COMMUNITY MIDWIFERY INITIATIVES IN FRAGILE AND CONFLICT-AFFECTED COUNTRIES: A SCOPING REVIEW OF APPROACHES FROM RECRUITMENT TO RETENTION

Sachiko Miyake[1], Elizabeth M Speakman[1], Sheena Currie[2], Natasha Howard[1§]

[1] London School of Hygiene and Tropical Medicine, Faculty of Public Health and Policy, London, UK

[2] Jhpiego, Baltimore, USA

[§]Corresponding author

Key words

fragile and conflict-affected, midwifery, health workforce, maternal and newborn health

ABSTRACT

Background

Birth assisted by skilled health-workers is one of the most effective interventions for reducing maternal and neonatal mortality. Fragile and conflict-affected states and situations (FCAS), with one-third of global maternal deaths, face significant challenges in achieving skilled care at birth, particularly in health workforce development. The importance of community-level midwifery services to improve skilled care is internationally recognised, but literature on FCAS is limited. This review aimed to examine community midwifery (CMW) approaches, from recruitment to retention, in FCAS.

Methods

This scoping review design adapted Arksey and O'Malley's six-stage framework. Data collection included systematic searching of seven databases, purposive hand-searching of reference lists and websites, and stakeholder engagement for additional information. Potential sources were screened against inclusion and exclusion criteria. Included sources were appraised for methodological quality using the McGill University Mixed Methods Appraisal Tool. Data were analysed thematically, using deductive (i.e. cadre definition, recruitment, education, deployment, retention) and inductive coding (i.e. capacity, gender, insecurity).

Results

Twenty-three sources were included, of 2,729 identified, discussing community midwifery programmes in six FCAS (i.e. 8 for Sudan, 6 for Afghanistan, 3 each for Mali and Yemen, 2 for South Sudan, 1 for Somalia). Source quality was relatively poor and cadre definitions were context dependent. Major enablers for effective CMW programmes were community linkages and acceptance, while barriers included inappropriate recruitment, non-standardised education, weak supportive environment, political insecurity, and violence.

Conclusions

While community engagement and acceptance were crucial, CMW programmes were weakened by inappropriate recruitment and training, lack of support, and general insecurity. Further research and implementation evidence is needed to aid policy-makers, donors and implementing agencies in developing and implementing effective CMW programmes in FCAS.

INTRODUCTION

Ensuring labour and birth with skilled birth attendants (SBA) is a globally-recognised strategy for reducing preventable maternal and neonatal morbidity and mortality [1, 2]. However, a global shortage of 4.3 million doctors, midwives, nurses and support-workers means most countries experience inequitable health-worker coverage [3]. Fragile and conflict-affected states and situations (FCAS) experience additional security and resource constraints and thus contribute one-third of maternal deaths and half of global under-five deaths, despite comprising only 26% of the world's population [4]. The global community is beginning to recognise that a key element of ensuring Sustainable Development Goals reach those 'left behind' by the Millennium Development Goals, requires improving health outcomes for those directly affected by conflict and mass violence [5, 6].

Skilled birth attendance

The importance of primary healthcare was recognised in the 1978 Alma-Ata Declaration [7]. The global Safe Motherhood Initiative, launched in 1987, called for expanded core maternal health services including antenatal, delivery, and postpartum care at both community and referral levels. After ten years without improvements, the initiative's focus shifted from traditional to skilled attendant education, improving women's access to professional medical care including emergency obstetric and newborn care (EmONC).

SBAs are defined as persons "*trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns*" [8]. Skilled attendance consists of both skilled personnel and an enabling environment [9], thus delivery at a health facility with a skilled attendant who can provide emergency care is now considered the best strategy to reduce maternal and neonatal mortality [10]. Midwives are considered the optimal SBAs and many countries have invested in scaling up the number and quality of midwives to improve access and coverage of maternal and neonatal health services [2]. The *State of the World's Midwifery Report 2014* makes a compelling case for investing in midwifery services to eliminate preventable maternal and newborn mortality and morbidity, while a recent Lancet series on midwifery showed that universal midwifery coverage for both family planning and maternal and newborn health interventions could avert 83% of all maternal, stillbirth, and neonatal deaths [2, 11]. Thus, in committing to the *Global Strategy for Women's, Children's and Adolescent's Health 2016-2030*, more countries are investing in midwives [6].

Scale-up remains particularly slow in resource-constrained settings, due to variable proficiency, education, and scope of practice [12-14], with more than 32 million of 40 million births not attended by SBAs in 2012 occurring in rural and hard-to-reach areas [15]. Increasing deliveries by SBAs requires increased access among these hard-to-reach pregnant women. Since 2006, attention has turned to developing and strengthening community midwifery (CMW) services embedded within functional community-focused health systems [16].

SBA development in FCAS

Sixty percent of preventable maternal deaths and 53% of under-five deaths globally occur in FCAS [17, 18]. Fragility is a dynamic process related to weak government institutions, unequal economic development, crises, and political conflict [19]. Despite no agreed measurement for FCAS, organisations such as the World Bank (WB) [20, 21], the Organization for Economic Cooperation and Development (OECD) [22], Fund for Peace [23], Uppsala Data Conflict Programme [24] and UK Department for International Development (DFID) [25] use similar definitions.

