- Audio recordings of semi-structured interviews
- Word documents of interview transcripts (original and translated)
- Word document with participant key
- Quantitative data will be cleaned and stored in EpiData and exported into STATA 16 for analysis.
- Qualitative data will be stored and analysed in Nvivo 12. It will also be analysed using VensimPLE.
- Mendeley will be used for storing relevant reference documents
- Scans of all paper copies

3. What data-related activities will be performed during the research?

Task	Description
Exit interviews	- Conduct exit interviews in month 1-3 - Enter data into the EpiData database in month 4 - Clean and analyse data in STATA 16 in month 5-8
Clinic audits	- Conduct audit of study clinics in month 1-3 - Enter data into the EpiData database in month 4 - Clean and analyse data in STATA 16 in month 5-8
Semi-structured interviews	- Conduct semi-structured interviews in month 1-3 - Transcribe audio recordings from interviews in month 4 - Translate transcripts of interviews in month 5 - Analyse transcripts with field notes in Nvivo 12 in month 9-12 - Analyse all qualitative data in VensimPLE in month 13-18

4. What quality checks will you perform to ensure resources are fit for purpose?

- The exit interview questionnaire will be developed based on previously validated tools
- The translated tools (survey and interview guides) will be pre-tested and piloted in Malawi to address any language, feasibility, and logistical issues relating to their administration.
- To ensure that similar standards are achieved throughout the data collection process, the team coordinator and interviewers in Malawi will be trained on the study's purpose and the standard operating procedures developed for this study.
- Data from the exit interviews and clinic audits will be double entered into EpiData using validation rules, controlled vocabulary, code lists and choice lists to minimise data entry errors.
- The quality of semi-structured interviews will be checked by 1) verifying the accuracy of the transcription against the original audio recording, and 2) checking the accuracy of the translated transcripts against the original Chichewa transcripts where needed.

5. How will you address ethical & legal issues within your research?

Approval for this study will be requested from the National Committee on Research in the Social Sciences and Humanities in Malawi and the London School of Hygiene & Tropical Medicine research ethics committee in the UK. Permission to conduct the study will also be requested from the Blantyre and Thyolo District Health Offices.

There is no direct benefit to participants, nor are there any direct risks associated with participating in this study. Some participants may feel uncomfortable discussing personal information such as their relationship status, their experience of FP services, and their history of contraception use.

Informed written consent will be sought and obtained from all participants using a standardized process. Literate participants will document their consent to participate by signing the consent form. In the event of non-literate eligible participants, an option to document their consent by marking the consent forms (e.g., with an X or thumbprint) in the presence of a literate third party acting as an impartial witness will be provided. All participants will be provided with a copy of their signed informed consent form.

Personal identifiers (e.g., names) will only be collected for informed consent. A unique ID number will be assigned to each study participant and will be used to link personal identifiers to study

information. Personal identifiers recorded on paper will be stored in a locked cabinet, while those recorded electronically will be stored in separate datasets with password protection only accessible by designated study staff.

6. What documentation will be created to ensure resources can be understood?

Standard operating procedures (SOPs) will be developed. The SOPs will provide a detailed "how-to" manual of the day-to-day procedures involved in the study. Among other details, it will outline the procedures for participant recruitment, consent, data collection and data quality activities. All team members working under the protocol for this study will be expected to review and adhere to these SOPs. Additionally, a user guide will be prepared in MS Excel to summarise the content, file location, and the creation and last modification date of all datasets. This guide will be made available alongside the datasets upon request following the publication of findings and the completion of the thesis.

STORAGE AND SECURITY

7. Where will resources be stored at key stages of your research?

Paper forms will be securely stored at the Save the Children offices. To ensure participant anonymity, completed forms will be stored separately from consent forms. Data entered into EpiData and audio recordings from the semi-structured interviews will be uploaded to encrypted, password-protected computers every day, with access restricted to the data collection team coordinator in Malawi. This data will be backed-up daily using the study's external hard drive. All electronic data will be stored in password protected systems accessible only to study investigators and the data collection team coordinator (during the data collection period only). A second layer of protection will be provided through hardware password protection on computers, servers, and networks. Data transfers over wireless or mobile networks will be minimised and when conducted will use private for-cost cloud service and private networks. All collected study data on central computers and servers, remote computers, and hand-held devices, will be backed-up daily. Back-up discs will be stored separately from the primary electronic storage.

