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[Qualitative Review]

Factors that influence the provision of intrapartum and postnatal care by skilled birth attendants in low- and middle-income countries: a qualitative evidence synthesis

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ABSTRACT

Background

In many low- and middle-income countries women are encouraged to give birth in clinics and hospitals so that they can receive care from skilled birth attendants. A skilled birth attendant (SBA) is a health worker such as a midwife, doctor, or nurse who is trained to manage normal pregnancy and childbirth. (S)he is also trained to identify, manage, and refer any health problems that arise for mother and baby. The skills, attitudes and behaviour of SBAs, and the extent to which they work in an enabling working environment, impact on the quality of care provided. If any of these factors are missing, mothers and babies are likely to receive suboptimal care.

Objectives

To explore the views, experiences, and behaviours of skilled birth attendants and those who support them; to identify factors that influence the delivery of intrapartum and postnatal care in low- and middle-income countries; and to explore the extent to which these factors were reflected in intervention studies.

Search methods

Our search strategies specified key and free text terms related to the perinatal period, and the health provider, and included methodological filters for qualitative evidence syntheses and for low- and middle-income countries. We searched MEDLINE, OvidSP (searched 21 November 2016), Embase, OvidSP (searched 28 November 2016), PsycINFO, OvidSP (searched 30 November 2016), POPLINE, K4Health (searched 30 November 2016), CINAHL, EBSCOhost (searched 30 November 2016), ProQuest Dissertations and Theses (searched 15 August 2013), Web of Science (searched 1 December 2016), World Health Organization Reproductive Health Library (searched 16 August 2013), and World Health Organization Global Health Library for WHO databases (searched 1 December 2016).

Factors that influence the provision of intrapartum and postnatal care by skilled birth attendants in low- and middle-income countries: a qualitative evidence synthesis (Review)

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Selection criteria

We included qualitative studies that focused on the views, experiences, and behaviours of SBAs and those who work with them as part of the team. We included studies from all levels of health care in low- and middle-income countries.

Data collection and analysis

One review author extracted data and assessed study quality, and another review author checked the data. We synthesised data using the best fit framework synthesis approach and assessed confidence in the evidence using the GRADE-CERQual (Confidence in the Evidence from Reviews of Qualitative research) approach. We used a matrix approach to explore whether the factors identified by health workers in our synthesis as important for providing maternity care were reflected in the interventions evaluated in the studies in a related intervention review.

Main results

We included 31 studies that explored the views and experiences of different types of SBAs, including doctors, midwives, nurses, auxiliary nurses and their managers. The included studies took place in Africa, Asia, and Latin America.

Our synthesis pointed to a number of factors affecting SBAs' provision of quality care. The following factors were based on evidence assessed as of moderate to high confidence. Skilled birth attendants reported that they were not always given sufficient training during their education or after they had begun clinical work. Also, inadequate staffing of facilities could increase the workloads of skilled birth attendants, make it difficult to provide supervision and result in mothers being offered poorer care. In addition, SBAs did not always believe that their salaries and benefits reflected their tasks and responsibilities and the personal risks they undertook. Together with poor living and working conditions, these issues were seen to increase stress and to negatively affect family life. Some SBAs also felt that managers lacked capacity and skills, and felt unsupported when their workplace concerns were not addressed.

Possible causes of staff shortages in facilities included problems with hiring and assigning health workers to facilities where they were needed; lack of funding; poor management and bureaucratic systems; and low salaries. Skilled birth attendants and their managers suggested factors that could help recruit, keep, and motivate health workers, and improve the quality of care; these included good-quality housing, allowances for extra work, paid vacations, continuing education, appropriate assessments of their work, and rewards.

Skilled birth attendants' ability to provide quality care was also limited by a lack of equipment, supplies, and drugs; blood and the infrastructure to manage blood transfusions; electricity and water supplies; and adequate space and amenities on maternity wards. These factors were seen to reduce SBAs' morale, increase their workload and infection risk, and make them less efficient in their work. A lack of transport sometimes made it difficult for SBAs to refer women on to higher levels of care. In addition, women's negative perceptions of the health system could make them reluctant to accept referral.

We identified some other factors that also may have affected the quality of care, which were based on findings assessed as of low or very low confidence. Poor teamwork and lack of trust and collaboration between health workers appeared to negatively influence care. In contrast, good collaboration and teamwork appeared to increase skilled birth attendants' motivation, their decision-making abilities, and the quality of care. Skilled birth attendants' workloads and staff shortages influenced their interactions with mothers. In addition, poor communication undermined trust between skilled birth attendants and mothers.

Authors' conclusions

Many factors influence the care that SBAs are able to provide to mothers during childbirth. These include access to training and supervision; staff numbers and workloads; salaries and living conditions; and access to well-equipped, well-organised healthcare facilities with water, electricity, and transport. Other factors that may play a role include the existence of teamwork and of trust, collaboration, and communication between health workers and with mothers. Skilled birth attendants reported many problems tied to all of these factors.