In addition to high maternal and newborn mortality rates, FCAS generally have inadequate health systems and weak health workforce development [4]. A well-performing health workforce is key to health system strengthening, as workforce coverage correlates with service coverage and health outcomes [26]. However, health workforce development approaches may be fragmented, nonexistent or not feasible in FCAS because of insufficient staff, political commitment, and/or financial investment [27]. In conflict-affected settings, women have reduced access to both SBAs and EmONC, due to insecurity, travel restrictions, and missing or delayed staff and services [18]. Thus, CMW investment can increase access, improving birth and other reproductive health outcomes such as family planning, and reduces the need for possibly dangerous travel in FCAS.

> *"…investing in midwifery education, with deployment to community-based services, can yield a 16-fold return on investment in terms of lives saved and costs of caesarean sections avoided*" [2].

The return on investment from educating and deploying community-based midwives appears similar to vaccination costs per death averted [28].

While increasing SBA numbers is important for increasing availability and accessibility, related deployment and retention strategies are also needed to maintain and improve coverage, quality of care, and equity [11, 29-31]. As no reviews were found that focussed on CMW workforce development in FCAS, this exploratory review contributes available data on existing initiatives.

The research question was: “What are the scope, main enablers, barriers and gaps in the available literature on CMW programmes in FCAS?”

Objectives

This study aimed to examine community midwifery programmes in FCAS. Objectives were to: (i) identify the scope and quality of available literature; (ii) describe existing CMW programmes in terms of cadres and approaches to recruitment, education, retention, and deployment of CMWs; and (iii) analyse community midwifery programme enablers and barriers in FCAS.

METHODS

Study design

A scoping literature review design was selected, adapting Arksey and O’Malley’s six-stage scoping framework: (i) identifying research questions; (ii) identifying relevant sources; (iii) selecting sources; (iv) extracting data; (v) collating, summarising, and reporting; and (vi) consulting stakeholders [32]. A scoping, rather than systematic, review was conducted to provide a preliminary assessment of the depth and breadth of available research literature and identify research gaps [33]. Source quality was appraised before data extraction, though no sources were excluded for poor methodological quality.

A ‘community midwife’ was defined by SBA functions and service location rather than title, as different names are used for this cadre. FCAS were selected using the World Bank’s harmonised list of fragile situations. As the intention was to select countries with experiences of chronic conflict and instability, only those listed for two or more years between 2010-2015 on the FCAS list and at least once between 2006-2009 on the similar Low-Income Countries Under Stress list were included. The World Bank list was adopted as a starting point due to its relatively transparent methodology and broad recognition. Additionally, selected countries were cross-checked with those listed as ‘high alert’ or ‘very high alert’ by the Fragile States Index of Fund for Peace during 2005-2015 to ensure no relevant countries were missed. Box 1 provides definitions used.

Sources

Multiple information sources were searched [32]. First, a systematic search of published literature in seven databases (i.e. Global Health, Medline, Web of Science, EMBASE, CINAHL Plus, IBSS, POPLINE) was conducted in May 2015, using terms related to community midwifery and countries in the World Bank’s harmonized list during 2010-2015 [20] to map

which FCAS had CMW programmes and identify related literature. Countries for which sources were identified were cross-checked to ensure they fit FCAS criteria when CMW programmes were implemented.

Search terms included: (Community midwi* OR SBA OR skilled attend* OR skilled birth OR midwi* OR auxiliary midwi*) AND (Afghanistan OR Bosnia Herzegovina OR Burundi OR Central African Republic OR Chad OR Comoros OR Côte d'Ivoire OR Congo (Republic) OR Congo (Democratic Republic) OR Eritrea OR Guinea OR Guinea Bissau OR Haiti OR Iraq OR Kiribati OR Kosovo OR Liberia OR Libya OR Madagascar OR Mali OR Marshall Island OR Micronesia OR Myanmar/Burma OR Palestine/West Bank and Gaza OR Sierra Leone OR Solomon Islands OR Somalia OR South Sudan OR Sudan OR Syria OR Timor-Leste OR Togo OR Tuvalu OR Yemen OR Zimbabwe). Alternative country names, “fragile,” and “conflict-affected” were also included.

Second, purposive hand-searching was conducted May-August 2015, including snowball searching of reference lists and websites. Similar key terms were used in Google Scholar, Google, and websites, e.g. WHO Reproductive Health Library, Partnership for Maternal, Newborn and Child Health, Global Health Workforce Alliance (GHWA), United Nations Population Fund (UNFPA), United Nations Children’s Fund (UNICEF), WHO, and Ministries of Health of target countries.

Third, email communications with in-country experts to fill identified gaps including cadre definitions and education curricula (see Stakeholder consultation below).

Source selection

Inclusion and exclusion criteria were agreed prior to selection (Box 2). SM screened titles, abstracts, and full-texts against inclusion criteria. Potential sources not excluded in screening were read in full against eligibility criteria and uncertainties resolved through co-author discussion.

Quality appraisal

SM assessed methodological quality of sources using the McGill University Mixed Methods Appraisal Tool Version 2011 (MMAT 2011) [34]. This tool was selected as having applicability for qualitative, quantitative and mixed-methods studies, as most sources were qualitative and mixed-methods. The MMAT tool is designed for systematic reviews that include quantitative and

qualitative components, thus allowing use of one tool for concomitantly appraising the most common empirical study types [34]. It is based on a constructionist theory and literature review, validated using feedback from experts and workshops, pilot-tested for reliability, and already used worldwide in over 50 reviews [34, 35].

The main reasons for qualitative study downgrading were poor justification of data analysis and unclear descriptions of researcher's influence. Quantitative studies were mainly downgraded for unclear descriptions of sampling representativeness. Mixed-methods studies were mainly downgraded for poor data integration. For example, one source did not describe study population or sampling strategy [36], while 7 sources only mentioned study populations as stakeholders without explaining integration strategies [37-43]. Given the limited number of relevant sources, appraisal was used to guide interpretation of findings rather than to exclude sources.