8. What labelling conventions will you apply to manage your resources?

All electronic files will be categorised by type of form/activity. As the respondent ID will be a 10-digit number that will include information on the clinic site, respondent, interviewer and the date of the interview, all electronic files will be saved using the following standard naming convention:

- Recruitment form scans:
    - Exit interview recruitment_Respondent ID
    - SSI recruitment_Client_Respondent ID
    - SSI recruitment_Provider_Respondent ID
- Consent form scans:
    - Exit interview consent_Respondent ID
    - SSI consent_Client_Respondent ID
    - SSI consent_Provider_Respondent ID
- SSI audio files:
    - SSI audio_Client_Respondent ID
    - SSI audio_Provider_Respondent ID
- SSI transcript files:
    - SSI transcript_Client_Respondent ID
    - SSI transcript_Provider_Respondent ID

- SSI translated transcript files:
    - SSI English transcript_Client_Respondent ID
    - SSI English transcript_Provider_Respondent ID
- SSI field notes files:
    - SSI field notes_Client_Respondent ID
    - SSI field notes_Provider_Respondent ID
- Data saved in EpiData:
    - Exit interview data_Date of file creation [yyyymmdd]
    - Audit data_Date of file creation [yyyymmdd]
- Data saved in STATA:
    - Exit interview analysis_Date of file creation [yyyymmdd]
    - Audit analysis_Date of file creation [yyyymmdd]
- Data saved in NVIVO:
    - SSI analysis_Date of file creation [yyyymmdd]
- Data saved in VensimPLE:
    - Causal loop analysis_Date of file creation [yyyymmdd]
- Incident forms:
    - Incident form_Clinic ID_Clinic visit date [yyyymmdd]
- Debriefing forms:
    - Debriefing form_Clinic ID_Clinic visit date [yyyymmdd]
- Participant key:
    - Participant key_Master_Date of latest update [yyyymmdd]

9. How will you keep data safe and secure? (choose one or more)

Only anonymised data will be used - personal, sensitive, or otherwise confidential data is not needed for the research		Store personal details in a separate secure location & link it via an identifier	X	Delete personal & confidential details at earliest opportunity (specify when below)	X
Use digital storage that require a username/password or other security feature	X	Physical security (such as locked cabinet or room)	X	Protect portable devices using security features, e.g., biometric	
Encrypt storage devices	X	Encrypt during transfer	X	Avoid cloud services located outside EU	X
Take 'Information Security Awareness training'		Ensure backups are also held securely	X		
Notes:	N/A				

ARCHIVING & SHARING

10.What resources should be kept as evidence of your research?

Data and resources from this study will be kept according to the LSHTM retention schedule for a minimum of 10 years following the end of the study.

11.Where will these resources be hosted?

Following the completion of the study, all relevant data and resources will be retained by the research team for archiving.

12.When will the resources be made available?

During the research life		At the same time as findings are published in an academic journal	X	A set time after research end, e.g., 12 months. Specify below	
Resources already available (provide details below)		On completion of my thesis	X	Other (provide details below)	
Further information / Other					
N/A					

13.How will you make other researchers aware that the resources exist?

Publish a metadata record describing the resources in a repository or other catalogue		Obtain a Digital Object Identifier (DOI) or other permanent ID	
Cite resources in future research papers, e.g., in the data access statement or reference list	X	Cite resources in project reports	X
Publish a description for the project website		Write and publish a Data Paper	
Add resources to a list of your academic outputs	X		
Other measures / Further details			
N/A			

14.What steps will you take to ensure resources are easy to analyse and use in future research?