PLAIN LANGUAGE SUMMARY

What factors influence the delivery of care by skilled birth attendants in low- and middle-income countries?

Review aim

Factors that influence the provision of intrapartum and postnatal care by skilled birth attendants in low- and middle-income countries: a qualitative evidence synthesis (Review) 2

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The aim of this Cochrane synthesis of qualitative evidence was to identify factors that influence the provision of care by skilled birth attendants. To answer this question, we searched for and analysed qualitative studies of skilled birth attendants' views, experiences, and behaviour.

This synthesis complements another Cochrane Review assessing the effect of strategies to promote women's use of healthcare facilities when giving birth.

Key messages

Many factors influence the care that skilled birth attendants provide to mothers during childbirth. These include access to training and supervision; staff numbers and workloads; salaries and living conditions; and access to well-equipped, well-organised healthcare facilities with water, electricity, and transport. Other factors that may play a role include the existence of teamwork, trust, collaboration, and communication between health workers and with mothers. Skilled birth attendants reported many problems tied to these factors.

What did we study in the synthesis?

In low- and middle-income countries, many mothers still die during childbirth. Women are encouraged to give birth in health facilities rather than at home so they can receive care from skilled birth attendants. A skilled birth attendant is a health worker such as a midwife, doctor, or nurse who is trained to manage a normal pregnancy and childbirth, and refer the mother and newborn when complications arise.

By exploring skilled birth attendants' views, experiences, and behaviour, this synthesis aimed to identify factors that can influence their ability to provide quality care.

Main findings

We included 31 studies conducted in Africa, Asia, and Latin America. Participants were skilled birth attendants including doctors, midwives, nurses, auxiliary nurses and their managers.

Our synthesis pointed to several factors that affected skilled birth attendants' provision of quality care. The following factors are based on evidence assessed as of moderate to high confidence. Skilled birth attendants reported that they sometimes had insufficient training during their education or after they had begun work. Where facilities lacked staff, skilled birth attendants' workloads could increase, it could become difficult to provide supervision, and mothers could receive poorer care. In addition, skilled birth attendants did not always believe that their salaries and benefits reflected their tasks and responsibilities and the personal risks they undertook. Together with poor living and working conditions, these issues could lead to stress and affect skilled birth attendants' family life. Some skilled birth attendants felt that managers lacked capacity and skills, and they felt unsupported when their workplace concerns were not addressed.

Possible causes of staff shortages included problems with hiring and assigning health workers to health facilities; lack of funding; poor management and bureaucratic systems; and low salaries. Skilled birth attendants and their managers suggested factors that could help recruit, keep, and motivate health workers, and improve the quality of their work; these included good-quality housing, allowances for extra work, paid vacations, continued education, proper assessments of their work, and rewards.

Skilled birth attendants' ability to provide quality care was also limited by a lack of equipment, drugs, and supplies; blood and the infrastructure to manage blood transfusions; electricity and water supplies; and adequate space and amenities on maternity wards. These factors were seen to reduce skilled birth attendants' morale, increase their workload and infection risk, and make them less efficient in their work. A lack of transport sometimes made it difficult for skilled birth attendants to refer women to higher levels of care. In addition, women's negative perceptions of the health system could make them reluctant to accept referral.

We identified some other factors that also may have affected the quality of care, which were based on findings assessed as of low or very low confidence. Poor teamwork and lack of trust and collaboration between health workers appeared to negatively influence care. In contrast, good collaboration and teamwork appeared to increase skilled birth attendants' motivation, their decision-making abilities, and the quality of care. Skilled birth attendants' workloads and staff shortages influenced their interactions with mothers. In addition, poor communication undermined trust between skilled birth attendants and mothers.

How up-to-date is this review?

We searched for studies published before November 2016.