Data extraction

Data were extracted into Excel 2010 by search type (i.e. systematic, purposive hand-search), country, lead author, publication year, journal/publisher, study design, objectives, population, name and definition of cadre, limitations, and main findings within predefined themes (i.e. recruitment, selection, education, deployment, retention). SM extracted data with cross-checks by EMS and NH.

Analysis

First, the nature and distribution of included sources were collated and summarised. Second, data quality was assessed. Third, cadre definitions were described. Fourth, data were analysed thematically using deductive coding: (i) recruitment and selection, (ii) training/education, (iii) deployment, and (iv) retention. Deductive themes were chosen based on the *WHO framework for health workforce monitoring* [44] and human resources for health documents [45, 46]. Finally, inductive coding was used to identify emerging themes through repeated reading and recoding of data.

Stakeholder consultation

A stakeholder group was organised to provide feedback on preliminary results. Ten experts in community midwifery in one or more FCAS, identified from sources, were approached via email and invited to participate. Six agreed to participate within the study timeframe and provided

feedback on draft findings, additional potential sources, gaps or unexpected findings, and suggestions for policy and research recommendations that could inform the discussion.

RESULTS

Scope and quality of sources

Figure 1 shows the flow diagram of 23 sources included from 2,729 identified. First, database searches identified 2,712 potential sources, 2,687 of which did not meet inclusion criteria. Second, purposive hand-searching of citation lists, websites and personal communications identified 16 additional sources, 1 of which - from stakeholder recommendations - was included for full-text reading. Of 42 sources read in full, 19 were excluded based on eligibility criteria.

Table 1 shows that 23 literature sources comprised 9 peer-reviewed journal articles, 5 United Nations reports, 3 bilateral donor reports, 1 non-governmental organisation report, 1 consultancy report, 1 university journal article, 1 book chapter, 1 doctoral thesis, and 1 master's thesis. MMAT assessment results for each source are also provided. Sources drew from public health, public policy and social science disciplines. Though study designs and methods were not always described, 12 sources were qualitative, 6 were mixed-methods, and 5 were quantitative. Qualitative methods were primarily focus group discussions, semi-structured or in-depth interviews, observation, and document review. Quantitative methods were structured questionnaires and observation.

Table 2 summarises programme characteristics by country. CMW programmes were identified in six FCAS: Afghanistan, Mali, Somalia, South Sudan, Sudan, and Yemen. Mali has oscillated in and out of periods of instability with its FCAS categorisation debated, but was included due to entrenched socio-political inequities, ongoing violence, corruption, and potential lessons from its longstanding community midwifery programme [47]. Distribution of sources varied across countries, with Sudan best represented (8 sources), followed by Afghanistan (6 sources), Mali and Yemen (3 sources each), South Sudan (2 sources), and Somalia (1 source). Five sources were not focused on community midwives (i.e. all sources for Somalia [38] and Yemen [41-43], and 1 for South Sudan [40]), but were retained given the very limited literature on CMW programmes in these countries. Additionally, six stakeholders contributed (i.e. 2 global, 2 Sudan, 1 Mali, 1 Somalia) to address specific gaps on cadre definition, training, and accreditation.

Cadre definitions

CMW cadre definitions varied between the six countries (Table 2). Cadres in Afghanistan, Somalia and Yemen appeared to fulfil international SBA [8] and International Confederation of Midwives (ICM) professional midwife standards by being trained and legally mandated to provide the full range of basic emergency obstetric and newborn care (BEmONC) [13, 48-51]. South Sudan sources were unclear as to whether cadres met international SBA standards. Mali and Sudan sources indicated cadres did not fully meet international SBA standards, as they were not legally mandated to use manual vacuum aspiration for post abortion care [52-54]. However, they would be considered SBA for reporting purposes [54].

Afghanistan

The community midwifery education programme began in 2002, initially requiring 18 months' education that was extended to 24 months in 2010 [37, 55-59]. The curriculum followed international SBA standards, including the full range of BEmONC [49].

Mali

The rural auxiliary midwife ("*matrone*") programme began around 1970 and required 6-12 months' education. While the cadre did not fully meet international SBA standards because *matrones* lacked some requisite skills and equipment for BEmONC, *matrones* were the primary-level skilled attendants in rural areas [60, 61]. Unlike TBAs, *matrones* were trained to assess cervical progress and manually remove placentas if necessary [60, 61].

Somalia

The community midwife programme began in 2007 in Somaliland and required 24 months' education. It aimed to provide skilled attendance at home-births in rural communities by replacing TBAs. Though the single Somalia source did not specify whether this cadre met international SBA standards [38], a cross-sectional study of nine sub-Saharan African countries indicated that community midwives in Somaliland met international standards [13]. Additional correspondence with UNFPA Somalia indicated that the 24-month direct-entry training content was based on the ICM curriculum and community midwives were expected to perform BEmONC [51].

South Sudan

This new country is in a transitional period and two national programmes were identified. The community midwife programme, developed in 2006, required 18 months' education for posting to rural areas [39]. However, this cadre was replaced in 2011 by a 30-month enrolled midwives' education programme. The definition or scope of practice of an enrolled midwife was unclear, though the education curriculum appeared similar to a 3-year diploma and aligned with international SBA standards [40]. Communication with a midwifery education expert involved in programme development in South Sudan indicated education shifted to a 42-month diploma to ensure international SBA standards were fulfilled [62]. However, due to ongoing political complexities and conflict, information is fragmented and for the purpose of the review enrolled midwives were classified as not fully meeting international SBA standards due to the lack of clear cadre definitions and information.