Prepare a codebook or other documentation that provides an accurate description of content		Store resources in open file formats such as CSV, Rich Text, etc. See https://www.ukdataservice.ac.uk/manage-data/format/recommended-formats	
Write a user guide that provides a high-level overview of research	X	Apply a standard licence that allows a broad range of uses (e.g., Creative Commons, Open Data Commons)	
Designate a corresponding author / data custodian who will handle data-related questions	X	Use domain-specific standards that make it easy to import and analyse data	X
Other / Further information			
N/A			

15.If resources can be made available, but not openly, what conditions on access/use must be met?

E.g., data can be used for specific types of research only. Leave blank if not applicable.

Requirement:	To be addressed by:
N/A	N/A

RESOURCING

16.What are the primary data management challenges in your research?

Loss of data due to malfunctioning hardware, such as audio recording devices and external hard drives represents the main challenge. Data will be retrieved from audio recording devices as soon as possible following each interview and backed up onto a study laptop. All data will be uploaded to a for-cost cloud service and backed-up on two external drives daily to avoid the loss of data.

17.How can LSHTM & others help you to better manage your data?

A short training on the encryption of datasets and documents would be useful to ensure that encryption is completed correctly when storing and transferring data.

Appendix F - Ethics approval certificates

NATIONAL COMMISSION FOR SCIENCE & TECHNOLOGY
Lingadzi House
Robert Mugabe Crescent
P/Bag B303
City Centre
Lilongwe
Tel: +265 1 771 550
+265 1 774 189
+265 1 774 869
Fax: +265 1772 431
Email:directorgeneral@ncst.mw
Website:http://www.ncst.mw

NATIONAL COMMITTEE ON RESEARCH IN THE SOCIAL SCIENCES AND HUMANITIES

Ref No: NCST/RTT/2/6 **7th May 2019**

Prof Jayne Webster,

London School of Hygiene and Tropical Medicine,

Keppel Street,

London WC1E 7HT,

United Kingdom.

Email: jayne.webster@lshtm.ac.uk

Dear Prof Webster,

RESEARCH ETHICS AND REGULATORY APPROVAL AND PERMIT FOR PROTOCOL NO. P.03/19/362: PROCESS EVALUATION OF INTEGRATED FAMILY PLANNING & IMMUNIZATION SERVICES IN BENIN, MALAWI AND UGANDA

Having satisfied all the relevant ethical and regulatory requirements, I am pleased to inform you that the above referred research protocol has officially been approved. You are now permitted to proceed with its implementation. Should there be any amendments to the approved protocol in the course of implementing it, you shall be required to seek approval of such amendments before implementation of the same.

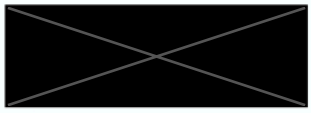
This approval is valid for one year from the date of issuance of this approval. If the study goes beyond one year, an annual approval for continuation shall be required to be sought from the National Committee on Research in the Social Sciences and Humanities (NCRSH) in a format that is available at the Secretariat. Once the study is finalised, you are required to furnish the Committee and the

Committee Address:
Secretariat, National Committee on Research in the Social Sciences and Humanities, National Commission for Science and Technology, Lingadzi House, City Centre, P/Bag B303, Capital City, Lilongwe3, Malawi. Telephone Nos: +265 771 550/774 869; E-mail address: ncrsh@ncst.mw

Commission with a final report of the study. The committee reserves the right to carry out compliance inspection of this approved protocol at any time as may be deemed by it. As such, you are expected to properly maintain all study documents including consent forms.

Wishing you a successful implementation of your study.