SUMMARY OF FINDINGS FOR THE MAIN COMPARISON *[Explanation]*

Summary of review finding	Studies contributing to the review finding	CERQual assessment of confidence in the evidence	Explanation of CERQual assessment
SOCIOCULTURAL			
Sociocultural barriers sometimes hindered mothers from receiving care in hospitals. For instance, women preferred not to be examined by male health providers, or for cultural reasons preferred a particular position in which to deliver, or for religious reasons did not divulge information that was needed for their care	Blum 2006 ; Khalaf 2009 ; Thorsen 2012	Low confidence	Due to moderate concerns about adequacy; and moderate concerns about relevance
PROFESSIONAL ASSOCIATIONS			
Health workers had conflicting views on the role of professional councils. For instance, some viewed professional councils as advocates for their members, while others viewed them as a regulatory body with punitive functions	VSO 2012	Very low confidence	Due to moderate concerns about methodological quality; and moderate concerns about relevance; and severe concerns about adequacy
HUMAN RESOURCES			
Staff shortage was a widely reported problem and led to increased workloads, which in turn compromised quality of care. For instance, heavy workload limited health worker time for history taking and thorough assessment of women, and hand hygiene was sometimes compromised. Staff shortages and work overload jeopardised health workers' ability to provide timely care, and manage routine care as well as emergency cases. In addition, shortage of staff some-	Afsana 2001 ; Anwar 2009 ; Barua 2011 ; Bradley 2009 ; Conde-Agudelo 2008 ; Frånngård 2006 ; Fujita 2012 ; Graner 2010 ; Hassan-Bitar 2011 ; Ith 2012 ; Khalaf 2009 ; Lugina 2001 ; Maputle 2010 ; Mathole 2006 ; Mondiwa 2007 ; Spangler 2012 ; Thorsen 2012 ; VSO 2012	Moderate confidence	Due to minor concerns about coherence; and minor concerns about methodological limitations

times led health workers to exceed their scope of practice, and influenced a health facility's ability to provide 24-hour care		
A lack of specialists or experienced staff, including absence of health workers with key skills such as anaesthetists, influenced the provision of care and supervision of junior staff. When no specialists were available, some tasks such as emergency obstetric care were not delivered at all, or tasks were transferred to health workers who were not properly qualified or trained to deliver them. When senior experienced health workers were not available, junior health workers lacked supervision	Afsana 2001 ; Anwar 2009 ; Blum 2006 ; Bradley 2009 ; De Brouwere 2009 ; Fränngård 2006 ; Hassan-Bitar 2011 ; Khalaf 2009 ; Penfold 2013 ; Pitchforth 2010 ; Spangler 2012 ; VSO 2012	Moderate confidence Due to moderate concerns about methodological limitations
Health workers had vague job descriptions that sometimes led them to perform tasks that were beyond their expertise or scope of practice	Bradley 2009	Very low confidence Due to minor concerns about methodological limitations; and serious concerns about relevance and adequacy
Staff shortages and work overload could jeopardise health workers' ability to display support, empathy, and friendliness to women in labour	Conde-Agudelo 2008 ; Maputle 2010 ; VSO 2012	Very low confidence Due to minor concerns about methodological limitations; and moderate concerns about relevance and adequacy
Staff shortages and increased workload, as well as living and work conditions, sometimes caused stress and frustration, affected health workers' family life, and led to concerns about personal safety	Anwar 2009 ; Blum 2006 ; Fränngård 2006 ; Graner 2010 ; Lester 2003 ; VSO 2012	Moderate confidence Due to moderate concerns about methodological limitations; and minor concerns about relevance and adequacy
A wide range of interlinked reasons for staff shortages were suggested. These included limited funds to recruit health workers; bureaucratic processes of the recruitment process, e.g. absence of committees	Anwar 2009 ; Graner 2010 ; Molina 2011 ; Pitchforth 2010 ; VSO 2012	Moderate confidence Due to moderate concerns about adequacy; and minor concerns about relevance and methodological limitations

<p>responsible for recruitment at the district level; scarcity of health workers especially in rural areas; and other factors that deterred retention of health workers (see finding on factors affecting recruitment, Table 9). In addition, institutional arrangements, e.g. when health facilities hired contract staff in order to reduce labour costs, and inefficient deployment of available staff sometimes created staff shortages. Facilities with staff shortages and work overload were viewed as unattractive places to work, and made it difficult for managers to transfer staff from well-served to underserved areas, thus compounding/increasing the problem</p>		
<p>Health workers' salaries and benefits were considered insufficient for the work done, the responsibility and personal risk, and the additional responsibilities assigned, e.g. through informal task-shifting. In addition, salaries were insufficient for their personal needs, e.g. to send their children to school and for transport costs to visit their husbands.</p> <p>Low salaries and incentives sometimes led to a lack of motivation and poor performance, absenteeism, and increased rates of dual practice</p>	<p>Anwar 2009; Belizan 2007; De Brouwere 2009; Fränngård 2006; Graner 2010; Hassan-Bitar 2011; Ith 2012; Molina 2011</p> <p>Moderate confidence</p>	<p>Due to moderate concerns about methodological limitations; and minor concerns about relevance and adequacy</p>
<p>Factors reported by health workers or their managers to influence recruitment, retention, motivation, or performance of health workers were: good-quality accommodation for health workers provided by government, allowances for extra project-re-</p>	<p>Anwar 2009; Bradley 2009; De Brouwere 2009; Fränngård 2006; Hassan-Bitar 2011; Ith 2012; VSO 2012</p> <p>Moderate confidence</p>	<p>Due to minor concerns for methodological limitations and relevance</p>

lated work, paid vacations for 1 month of the year, improved access to and funding for continued education/in-service training, career progression, non-biased evaluations or performance-related rewards or promotions, e.g. for those doing better, working longer, or taking on added responsibilities, and verbal recognition by supervisors and management. The following factors were reported as discouraging health workers from working in rural or remote health facilities: facilities that lacked good equipment and did not provide sufficient work needed to maintain clinical skills, lack of family amenities, limited opportunities for private practice, lack of electricity, TV, or internet, coupled with poor roads and lack of transport deterred health workers from undertaking rural employment. In addition, interference in treatment decisions by local politicians and mismanagement of posting and transfer from the national level were demotivating to health workers working in rural facilities