Sudan

Midwifery education is in a transitional period with three programmes identified. A 12-month village midwife (VMW) education began in the 1960s, replacing TBA training initiated in the 1920s. This cadre did not appear to meet international SBA standards, although VMWs completed formal midwifery education at public midwifery schools [36, 63, 64]. In 2009, a 24-month midwife technician (MT) training programme replaced VMW education in some states. In 2013, CMW education began replacing both VMWs and MTs. A representative of the Sudan Federal Ministry of Health indicated that the new curriculum was aligned to ICM standards, and VMWs, MTs, and CMWs provided three of the seven recommended signal functions of BEmONC, namely administering antibiotics, manual removal of placenta, and newborn resuscitation [53]. A UNICEF Sudan source indicated CMW education was 18-20 months, while a UNFPA Sudan source indicated 15 months. Both indicated CMWs did not fulfil international SBA standards, but could not clarify why [65, 66].

Yemen

The community midwifery education programme began in 1997 as a 24-month course [42, 43], extending to 36 months in 2013 [41]. Extended training included ICM key competencies and the curriculum fulfilled international SBA standards, as confirmed by the USAID supported Maternal and Child Health Integrated Programme mapping of the curriculum to ICM standards. However, midwifery education was adversely affected by civil conflict and is largely suspended [54].

Thematic findings

Table 3 summarises coverage of four deductive themes (i.e. recruitment, education, deployment, retention) and three inductive themes (i.e. professional capacity, gender, insecurity) by source. While cadres were defined in all sources, coverage of themes varied.

Recruitment

Nomination

Nomination of community midwife candidates was linked to post-education deployment. Afghanistan, Mali, Somalia, Sudan and Yemen sources described community nomination for candidate recruitment [36, 37, 42, 43, 51, 56-61, 63, 64]. In Afghanistan and Yemen, candidates were selected from communities with health facilities lacking qualified midwives and expected to work in these health facilities on graduation [37, 42, 55-58]. In Somalia, the same strategy was used, with additional requirements to complete the training school examination and to consider balanced geographical distribution of candidates [51]. In South Sudan, nomination was unclear with enrolled midwife candidates needing to pass an entrance exam in English and mathematics [40]. Thus men could be trained in midwifery – as men were more likely to have sufficient education - which was not found in the other countries. In Sudan, local candidate nominations [63, 67], prioritising remote areas with low midwifery coverage and poor accessibility for health services [64], were described.

Other stakeholders involved in candidate selection included Ministry of Health authorities and training institutes in Afghanistan, Sudan, Yemen [36, 37, 42] and Somalia [51]. Some sources indicated nominations could be influenced by local leaders with personal, political, family, and tribal interests [37, 56, 63]. In Sudan, Eldin and Abdhalla found that this reflected reduced involvement of midwifery school management [63]. Bakheit indicated that poor distribution of VMWs was attributable to geographical and cultural factors linked to candidate selection and non-adherence to school selection criteria by some NGOs supporting VMWs [64].

Educational prerequisites

Programmes in Afghanistan, Somalia and Yemen required candidates to have at least nine years of education [38, 41, 58, 59] while Mali required eight years [60]. In South Sudan, enrolled midwives needed to have completed secondary school with an average 50% pass in science subjects, and foreign applicants (e.g. from Kenya or Ethiopia) with equivalent education were eligible. [40]. In Sudan, VMW candidates should be literate, with at least 4-6 years of schooling

preferred [36, 63], MTs should have completed secondary school [53], and sources differed as to whether community midwives should have completed basic or secondary education [65]. Personal characteristics were sometimes mentioned, e.g. in Afghanistan female gender, motivation, and willingness to adhere to community working conditions were required [57]. In Sudan, candidates must not be pregnant, breast-feeding, or become pregnant during training [53]. Preference was generally given to younger women and those who were literate or better educated.

Education

Curricula

Curricula in Afghanistan [57, 59], Somalia [51], and Yemen [41, 50], adopted and standardised ICM essential competencies for basic midwifery practice [68]. As the CMW cadre worked closely with communities, CMW education curricula in Afghanistan, Mali and Sudan included topics beyond midwifery, such as health promotion, child health, and broader reproductive health issues [37, 57, 60, 64].

In Mali, CMW education was not nationally standardised, but the *matrone*'s scope of work included all aspects of reproductive health [60]. *Matrone* responsibilities were similar to those of SBAs, although they were not authorised to conduct vacuum-assisted deliveries or aspiration following miscarriage. The lack of standardised curricula was identified as an obstacle to consistent skills and service provision [60, 61].

In South Sudan, a lack of consensus among national stakeholders (e.g. Ministry of Health, UN, NGOs, faith-based organisations, medical professionals) about the value and future of community midwifery was an obstacle to standardising the programme [39]. The enrolled midwife education curriculum was standardised in 2011 to align with ICM standards [40].

In Sudan, the CMW education curriculum was aligned to ICM educational competencies [53], while VMW and MT education curricula were not [69].