Yours Sincerely,



Yalonda .I. Mwanza
NCRSH ADMINISTRATOR
HEALTH, SOCIAL SCIENCES AND HUMANITIES DIVISION

For: CHAIRMAN OF NCRSH

Committee Address:
Secretariat, National Committee on Research in the Social Sciences and Humanities, National Commission for Science and Technology, Lingadzi House, City Centre, P/Bag B303, Capital City, Lilongwe3, Malawi. Telephone Nos: +265 771 550/774 869; E-mail address: ncrsh@ncst.mw

London School of Hygiene & Tropical Medicine
Keppel Street, London WC1E 7HT
United Kingdom
Switchboard: +44 (0)20 7636 8636

www.lshtm.ac.uk

Observational / Interventions Research Ethics Committee

Prof Jayne Webster
LSHTM

27 February 2019

Dear Jayne,

Study Title: Process evaluation of integrated family planning and immunisation services in Benin, Kenya, Malawi and Uganda.

LSHTM Ethics Ref: 16188

Thank you for responding to the Observational Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Conditions of the favourable opinion

Approval is dependent on local ethical approval having been received, where relevant.

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document Type	File Name	Date	Version
Investigator CV	CV - Jayne Webster	29/10/2018	1
Investigator CV	CV - Jane Bruce	29/10/2018	1
Investigator CV	CV - Shari Krishnaratne	29/10/2018	1
Investigator CV	CV - Jessie Hamon	29/10/2018	1
Protocol / Proposal	Protocol_20181030	30/10/2018	1
Information Sheet	Information sheet for District and Health Facility leads_Kenya Malawi Uganda	31/10/2018	1
Information Sheet	Information sheet for District and Health Facility leads Benin	31/10/2018	1
Information Sheet	Consent form_Structured interview HW_Intervention	31/10/2018	1
Information Sheet	Consent form_Structured interview HW_Benin_Non-intervention	31/10/2018	1
Information Sheet	Consent form_Semi-structured interview PPW_Intervention	31/10/2018	1
Information Sheet	Consent form_Semi-structured interview PPW_Benin_Non-intervention	31/10/2018	1
Information Sheet	Consent form_Semi-structured interview HW_Intervention	31/10/2018	1
Information Sheet	Consent form_Semi-structured interview HW_Benin_Non-intervention	31/10/2018	1
Information Sheet	Consent form_In-depth interview Stakeholders	31/10/2018	1
Information Sheet	Consent form_In-depth interview PPW	31/10/2018	1
Information Sheet	Consent form_In-depth interview HW	31/10/2018	1
Information Sheet	Consent form_Exit interview PPW_Intervention	31/10/2018	1
Information Sheet	Consent form_Exit interview PPW_Benin_Non-intervention	31/10/2018	1
Protocol / Proposal	Exit survey questionnaire	31/10/2018	1
Protocol / Proposal	Health facility audit questionnaire	31/10/2018	1
Protocol / Proposal	Semi-structured interview guide HW	31/10/2018	1
Protocol / Proposal	Semi-structured interview guide PPW	31/10/2018	1
Protocol / Proposal	Structured interviews HW	31/10/2018	1

Protocol / Proposal	Theme guide PE health providers	31/10/2018	1
Protocol / Proposal	Theme guide PE post partum women	31/10/2018	1
Protocol / Proposal	Theme guide PE stakeholders	31/10/2018	1
Covering Letter	Response to committee_20181122	22/11/2018	Version 1
Information Sheet	Revised ICF_Exit interview PPW_Benin_Non-intervention	22/11/2018	Version 2
Information Sheet	Revised ICF_Exit interview PPW_Intervention	22/11/2018	Version 2
Information Sheet	Revised ICF_In-depth interview PPW	22/11/2018	Version 2
Information Sheet	Revised ICF_Semi-structured interview PPW_Benin_Non-intervention	22/11/2018	Version 2
Information Sheet	Revised ICF_Semi-structured interview PPW_Intervention	22/11/2018	Version 2

After ethical review

The Chief Investigator (CI) or delegate is responsible for informing the ethics committee of any subsequent changes to the application. These must be submitted to the Committee for review using an Amendment form. Amendments must not be initiated before receipt of written favourable opinion from the committee.

The CI or delegate is also required to notify the ethics committee of any protocol violations and/or Suspected Unexpected Serious Adverse Reactions (SUSARs) which occur during the project by submitting a Serious Adverse Event form.