Health workers perceived managers as lacking in management capacity and skills and sometimes felt unsupported. Health workers also complained that concerns about the workplace were sometimes left unheard, and no solutions or feedback given

Helping women access financial assistance for out-of-pocket payments was sometimes time-consuming for health workers

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Anwar 2009 ; Bradley 2009 ; Ith 2012 ; Lester 2003 ; Mondiwa 2007 ; VSO 2012	Moderate confidence	
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Pitchforth 2006	Very low confidence	
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		Due to moderate concerns about relevance; and minor concerns about methodological limitations and adequacy
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		Due to serious concerns about relevance and adequacy
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HEALTH WORKER EDUCATION AND TRAINING			
<p>Inadequate pre-service and in-service training sometimes limited health workers' skills and ability to provide care. For instance, some health workers lacked training to attend home births or manage complicated pregnancies or deliveries, e.g. eclampsia or HIV in pregnancy. In contrast, training allowed midwives to practice assisting women to deliver in non-supine positions and enabled them to get accustomed to this practice</p>	<p>Afsana 2001; Barua 2011; Blum 2006; DeMaria 2012; Fujita 2012; Graner 2010; Lester 2003; Mathole 2006</p>	<p>High confidence</p>	<p>-</p>
<p>Health worker competencies and opportunities for on-the job training were sometimes limited by poor scheduling of in-service education sessions, high cost of continuing education for health workers, inequitable selection for professional development opportunities, lack of ongoing training and follow-up, and shortage of instructors for upgrading courses. In addition, the variation in quality of pre-service training resulted in varying levels of need for in-service training, and these needs were not always met, resulting in wide variation in proficiency among health workers</p>	<p>Fränngård 2006; Ith 2012; Pettersson 2006; Spangler 2012</p>	<p>Moderate confidence</p>	<p>Due to minor concerns about methodological limitations and relevance; and moderate concerns about adequacy</p>
<p>Learning through practical application facilitated acquisition of skills and confidence. The experience gained through, for example, internship, social service year, and working in the community, was identified as important for building doctors' and midwives' practical experience and confidence in providing care</p>	<p>DeMaria 2012</p>	<p>Very low confidence</p>	<p>Due to moderate concerns about methodological limitations and relevance; and severe concerns about adequacy</p>

<p>Health workers reported several barriers to implementing recommended practice. Firstly, health workers were sometimes unaware of current recommended effective practices. Secondly, health workers' flexibility, attitudes, and beliefs about medical knowledge and skills sometimes influenced their receptivity to new practice knowledge. For example, health worker attitudes did not view medical education as dynamic; held beliefs that no significant progress had been made and clinical practice was similar to techniques learnt many years ago; or were not flexible or willing to implement alternative positions of delivery, even though these were preferred by women</p>	<p>Conde-Agudelo 2008; Pettersson 2006; Pitchforth 2010 Low confidence</p>	<p>Due to moderate concerns about relevance and adequacy</p>
<p>Lack of time, infrastructure, and skills limited health workers' ability to seek knowledge and practice new clinical skills. For instance, chronic staff shortages meant less time available for health workers to seek information. This was sometimes further compounded by lack of information sources such as internet access, and poorly resourced hospital libraries. In addition, lack of training and skills in networking, epidemiology, research appraisal, or critical thinking about clinical practice limited health workers' awareness and receptivity to clinical practice changes, and this lack of skills led some professionals to prefer old, familiar procedures</p>	<p>Afsana 2001; Belizan 2007; Conde-Agudelo 2008; Lugina 2001 Low confidence</p>	<p>Due to moderate concerns about relevance and adequacy; and minor concerns about methodological limitations</p>