Accreditation

Educational accreditation, linked to clear performance objectives, is recommended to improve quality of care [70]. In Afghanistan, CMW education was contracted out to international and national NGOs and was accredited [58, 70], although accreditation was not always possible due to a limited number of accreditors and insecurity in some provinces [37]. In South Sudan,

several stakeholders were involved in CMW education implementation and development of the health workforce, making it difficult to gain an overview and deliver coordinated and standardised education [40]. In Sudan, sources indicated that the roles and responsibilities of key governmental stakeholders were not clearly defined, with weak coordination of midwifery strategy [69]. In Yemen, the lack of a regulatory system and licensing exam hindered assessment of the competency of graduates [41].

Capacity and sustainability

CMW education capacity was affected by the availability of funding, eligible trainers, equipment and materials, and clinical practice opportunities. Rural health facilities often lacked a strict monitoring and supervision system [56]. In Afghanistan, problems were identified with delayed materials delivery, lack of teaching skills among trainers (e.g. audio-visual aids), and insufficient numbers and capacity of trainers [58]. In Somalia, funding availability affected CMW education [51]. In South Sudan [40] and Sudan [69], a lack of qualified trainers and education materials was noted. Additionally, in South Sudan [40] and Yemen [41], limited numbers of clinical practice opportunities were noted. Sustainability was affected by dependency on external funding and technical support, with donor funding indicated as a concern in Afghanistan [58] and Sudan [64].

Deployment

Community acceptance

Community nomination of candidates was credited with facilitating community acceptance in Afghanistan, Mali, and Sudan, due to midwives' familiarity with local sociocultural contexts [36, 60, 61, 63, 67, 71, 72]. The importance of appropriate student selection, for later acceptance and retention, was highlighted in Afghanistan [56, 58].

Pre-arranged deployment

Pre-arranged deployment in source communities was linked to increased availability of midwifery services. In Afghanistan, Zainullah *et al* found pre-arranged deployment increased the likelihood of graduation and employment opportunities [59]. In Sudan, Eldin and Abdallah found 86% of midwives surveyed were deployed to source communities, but attributed this partially to increases in government employment or paid incentives [63].

Retention

Status

Reasons for leaving deployment primarily related to professional status and opportunities, including family opposition to deployment, overwhelming responsibilities beyond midwifery duties, discrimination, lack of incentives, spouse relocation, and seeking better paid/urban employment [37, 55-57, 64]. In Afghanistan and Mali, a lack of further educational opportunities was highlighted [37, 55-57, 60, 61]. In Afghanistan and Sudan, poor professional status weakened retention [56, 58] [63]. Afghan community midwives were excluded from the civil service for insufficient educational attainment, which caused frustration [56, 58]. Sudan's VMWs were similarly excluded from government employment or incentives system, though this may be changing [63]. Discrimination by health system colleagues, due to CMWs relatively low perceived professional status, was reported as contributing significantly to attrition in Afghanistan, Mali, and Sudan [56, 58, 60, 61, 63]. In Afghanistan and South Sudan, lack of a post-deployment tracking system weakened support and follow-up [37, 39].

Health system and socio-cultural support

Poor professional status heightened CMW perceptions of isolation and lack of health-system support after deployment [37, 56, 63, 64]. In Mali, *matrones'* supervision and evaluation were not included in Ministry documents [60], while supervisory provision without external support was identified as difficult [61]. In Sudan, limited supervisory capacity challenged supportive supervision of VMWs, despite recognised benefits for graduate capacity and motivation [63].

Community-level support also varied. In Afghanistan and South Sudan, ethnicity, language, and tribal differences affected community support [56, 62]. In Mali, while visiting *matrones* might be treated with more respect as guests and a local *matrone* might attract jealousy because of her independence, *matrones* were generally treated respectfully by communities [71]. In South Sudan, language and culture were barriers for midwives from outside communities [39]. In Sudan, midwives who broke traditional codes could face work difficulties [36].

Midwifery capacity

Capacity reflects midwives' performance and therefore the quality of their education and training. While midwifery capacity assessment is an important measure of service and education quality, only seven sources measured this [58, 59, 63, 67, 72-74]. In Afghanistan, assessment of community midwives' capacity (i.e. diagnosis and management of pre-eclampsia/eclampsia, partograph use, manual removal of placentas, manual vacuum aspiration, shock management, and newborn resuscitation), demonstrated a mean competency score higher than that of hospital-based midwifery graduates [59]. In Sudan, Bella and Ebrahim

reported VMWs were competent in identifying referral cases such as postpartum haemorrhage [67]. Altigani reported VMWs were competent in referral and antenatal care [72]. Eldin and Abdallah reported VMWs were competent in identifying obstructed labour and main causes of maternal death, and providing family planning [63]. In contrast, FMOH and UNICEF found unsatisfactory VMW knowledge and skills [73], while Elshiekh *et al*. found VMWs to be weak in identification, management and referral of complications [74]. As studies covered different time-periods, locations, and populations with different methodologies, results cannot be generalised but are valuable in providing an indication of their capacities.

Gender

Gender issues included educational disparities and empowerment [75]. Girls and women appeared to have relatively limited educational opportunities in FCAS, particularly in rural areas [75]. In Afghanistan and Sudan, CMW candidate eligibility was problematic because of women's limited access to education [37, 53, 56, 58, 66, 69]. However, CMW education could become an opportunity for girls with limited educational prospects, as noted in Afghanistan, Mali, and Yemen [42, 56, 60].

Receiving education and an independent income was noted as contributing to women's empowerment and improved social status [42, 57, 58, 60, 61]. In Afghanistan, a formal CMW programme elevated women's health needs in communities [57, 58]. In Mali, *matrones* became role models for balancing work and domestic duties and contributed to reducing gender inequality in rural communities, e.g. by referring women to hospital [60, 61]. In South Sudan, admitting male candidates into a female-dominated profession in response to human resource shortages may have indirectly negated opportunities to improve women's education and socioeconomic status within communities [40]. For example, some male midwifery students, many of them former soldiers, behaved disrespectfully towards women trainers [40].