An annual report should be submitted to the committee using an Annual Report form on the anniversary of the approval of the study during the lifetime of the study.

At the end of the study, the CI or delegate must notify the committee using an End of Study form.

All aforementioned forms are available on the ethics online applications website and can only be submitted to the committee via the website at: http://leo.lshtm.ac.uk

Additional information is available at: www.lshtm.ac.uk/ethics

Yours sincerely,

Professor John DH Porter
Chair

ethics@lshtm.ac.uk
http://www.lshtm.ac.uk/ethics/

Improving health worldwide

Appendix G - Consent form for structured exit interviews with clients

Information sheet for structured exit interviews with women

Title of Research
Process evaluation of integrated family planning and immunisation services in Benin, Kenya, Malawi, and Uganda

Investigators
Jayne Webster, Jane Bruce, Shari Krishnaratne and Jessie Hamon
London School of Hygiene & Tropical Medicine (LSHTM)

Introduction
Access to quality family planning services is important to improve the health of women and their children. Family planning helps women have the number of children they want because they can plan when they will get pregnant. Family planning uses methods such as injections, pills, implants and others. Access to quality family planning services is particularly important for women within the 12 months following childbirth (postpartum women), because spacing each pregnancy by 2 years or more is known to reduce the risks that sometimes occur with pregnancy. However, these family planning needs among women in many countries remain largely unmet, which leads to women becoming pregnant during the 12 months following childbirth, when this was not what they wanted. There is evidence that integrating family planning with child immunisation services can increase family planning methods use among women who gave birth in the last 12 months by creating many opportunities for women to access family planning services during the year following childbirth.

We are conducting a study that aims to understand how integration or combining these services, that is when you go for immunisation you are also able to get family planning services, affects the decision of women to start or continue using family planning methods.

I am going to give you some information about the study that we are doing, and I will then invite you to be part of this study. It is important for you to understand why the study is being done and what it will involve. If there is anything you do not understand please ask me to stop and I will take time to explain and answer your questions. If you have questions later, I am leaving my phone number so that you can contact me.

The process evaluation study
We are interested in knowing about how family planning and child immunisation services are delivered in health facilities such as the one you attended today. Specifically, we are interested in how a woman's decision to start or continue using a family planning method is associated with the way family planning services are delivered, what the experience of women is like when they use these services, and what about the delivery of these services works, for who, how, where, and when.

Who is being asked to join in the research?
Women who have a child under the age of 3 and who attended the immunisation and/or family planning services in this health facility today are being invited to be involved in the study. A total of

(*insert country-specific number of women being recruited into the study*) women are expected to participate in the study.

What are we asking from you?

If you agree to take part in the study, we will ask you a few questions now about the immunisation and family planning services you attended in this facility today. We will ask you a few questions about your birth history, your experience with family planning, your knowledge and use of contraception methods, your child's immunisation history and your interactions with health providers in this facility today. We will also ask you information about your family, your occupation, about your house and possessions.

What are the risks and benefits of taking part?

There will be no direct benefits to you by agreeing to participate in the study. Our work is to learn more about the delivery of immunisation and family planning services so that we can make suggestions about ways to improve the services. We do not expect that you will experience any risks or discomforts during the interview.

Information collected is confidential

We will do everything possible to protect your confidentiality if you participate in the research. We do this by giving you a research number and labelling any information you provide with this study number. Your personal information (name, address, phone number) will be protected by the research staff.

What happens if I don't want to participate?

You are free to decide whether you wish to participate. Participation is voluntary. Before deciding whether you are willing to support our study, please feel free to ask any questions about what we have just said. If you agree to participate, we will record your written agreement now.

If you have any further questions or concerns

If you have any questions about this study in the future, please contact (*insert name of in-country study coordinator*) at the *(insert name of NGO*) office in (*insert physical address of NGO office*) or by telephone (*insert in-country study coordinator telephone number*).