STANDARDS AND PROTOCOLS

<p>Lack of guidelines/protocols, or where they were inconsistent or health workers were not aware or were uncertain of them, could impact patient care and outcomes and cause harm</p>	<p>Barua 2011; de Carvalho 2012; Khalaf 2009; Lugina 2001; Mathole 2006</p>	<p>Low confidence</p>	<p>Due to moderate concerns about adequacy; and minor concerns about methodological limitations</p>
<p>Health workers did not always adhere to protocols/guidelines, even when they were aware of them. Guidelines/protocols were not followed for a number of reasons. Some health workers felt that guidelines were insufficient without consensus from staff. Some studies described how health workers continued to practice ineffective procedures because they were considered routine; due to lack of time; because they lacked the autonomy to avoid using what they knew to be inappropriate care; because the resources at the institution were not aligned with the protocols for postpartum care; or when it was unclear who was professionally responsible, e.g. in using the partograph</p>	<p>Belizan 2007; de Carvalho 2012; Conde-Agudelo 2008; Molina 2011; Pettersson 2006</p>	<p>Low confidence</p>	<p>Due to moderate concerns about methodological limitations, relevance, and adequacy</p>
<p>Health workers sometimes used unnecessary diagnostic tests and did not follow recommended practice when they feared malpractice suits. This fear could lead to practitioners retaining practices they believed were 'safer'</p>	<p>Belizan 2007</p>	<p>Very low confidence</p>	<p>Due to moderate concerns about relevance; serious concerns about adequacy; and minor concerns about methodological limitations</p>
<p>Some health workers did not use recommended interventions when delivering care because of concerns about negative outcomes for the baby or the mother. Examples included the use of magnesium sulphate administered with anaesthesia dur-</p>	<p>Barua 2011</p>	<p>Very low confidence</p>	<p>Due to moderate concerns about relevance; serious concerns about adequacy; and minor concerns about methodological limitations</p>

<p>ing Caesarean sections or when monitoring of serum magnesium sulphate levels was not possible</p>		
<p>Health workers were sometimes reluctant to admit their lack of skills in delivering care for fear of blame and criticisms from managers. This fear of criticism could undermine health worker confidence and performance</p>	<p>Lugina 2001; Pettersson 2006; Thorsen 2012 Low confidence</p>	<p>Due to minor concerns about relevance; and moderate concerns about adequacy</p>
<p>COMMODITIES AND HEALTH SERVICES INFRASTRUCTURE</p>		
<p>Insufficient stock and/or lack of drugs such as hydralazine, magnesium sulphate, oxytocin, misoprostol, antiretrovirals, and supplies such as gloves, sometimes influenced the quality of care provided to mothers and their babies. For instance, health workers had to use less effective alternative drugs, e.g. diazepam instead of magnesium sulphate. Lack of supplies sometimes limited good hygiene and practice of aseptic techniques, resulting in unsafe practices, e.g. reuse of disposable gloves could increase the risk of HIV infection. Lack of supplies sometimes led to poor outcomes and increased the length of stay in health facilities. Lack of supplies could determine if a new clinical practice was implemented and maintained over time</p>	<p>Anwar 2009; Belizan 2007; Bradley 2009; de Carvalho 2012; Foster 2006; Fränngård 2006; Graner 2010; Ith 2012; Lester 2003; Mathole 2006; Penfold 2013; Pitchforth 2010; Spangler 2012; VSO 2012 Moderate confidence</p>	<p>Due to moderate concerns about methodological limitations</p>
<p>Lack of drugs or supplies meant mothers or their carers had to purchase their own. This sometimes led to wasted time in procuring the drugs and supplies and the creation of informal markets and corruption at health facilities</p>	<p>Barua 2011; Foster 2006; Fränngård 2006; Lester 2003; Pitchforth 2010; Spangler 2012; VSO 2012 Low confidence</p>	<p>Due to moderate concerns about methodological limitations and adequacy; and minor concerns about coherence</p>

Lack of equipment limits health workers' ability to deliver quality care to mothers and their babies. As a result of this lack of equipment, mothers and their babies sometimes received poor quality care	Barua 2011 ; Fränngård 2006 ; Graner 2010 ; Lester 2003 ; Molina 2011 ; Penfold 2013 ; Pettersson 2006 ; Pitchforth 2010	High confidence	-
Lack of blood or limited infrastructure to manage blood transfusion limited health workers from delivering appropriate care	Afsana 2001 ; Anwar 2009 ; Ith 2012	Moderate confidence	Due to moderate concerns about adequacy; and minor concerns about relevance
Lack of equipment, supplies, or drugs sometimes wasted health workers' time, increased their workload and risk of infection, and led to low morale	Belizan 2007 ; Bradley 2009 ; Foster 2006 ; Graner 2010 ; Lester 2003 ; Mathole 2006 ; Penfold 2013 ; Pitchforth 2010 ; VSO 2012	Moderate confidence	Due to moderate concerns about methodological limitations; and minor concerns about coherence
Poor, incomplete, and non-systematised patient information could lead to delayed or incorrect management of high-risk mothers, or interfered with continuity of care	Molina 2011 ; Pettersson 2006	Low confidence	Due to serious concerns about adequacy
Lack of or unreliable supply of electricity, including a lack of fuel to run generators, and lack of water influenced health providers' ability to deliver quality care	Anwar 2009 ; Pitchforth 2010 ; Spangler 2012 ; VSO 2012	Moderate confidence	Due to moderate concerns about methodological limitations
The lack of space and amenities as well as poor physical layout and organisation of wards limited the delivery of quality care	Belizan 2007 ; Conde-Agudelo 2008 ; DeMaria 2012 ; Fränngård 2006 ; Khalaf 2009 ; Lester 2003 ; Molina 2011 ; Pettersson 2006 ; Pitchforth 2010	Moderate confidence	Due to minor concerns about adequacy, relevance, and methodological limitations
The lack of funds and material resources sometimes prevented health facility managers from adequately maintaining equipment and physical infrastructure	Ith 2012 ; Pettersson 2006 ; VSO 2012	Low confidence	Due to minor concerns about coherence; and moderate concerns about methodological limitations and adequacy