Insecurity

Insecurity was an overarching barrier to community midwives recruitment and retention in FCAS [39, 56, 63]. In Afghanistan, civil insecurity was a key barrier, especially in Taliban-surrounded areas in which CMWs could not work or travel freely to women's homes. Insecurity also limited the availability of appropriate candidates and trainers [56]. In South Sudan, insecurity undermined deployment in rural areas, particularly because incentives and support strategies were not provided [39]. In Sudan, insecurity was noted as particularly difficult for supportive supervision [63].

DISCUSSION

Source availability and quality

Sources describing community midwifery only included six of 35 eligible countries and territories. This is probably because the cadre is still rare in FCAS, though lack of English-language data may have played a role. Additionally, as FCAS have no standardised definition, this initial review was intentionally conservative and other countries could be included in future research by using broader criteria. It is perhaps unsurprising that 25 eligible FCAS (71%) were among *Countdown to 2015's* 75 highest-burden countries for maternal, newborn, and child survival, including all six of the FCAS in this review.

Data quality was relatively weak, with only three of 23 sources fulfilling all MMAT criteria. However, despite these methodological limitations (e.g. insufficient justification or description of data analysis strategy, researcher influence, sampling representativeness, data integration), all sources provided relevant data [76]. More research is clearly needed to support CMW policies and practice in these challenging settings, which requires additional donor attention and support as robust research remains difficult due to insecurity and resource limitations.

Definitional issues

This initial attempt at mapping whether programmes achieved international SBA standards was difficult given data and definitional constraints. This review found different descriptors and capacities for community midwives. Although all received formal midwifery education, content and skills were not consistent across countries. While community midwives in Afghanistan, Somalia and Yemen appeared to meet international SBA standards fully, those in Mali, South Sudan and Sudan did not. However, as some experts noted, international SBA standards are complex (e.g. does accreditation depend primarily on being able to conduct emergency obstetric care?) and sometimes contested within countries [13, 14]. Usage of 'birth with SBA' as a key MDG5 indicator encouraged inclusion of non-standard midwifery cadres by some countries, further confusing the issue.

Given the diversity of settings, it may not be effective to standardise cadre definitions and technical capacities across countries. Development of CMW cadres differed according to country contexts and simple comparisons miss this complexity. Midwives' roles and responsibilities were based on the legal and regulatory frameworks of each country's health system. To achieve international SBA standards, a midwife must be competent in essential

skills defined by the ICM (e.g. detection of complications, timely first-line treatment and referral for postpartum haemorrhage) [68], but these may be restricted depending on resources and an enabling environment in individual countries (e.g. performance of manual vacuum aspiration). Thus, at a minimum, CMWs should be competent in life-saving skills [62]. However, working in communities should not mean compromising quality or being perceived as less-qualified [16], and prioritising availability should not override quality and professionalism by assuming these will automatically follow later [77].

Addressing barriers and enablers

Major barriers and enablers found in recruitment, education, deployment, and retention of CMWs were not solely related to human resources management, but more broadly to health system, sociocultural, and security contexts.

Recruitment

The major recruitment barrier was finding sufficient candidates who met minimal educational criteria and were willing to work in rural areas. This will remain a barrier until educational attainment is improved in all countries. This could be improved in some cases by recruiting qualified foreigners (e.g. South Sudan). However, stakeholders noted considerable distrust of outsiders among communities, whether foreign or from different ethnic groups, and local recruitment and deployment seems preferable [62].

A key recruitment enabler was involving communities in candidate selection for deployment in source communities. This was identified as increasing community acceptance, as midwives were already familiar within the local sociocultural context. WHO recommends enrolling rural students and educating them close to their communities to improve service-user access and health-worker retention in remote and rural areas [78]. However, this requires appropriate student selection and transparent recruitment processes to ensure equity and confidence in the selection process.

Education

Major education barriers, in addition to funding and political will, were standardisation of curricula, qualifications and skills of trainers, and sufficient follow-up for supportive supervision and monitoring post-graduation. Standardisation of education curricula is greatly needed but must meet the criteria of the cadre in each country [11]. Even if education curricula are standardised, education quality cannot be standardised without appropriate materials and

trainers. More efforts are needed, to improve midwifery education curricula and provide qualified trainers and supportive, sufficiently equipped learning environments.

A major education enabler was implementation proximal to rural communities. This helped candidates build or maintain community ties and understand their working context.

Deployment and retention

Major retention barriers were insufficient supportive supervision by experienced midwives, delayed or insufficient provision of necessary equipment and supplies, poorly functioning referral systems, lack of continuing education opportunities, and contested or undervalued professional status [11]. Each of these barriers needs additional financial and technical investment to strengthen both new workforces and enabling environments.

A retention enabler, as with recruitment, was community-linked deployment. Such deployment can contribute to building resilience among women and communities during the transition from humanitarian emergency to sustainable development [6, 57]. Recruitment from communities was expected to increase retention in five of the six FCAS. Government employment and/or paid incentives could also increase retention. However, research is needed to determine the effectiveness of these approaches.