If you have any questions or concerns about your rights as a research participant or if you want to discuss a problem, get information, or offer input by talking to someone who is not part of the research team you may contact:

Independent review board/Ethics committee: *(insert title of person on the appropriate committee)*
Address of independent review board: *(insert physical address the appropriate committee/board)*
Daytime telephone number: *(insert telephone number)*

This proposal has been reviewed and approved by (*insert name of independent review board/Ethics committee in country*). This committee makes sure that research participants are protected from harm.

Written consent for structured exit interviews with women

The following will be read to participants and their written consent sought.
I have been given sufficient time to consider whether to take part in this research.

- I have read the information sheet (or have understood the verbal information) that explains the reason for the study, and the procedures that I will be asked.
- I understand that I am free to choose whether or not I wish to participate, and that no pressure will be put on me to participate.
- All the questions I had about this study have been answered.
- I understand that I can request to stop participating in this study at any time, and that it will stop immediately upon my request.
- I agree to take part in this study.

Signature of the study participant. If the woman does not wish to consent, the form should not be signed.

_____	_____	_____
Name of participant	Signature	Date

_____	_____	_____
Name of witness if applicable	Signature	Date

I certify that the information was provided in a language that was understandable to the participant, that I have explained the above to _____ and that she understood what I said and has agreed to take part in the study.

_____	_____	_____
Name of staff conducting consent	Signature	Date

_____	_____
Name of health facility	Name of district

Appendix H - Consent form for semi-structured interviews with clients

Information sheet for semi-structured interviews with women

Title of Research
Process evaluation of integrated family planning and immunisation services in Benin, Kenya, Malawi, and Uganda

Investigators
Jayne Webster, Jane Bruce, Shari Krishnaratne and Jessie Hamon
London School of Hygiene & Tropical Medicine (LSHTM)

Introduction
Access to quality family planning services is important to improve the health of women and their children. Family planning helps women have the number of children they want because they can plan when they will get pregnant. Family planning uses methods such as injections, pills, implants, and others. Access to quality family planning services is particularly important for women within the 12 months following childbirth (postpartum women), because spacing each pregnancy by 2 years or more is known to reduce the risks that sometimes occur with pregnancy. However, these family planning needs among women in many countries remain largely unmet, which leads to women becoming pregnant during the 12 months following childbirth, when this was not what they wanted. There is evidence that integrating family planning with child immunisation services can increase family planning methods use among women who gave birth in the last 12 months by creating many opportunities for women to access family planning services during the year following childbirth.

We are conducting a study that aims to understand how integration or combining these services, that is when you go for immunisation you are also able to get family planning services, affects the decision of women to start or continue using family planning methods.

I am going to give you some information about the study that we are doing, and I will then invite you to be part of this study. It is important for you to understand why the study is being done and what it will involve. If there is anything you do not understand please ask me to stop and I will take time to explain. If you have questions later, I am leaving my phone number so that you can contact me.

The process evaluation study
We are interested in knowing about how family planning and child immunisation services are delivered in health facilities such as the one you attended today. Specifically, we are interested in how a woman's decision to start or continue using a family planning method is associated with the way family planning services are delivered, what the experience of women is like when they use these services, and what about the delivery of these services works, for who, how, where and when.

Who is being asked to join in the research?
Women who have a child under the age of 3 and who attended the immunisation and family planning services in this health facility today are being invited to be involved in the study. A total of (*insert country-specific number of women being recruited into the study*) women are expected to participate in the study.

What are we asking from you?

If you agree to take part in the study, we will ask you some questions about your experience of the family planning services you received in this health facility today. This includes questions about your experience using the family planning services, your discussion with the health providers and what changes you think would help improve the experience of women who use the family planning services in this health facility.

What are the risks and benefits of taking part?

There will be no direct benefits to you by agreeing to participate in the study. Our work is to learn more about the delivery of immunisation and family planning services so that we can make constructive suggestions about ways to improve existing services. We do not expect that you will experience any risks or discomforts during the interview.