<p>Health facilities varied in the availability, functionality, and quality of interventions assigned as signal functions for obstetric care. At the lower-level facilities, most of these functions were not available, e.g. parenteral antibiotics or anticonvulsants or neonatal resuscitation. At the higher levels, some of these functions appeared to be available, but functionality varied, for instance when there were drug stock-outs or unqualified providers of care</p>	<p>Afsana 2001; Spangler 2012</p>	<p>Very low confidence</p>	<p>Due to moderate concerns about methodological limitations, relevance, and adequacy</p>
<p>Health workers felt it was easier to deliver care in facilities than at home. Some of the positive aspects about delivering care at the health facility were that they were able to do other work while monitoring labour; provide care for several mothers; work schedules were more regular; and care was available 24 hours a day. Furthermore, at facilities other skilled providers were available to assist when needed, and some procedures (e.g. episiotomies) were easier to perform. In addition, health facilities provided a secure, controlled, hygienic work environment, where electricity, equipment, and medications were always available</p>	<p>Blum 2006</p>	<p>Very low confidence</p>	<p>Due to moderate concerns about relevance; and serious concerns about adequacy</p>
<p>REFERRAL MECHANISMS</p>			
<p>Where primary care workers in lower-level facilities lacked the knowledge and the skills to determine the need for referral, or were unable to provide emergency care, mothers could receive inadequate care. This lack of skills could also result in un-</p>	<p>Molina 2011</p>	<p>Very low confidence</p>	<p>Due to minor concerns about methodological limitations; moderate concerns about relevance; and serious concerns about adequacy</p>

necessary referrals to other health facilities			
Lack of trust and professional rivalries between midwives, doctors, and obstetrician gynaecologists may delay referral of mothers and their babies. Midwives sometimes felt blamed by physicians when complications arose and hesitated to seek support from the medical teams at the receiving facilities. Some midwives did not travel with the mothers to the referring facility for fear of blame for any negative occurrence during the referral process	Ith 2012 ; Tabatabaie 2012	Low confidence	Due to moderate concerns about adequacy and relevance
Respondents felt that maternal perceptions of the health system could make mothers reluctant to accept referral. For instance, mothers were sceptical about the cost of care, poor management and care at the next-level facility, the procedures used, the high levels of Caesarean sections, and fear of complications. Also mothers may have already travelled far to reach the facility they perceive as a good one, or feared unfamiliar, urbanised settings. As a result of mothers' reluctance to accept referral, midwives may feel pressured to conduct high-risk deliveries or spend a lot of time convincing reluctant mothers or their families	Barua 2011 ; Blum 2006 ; Graner 2010 ; Lester 2003 ; Tabatabaie 2012	Moderate confidence	Due to minor concerns about methodological limitations, coherence, relevance, and adequacy
The presence of trust between mothers and midwives may influence a mother's willingness to be referred. Referral may be delayed when facilities lack midwives or other primary care workers whom the mothers trust and who can convince moth-	Tabatabaie 2012	Very low confidence	Due to minor concerns about coherence and methodological limitations; moderate concerns about relevance; and serious concerns about adequacy