Gender and insecurity

The major gender equity barrier was patriarchal social structures in FCAS, which necessitated male approval and buy-in for programme success. A related enabler was the perceived beneficial sociocultural influence of community midwifery within traditional patriarchal societies. In Afghanistan, Mali, and Yemen, sources indicated community midwifery could provide new opportunities among women for further education and an independent income, thus improving women's status in families and society. However, findings need cautious interpretation as analysing sociocultural influence was not a primary objective among sources. Further research could provide insight into indirect gains of community midwifery.

Insecurity was an obvious barrier from recruitment through retention. Insecurity challenges selection of appropriate candidates, as many are displaced or migrate. It challenges CMW education, as students and trainers are at risk. It challenges deployment and retention, as high-risk areas remain underserved. A potential enabler is the contribution of equitable health services to state legitimacy, as discussed by Haar and Rubenstein [79]. Further research on

coping with insecurity and testing innovative models of community-based midwifery services is vital to inform a strategy for improving access in situations of complex insecurity.

Limitations

This review has several limitations. First, time-limited purposive hand-searching may not have captured all sources. Second, including only English sources excluded potentially important Arabic and French sources. Third, data on cadres, curricula, capacity, and responsibilities were insufficient and further research is necessary to investigate knowledge gaps. Fourth, demand-side research on service-user accessibility and acceptability is needed to interpret overall effectiveness. Fifth**,** this review did not exclude sources due to quality, and findings should be interpreted accordingly. Sixth, the uniqueness of each country in terms of fragility, health system, and political economy factors must be considered when interpreting or applying findings. For example, the lack of a standard FCAS definition means other countries (e.g. Nigeria, Pakistan) could have been included if different criteria were applied and this review took an intentionally conservative approach. Further research could expand the countries included. Lastly, rapid and disruptive change can occur within FCAS so that older literature no longer fits current realities and is primarily useful for historical insight.

Conclusion

This review summarises available literature on community midwifery in FCAS. International efforts to standardise SBAs were not apparent in the CMW programmes included, as simple comparisons across countries were hampered by the diversity of contexts. Providing international-standard midwifery services to rural and remote areas is important for improving health equity in FCAS and other low-resource settings, bringing services closer to women as needed to achieve SDGs. However, it is not always feasible, and less-skilled and under-equipped providers are often called upon to respond to urgent midwifery needs. The limited available sources indicate more research is needed on candidate recruitment, educational standardisation, linking recruitment and deployment, and supporting retention in fragile settings.

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CONFLICT OF INTEREST

None declared.

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Boxes and tables

Box 1. Key definitions used in this review

Term	Definition
Community midwife	Midwifery service provider who is nationally recognised as a skilled birth attendant, has successfully completed formal midwifery education, and is deployed to a rural or underserved area
Community midwifery programme	A formal midwifery service provided through the health system at community level, e.g. government primary healthcare facility, private/NGO health clinic, or family home [16]
Fragile and conflict-affected	Countries or territories in which formal government cannot or will not deliver core functions to the majority of people, "FCAS implies both overt crisis (e.g. organised conflict, violent disruption of socio-political processes) and latent fragmentation (e.g. contested political settlement, state predation, failure to ensure basic rights and services). Net effects include loss of regime legitimacy, control of the use of force and provision of security, and inability or unwillingness to provide for basic livelihood conditions" [80]
Midwife	An accredited healthcare professional who has successfully completed a nationally-recognised midwifery course and acquired the qualifications to be registered and/or legally licensed to practice midwifery [81]
Skilled birth attendant	An accredited health professional (e.g. midwife, doctor) with the requisite training and skills for normal uncomplicated pregnancies, childbirth and the immediate postnatal period and able to identify, manage, and refer complications in women and newborns [8]
Traditional birth attendant	Traditionally independent of the formal health system, non-formally trained, community-based provider of pregnancy, childbirth and postnatal care [8]

Box 2. Eligibility criteria

Inclusion criteria	Exclusion criteria
• Published in/after 1980; • Country included for at least two years in WB harmonized list of fragile situations during FY08-15; • Discussion of community midwifery cadre; • Published peer-reviewed journal article; unpublished academic thesis, technical report; • Written in English or English abstract available.	• Published before 1980; • Country not considered fragile by at least two int'l sources at the time of midwifery programme inception; • Discussion only includes TBAs or CHWs who received some midwifery education; • Insufficient data to map out either cadre definition, recruitment and selection, education, or deployment and retention; • Data not disaggregated by community midwife cadre; • Not primary or secondary research, assessment or evaluation-based (e.g. personal experience, advocacy, descriptive literature). • Conference abstract without full text available; • Programme report or other document duplicating an included peer-reviewed source; • No English abstract available.

Table 1. Sources by country, summarising type, study design, and quality appraisal