Information collected is confidential

We will do everything possible to protect your confidentiality if you participate in the research. We do this by giving you a research number and labelling any information you provide with this study number. Your personal information (name, address, phone number) will be protected by the research staff. We will only use quotes with your explicit permission. No quotes or other results arising from your participation in this study will be included in any reports, even anonymously, without your agreement.

What happens if I don't want to participate?

You are free to decide whether you wish to participate. Participation is voluntary. Before deciding whether you are willing to support our study, please feel free to ask any questions about what we have just said. If you agree to participate, we will record your written agreement now.

If you have any further questions or concerns

If you have questions about this study, please contact (*insert name of in-country study coordinator*) at the *(insert name of NGO*) office in (*insert physical address of NGO office*) or by telephone (*insert in-country study coordinator telephone number*).

If you have any questions or concerns about your rights as a research participant or if you want to discuss a problem, get information, or offer input by talking to someone who is not part of the research team you may contact:

Independent review board/Ethics committee: *(insert title of person on the appropriate committee)*
Address of independent review board: *(insert physical address the appropriate committee/board)*
Daytime telephone number: *(insert telephone number)*

This proposal has been reviewed and approved by (*insert name of independent review board/Ethics committee in country*). This committee makes sure that research participants are protected from harm.

Written consent for semi-structured interviews with women

The following will be read to participants and their written consent sought.
I have been given sufficient time to consider whether to take part in this research.

- I have read the information sheet (or have understood the verbal information) that explains the reason for the study, and the procedures that I will be asked.
- I understand that I am free to choose whether or not I wish to participate, and that no pressure will be put on me to participate.
- All the questions I had about this study have been answered.
- I understand that I can request to stop participating in this study at any time, and that it will stop immediately upon my request.
- I do / do not agree to quotes or other results arising from my participation in the study being included, even anonymously in any reports about the study.
- I agree to take part in this study.

Signature of the study participant. If the woman does not wish to consent, the form should not be signed.

_____	_____	_____
Name of participant	Signature	Date

_____	_____	_____
Name of witness if applicable	Signature	Date

I certify that the information was provided in a language that was understandable to the participant, that I have explained the above to _____ and that she understood what I said and has agreed to take part in the study.

_____	_____	_____
Name of staff conducting consent	Signature	Date

_____	_____
Name of health facility	Name of district

Appendix I - Consent form for semi-structured interviews with providers

Information sheet for semi-structured interviews with health workers

Title of Research
Process evaluation of integrated family planning and immunisation services in Benin, Kenya, Malawi, and Uganda

Investigators
Jayne Webster, Jane Bruce, Shari Krishnaratne and Jessie Hamon
London School of Hygiene & Tropical Medicine (LSHTM)

Introduction
Access to quality family planning services is important to improve the health of women and their children. Family planning gives women the possibility to achieve their preferred number of children and the ability to plan when pregnancies occur, which is achieved through the use of contraceptive methods. Access to quality FP services is particularly important for postpartum women, as spacing each pregnancy by 2 years or more has been shown to reduce the risks of miscarriages, preterm births, stillbirths and maternal and neonatal death. Nevertheless, family planning needs among women in many countries remain largely unmet, which leads to unintended pregnancies during the 12 months following childbirth. There is evidence to suggest that integrating family planning with child immunisation services can increase contraception use among postpartum women by creating repeated opportunities for these women to access family planning services during the year following childbirth.

We are conducting a study which aims to investigate the integration of immunisation and family planning services and explain pathways to outcomes. I am going to give you some information about the study that we are conducting, and I will then invite you to be part of this study. It is important for you to understand why the study is being done and what it will involve. If there is anything you do not understand please ask me to stop and I will take time to explain. If you have questions later, I am leaving my phone number so that you can contact me.

The process evaluation study
Since 2015, the delivery of family planning and immunisation services has been integrated in this health facility. We are interested in knowing how the services are delivered, how contraception methods are accepted by women in this facility, how contraception method acceptance and continued use is associated with service integration, what the experience of women is like when they use these services, and what about the integration of these services works, for who, how and in what circumstances.