ers of the need for referral			
Lack of transport hinders referral of women and their babies to higher levels of care. For instance, this occurred when health facilities lacked ambulances, or when facility budgets were insufficient to purchase fuel for vehicles	Fränngård 2006 ; Graner 2010 ; Molina 2011 ; VSO 2012	Moderate confidence	Due to minor concerns about relevance and adequacy
Lack of fuel for vehicles when the need for referral arises is frustrating to nurses and midwives and leaves them feeling helpless when mothers' and babies' lives are at risk	VSO 2012	Very low confidence	Due to minor concerns about methodological limitations; moderate concerns about relevance; and serious concerns about adequacy
When health facilities lack fuel for vehicles, mothers and their families are sometimes asked to pay their own transport costs. Many families could not afford this	Fränngård 2006 ; VSO 2012	Low confidence	Due to moderate concerns about relevance and adequacy
Several situations could lead health workers to refer mothers and shift responsibility to higher levels of care, including when they lacked the skills or confidence to provide care, or were working in isolation; when they were concerned about the facility's reputation when poor patient outcomes arose; or when they lacked supplies, drugs, or equipment to provide care. Some of these referrals were unnecessary and resulted in increased workloads at higher levels of care	Anwar 2009 ; Barua 2011 ; Blum 2006 ; Ith 2012	Low confidence	Due to moderate concerns about adequacy and relevance
When secondary-level care was non-existent, mothers were sometimes referred to tertiary-level care, which resulted in congestion at the tertiary level	Molina 2011	Very low confidence	Due to minor concerns about methodological limitations; moderate concerns about relevance; and serious concerns about adequacy

<p>Administrative processes and paperwork and poor communication between referring and receiving levels of care could influence the efficient transfer of mothers and their babies to receiving units</p>	<p>Molina 2011</p>	<p>Very low confidence</p> <p>Due to minor concerns about methodological limitations; moderate concerns about coherence and relevance; and serious concerns about adequacy</p>
<p>Lack of feedback between the referring and receiving facilities could influence midwives' practice and patient outcomes. Midwives perceived this feedback as useful for improving their practice and patient outcomes</p>	<p>Fränngård 2006</p>	<p>Very low confidence</p> <p>Due to moderate concerns about relevance; and serious concerns about adequacy</p>
<p>INTERPERSONAL RELATIONS</p>		
<p>Poor attitude and unethical behaviour among health workers could influence the quality of care. For instance, when health workers are harsh, rude, or impatient with mothers; or display poor cultural sensitivity, e.g. by not maintaining women's privacy; or when health workers are absent from their duty stations or involved in the illegal sale of drugs and supplies or expect 'back door' payments for services. Some of the suggested underlying reasons for these attitudes and behaviours were wrong intrinsic reasons for joining the profession and physical exhaustion from long, solitary hours of work</p>	<p>Afsana 2001; Hassan-Bitar 2011; Spangler 2012; VSO 2012</p>	<p>Low confidence</p> <p>Due to moderate concerns about methodological limitations and adequacy; and minor concerns about relevance</p>
<p>Mothers' participation in decision-making during labour could be limited by health worker attitudes and authoritarian behaviour, for instance when health workers conducted procedures without asking mothers for their opinion, or when physi-</p>	<p>Belizan 2007; de Carvalho 2012; Conde-Agudelo 2008; DeMaria 2012; Maputle 2010</p>	<p>Low confidence</p> <p>Due to minor concerns about coherence and adequacy; and moderate concerns about methodological limitations and relevance</p>

cians did not seek feedback from mothers about practices or outcomes and expected women to co-operate. Lack of patient participation in decision-making can threaten quality of care. Some of the reasons for this behaviour were related to health workers' attitudes about the woman's preferences and role during delivery of her baby

Some health workers did not value communication, communicated poorly, or said they had problems with communication. Poor communication and interaction could threaten the trust between health workers and mothers, for instance when health workers considered communication with mothers as a waste of time, and there was insufficient communication between staff and families, or when skilled birth attendants were abrasive and demeaning in their interactions with women and showed no concern for women's families. Language barriers could interfere with effective communication between mothers and health workers. As a result, mothers sometimes appeared not to listen to health workers while health workers mechanically worked through the process of providing care. Health workers acknowledged the need to respect and involve men, women's families, and the community in maternal health, e.g. in understanding cultural beliefs related to postpartum care

[Blum 2006](#); [de Carvalho 2012](#); [Hassan-Bitar 2011](#); [Lugina 2001](#); [Maputle 2010](#) Very low confidence

Due to moderate concerns about relevance and adequacy; and serious concerns about methodological limitations

<p>Mismatch between people's expectations of health workers and what health workers were actually able to deliver or thought was appropriate could lead to antagonism. For instance, health workers that delivered home-based care could experience social pressure from families and communities, e.g. to give injections to speed up delivery as opposed to waiting for labour to progress normally. Health workers providing maternity care at health facilities were sometimes treated harshly by people from the community when there was a lack of supplies and materials. In addition, misconceptions that midwives were not working when they took a break from their work, or that health workers sold drugs, threatened the trust between health workers and the community</p>	<p>Barua 2011; Blum 2006; Hassan-Bitar 2011; VSO 2012 Low confidence</p>	<p>Due to moderate concerns about methodological limitations, relevance, and adequacy</p>
<p>Health workers valued the appreciation, respect, trust, and praise from mothers, or when they made friends among mothers or worked with the community. Midwives in particular were delighted when a baby was given their name and seeing the baby grow</p>	<p>Bradley 2009; Fränngård 2006; VSO 2012 Low confidence</p>	<p>Due to moderate concerns about methodological limitations, relevance, and adequacy</p>
<p>Midwife-led shared care was perceived to improve the interaction between mothers, families, and health workers, and could improve health workers' self esteem and lead to a change in hospital culture with respect to service provision. For instance, midwife-led shared care increased communication between midwives, women, and their families; enabled the presence and participa-</p>	<p>Fujita 2012 Very low confidence</p>	<p>Due to moderate concerns about relevance; and severe concerns about adequacy</p>