Lead author, year	Source type	Study design	MMAT* score
Afghanistan			
Mansoor, 2013 [46]	Peer-reviewed article	Cross-sectional	∗ ∗ ∗
Mohmand, 2013 [33]	Technical report	Not described	∗ ∗
Speakman, 2014 [48]	Peer-reviewed article	Case study	∗ ∗ ∗
Turkmani, 2013 [49]	Peer-reviewed article	Not described	∗ ∗ ∗
Wood, 2013 [47]	Peer-reviewed article	Qualitative assessment	∗ ∗ ∗
Zainullah, 2014 [50]	Peer-reviewed article	Not described	∗ ∗ ∗
Mali			
Hurley, 2014 [65]	Peer-reviewed article	Embedded design	∗ ∗ ∗ ∗
Warren, 2007 [51]	PhD thesis	Interpretative phenomenology	∗ ∗ ∗ ∗
Warren *et al*, 2013 [52]	Peer-reviewed article	Interpretative phenomenology	∗ ∗ ∗ ∗
Somalia			
Sorbye, 2009 [34]	Technical report	Not described	∗ ∗
South Sudan			
Evans, 2010 [35]	Technical report	Not described	∗ ∗
Tveit, 2014 [36]	Technical report	Not described	∗ ∗
Sudan			
Altigani, 1992 [66]	Peer-reviewed article	Not described	∗ ∗
Bakheit, 2013 [55]	MD thesis	Cross-sectional descriptive	∗ ∗
Bella, 1984 [32]	Book chapter	Not described	∗
Bella & Ebrahim, 1984 [60]	Peer-reviewed article	Not described	∗ ∗ ∗
Eldin,2011 [54]	Technical report	Not described	∗ ∗
Elshiekh *et al,* 2009 [68]	University journal article	Cross-sectional descriptive	∗ ∗ ∗
FMOH, 2006 [67]	Technical report	Not described	∗ ∗ ∗
Mustafa, 2012 [63]	Technical report	Not described	∗ ∗
Yemen			
MCHIP, 2012 [37]	Technical report	Not described	∗ ∗
Pathfinder Int'l, 2011 [38]	Project evaluation report	Not described	∗ ∗
Perla, 2009 [39]	Project evaluation report	Not described	∗ ∗

NB: ∗ ∗ ∗ ∗ All criteria met; ∗ ∗ ∗ 75% of criteria met; ∗ ∗ 50% of criteria met; ∗ 25% of criteria met.

Table 2. Characteristics of community midwifery programmes in 6 FCAS

Content	Afghanistan	Mali	Somalia	South Sudan		Sudan			Yemen
Name of cadre	CMW	*Matrone* (Auxiliary midwife)	CMW	CMW	Enrolled midwife	Village midwife	Midwife technician	CMW	CMW
Meets int'l SBA standards	Yes	Above TBA but below international standard SBA	Yes	Above TBA but below international standard of SBA	Above TBA but SBA definition Is unclear	Above TBA but below international standard of SBA	Above TBA but below international standard of SBA	Above TBA but below international standard of SBA	Yes
Year started	2002	1970	2007 (Somaliland)	2006	2011	1960s	2009	2013	1997
Recruitment	Community nomination	Community nomination	Community nomination	-	Exam only	Community nomination	Community nomination	Community nomination	Community nomination
Education criteria	9 years	8 years	9 years	-	Complete secondary school	Literate (pref 4-6 years education)	Complete secondary school	Complete primary school	9 years
Training duration	18mo, extended to 24mo in 2010	6-12mo (Koutiala district data)	24mo	18mo	30mo	12mo	24mo	15-20mo	24mo, extended to 36mo in 2012
Curriculum	Standardised; used ICM	Nonstandard	Standardised; aligned to ICM	-	Standardised	Standardised	Standardised	Standardised; aligned to ICM	Standardised; used ICM
Deployment	Rural health facility with intensive outreach and home-based services	Small maternal health centre, rural health centre or community clinic in village	Maternity home or primary facility in rural/ underserved communities	Health facility at community level (e.g. state or county hospital, health centre, primary health unit)		Rural/ underserved communities	Primary facility or rural/ underserved communities		Rural/ underserved communities and some private clinics

Note1: Summarises information from literature, references, and stakeholder sources.
Note2: In Somaliland, these are "Basic midwife" or "Qualified midwife".
Note3: In South Sudan, the definition of enrolled midwife is unclear although the curriculum is similar to the 3-year diploma in midwife training aligned to international SBA standards.

Table 3. Theme coverage by country and source

Country	*A priori* themes				Emergent themes		
Lead author, year	**Cadre defined**	**Recruitment**	**Training**	**Deployment**	**Capacity**	**Gender**	**Insecurity**
Afghanistan							
Mansoor, 2013 [46]	✓	✓	✓	✓		✓	✓
Mohmand, 2013 [33]	✓	✓	✓	✓		✓	✓
Speakman, 2014 [48]	✓	✓	✓	✓		✓	✓
Turkmani, 2013 [49]	✓	✓	✓	✓	✓	✓	✓
Wood, 2013 [47]	✓	✓	✓	✓		✓	✓
Zainullah, 2014 [50]	✓		✓	✓	✓		
Mali							
Hurley, 2014 [65]	✓			✓		✓	
Warren, 2007 [51]	✓	✓	✓	✓		✓	
Warren *et al*, 2013 [52]	✓	✓	✓	✓		✓	
Somalia							
Sorbye, 2009 [34]	✓	✓	✓				
South Sudan							
Evans, 2010 [35]	✓		✓	✓		✓	✓
Tveit, 2014 [36]	✓	✓	✓	✓		✓	✓
Sudan							
Altigani, 1992 [66]	✓			✓	✓		
Bakheit, 2013 [55]	✓	✓	✓	✓		✓	
Bella, 1984 [32]	✓	✓	✓	✓		✓	
Bella & Ebrahim, 1984 [60]	✓				✓		
Eldin, 2011 [54]	✓	✓	✓	✓	✓	✓	✓
Elshiekh *et al*, 2009 [68]	✓				✓		
FMOH, 2006 [67]	✓				✓		
Mustafa, 2012 [63]	✓	✓	✓	✓	✓	✓	
Yemen							
MCHIP, 2012 [37]	✓		✓				
Pathfinder Int'l, 2011 [38]	✓	✓	✓			✓	
Perla, 2009 [39]	✓	✓	✓			✓	

Figure 1. Flow diagram of literature search