Who is being asked to join in the research?
Health workers, who provide family planning services in health facilities such as this one, are being invited to be involved in the study. A total of (*insert country-specific number of health workers being interviewed*) health workers are expected to participate in the study.

What are we asking from you?

If you agree to participate, we will ask you some questions about your experience delivering family planning services in this health facility. This includes questions about your experience counselling women about family planning, the challenges you face when doing so and the changes you think would help improve the experience of women who use the family planning services in this health facility.

What are the risks and benefits of taking part?

There will be no direct benefits to you by agreeing to participate in the study. Our work is to learn more about the delivery of immunisation and family planning services so that we can make constructive suggestions about ways to improve existing services. We do not anticipate you experiencing any risks or discomforts during the interview.

Information collected is confidential

We will do everything possible to protect your confidentiality if you participate in the research. We do this by giving you a research number and labelling any information you provide with this study number. Your personal information (name, address, phone number) will be protected by the research staff. We will only use quotes with your explicit permission. No quotes or other results arising from your participation in this study will be included in any reports, even anonymously, without your agreement.

What happens if I don't want to participate?

You are free to decide whether you wish to participate. Participation is voluntary. Before deciding whether you are willing to support our study, please feel free to ask any questions about what we have just said. If you agree to participate, we will record your written agreement now.

If you have any further questions or concerns

If you have questions about this study, please contact (*insert name of in-country study coordinator*) at the *(insert name of NGO*) office in (*insert physical address of NGO office*) or by telephone (*insert in-country study coordinator telephone number*).

If you have any questions or concerns about your rights as a research participant or if you want to discuss a problem, get information or offer input by talking to someone who is not part of the research team you may contact:

Independent review board/Ethics committee: *(insert title of person on the appropriate committee)*
Address of independent review board: *(insert physical address the appropriate committee/board)*
Daytime telephone number: *(insert telephone number)*

This proposal has been reviewed and approved by (*insert name of independent review board/Ethics committee in country*). This committee makes sure that research participants are protected from harm.

Written consent for semi-structured interviews with health workers

The following will be read to participants and their written consent sought.
I have been given sufficient time to consider whether to take part in this research.

- I have read the information sheet (or have understood the verbal information) that explains the reason for the study, and the procedures that I will be asked.
- I understand that I am free to choose whether or not I wish to participate, and that no pressure will be put on me to participate.
- All the questions I had about this study have been answered.
- I understand that I can request to stop participating in this study at any time, and that it will stop immediately upon my request.
- I do / do not agree to quotes or other results arising from my participation in the study being included, even anonymously in any reports about the study.
- I agree to take part in this study.

Signature of the study participant. If the individual does not wish to consent, the form should not be signed.

_____	_____	_____
Name of participant	Signature	Date

I certify that the information was provided in a language that was understandable to the participant, that I have explained the above to _____ and that (s)he understood what I said and has agreed to take part in the study.

_____	_____	_____
Name of staff conducting consent	Signature	Date

_____	_____
Name of health facility	Name of district

Appendix J - Confidentiality agreement

Confidentiality Agreement

I, _____, the _____ (specific job description, e.g., data officer, team coordinator, translator, transcriber) have been hired to _____.

I agree to:

1. keep all the research information shared with me confidential by not discussing or sharing the research information in any form or format (e.g., paper, disks, tapes, files, transcripts) with anyone other than the *Researcher(s)*,
2. keep all research information in any form or format (e.g., paper, disks, tapes, files, transcripts) secure while it is in my possession,
3. return all research information in any form or format (e.g., paper, disks, tapes, files, transcripts) to the *Researcher(s)* when I have completed the research tasks,
4. after consulting with the *Researcher(s),* erase or destroy all research information in any form or format regarding this research project that is not returnable to the *Researcher(s)* (e.g., information stored on computer hard drive).

_____	_____	_____
Print Name	Signature	Date

Researcher(s)

_____	_____	_____
Print Name	Signature	Date