tion of family members; and together increased satisfaction in the care provided. As a result, the need for medication during delivery was minimised, which reduced the financial burden experienced by families. The supportive environment for mothers, the good interaction between mothers and health workers, as well as recognition of professional expertise among midwives increased self esteem. Midwife-led shared care enabled other hospital staff to reflect on their own routine activities and manner of communication with families and clients, leading to a change in hospital culture with respect to service provision

Disrespectful communication, lack of trust, inadequate opportunities to review clinical practice, and poor teamwork and co-ordination sometimes led to poor interprofessional relations. Also, tensions arose when health providers did not recognise each others' capabilities, and when they acted in a way that reinforced clinical hierarchy, e.g. disrespectful interprofessional communication between physicians and midwives. Midwives with lower-level training could manage normal birth, but they felt marginalised and less motivated to provide care because midwives with higher levels of training and doctors used qualification, status, and their roles to dominate clinical practice. Tensions were reported between doctors and clinical officers due to salary differentials, benefits, workload, and status. There was sometimes a lack of understanding of competencies and alternative models of care

[Belizan 2007](#); [Bradley 2009](#); [DeMaria 2012](#); [Hassan-Bitar 2011](#); [Ith 2012](#); [Petterson 2006](#); Low confidence

Due to moderate concerns about relevance and adequacy

Due to moderate concerns about relevance and adequacy

[Bradley 2009](#); [Foster 2006](#); [Fränngård 2006](#); [Lester 2003](#); [Pettersson 2006](#) Low confidence

Nurses and midwives valued and were motivated by a good team dynamic where health workers provided feedback, supported, and co-operated to ensure all shifts were covered. For instance, midwives valued good interprofessional collaboration that made them feel accepted as part of the professional team and provided an opportunity to improve their competence through on-spot education provided by obstetricians. When midwives worked together in a team led by midwives, this increased their ability to share experiences and new practices and their decision-making responsibility; improved their self esteem; and provided quality assurance and improved the quality of care provided. This teamwork was especially useful when emergencies arose. In another study, researchers observed that nurses had a strong teamwork ethic and functioned well together to complete work

BACKGROUND

The United Nations' fifth Millennium Development Goal (MDG) aimed to reduce maternal death rates by increasing the proportion of births conducted by skilled birth attendants. Low- and middle-income countries promoted the skilled attendance at birth strategy in order to reduce high maternal mortality rates. Globally, from 1990 to 2014, a 12% increase in the proportion of births attended by skilled birth attendants was achieved (UN 2015). But while several low- and middle-income countries managed to improve access to skilled care at birth, several did not manage to reduce their high maternal mortality rates. The sub-Saharan Africa region was reported to have the highest number of maternal deaths (510 deaths per 100,000 live births), while South Asia, Oceania, and the Caribbean each had 190 deaths per 100,000 live births. Whereas attention at the policy level was given to increasing access to skilled care at birth, this was not matched with improvements in the quality of care available at health facilities, and this may have contributed to the slow decline in maternal mortality (Campbell 2016, Koblinsky 2016; Graham 2012).

The United Nations' Sustainable Development Goals represent a renewed call to action to sustain the gains achieved in the MDG era and to further improve priority areas such as maternal health (UN 2015b). Their third goal aims to reduce global maternal mortality ratio to fewer than 70 maternal deaths per 100,000 live births by 2030. The provision of quality maternal care, delivered through a resilient health system with well-staffed health facilities that are capable of managing routine and emergency maternity care, has been identified among the priorities for action over the next five years (Koblinsky 2016).

Description of the condition

In order to provide good-quality care to mothers and their babies, healthcare workers need to possess appropriate skills, attitudes, and behaviours, and also need access to drugs, supplies, and equipment, as well as tools for communication and referral when complications arise. Such components have been referred to as supply-side factors (Gabrysch 2009; Say 2007). When these components are not available at health facilities for mothers in active labour, they contribute to one source of delay in accessing care (Thaddeus 1994). The absence of these components can influence the technical quality of care provided at health facilities and lead to poor maternal and child outcomes. The absence of these components can also influence how care is perceived by mothers and mothers' choice in place of delivery, and can contribute to delays in providing adequate care for mothers in labour.

Description of the intervention

Skilled birth attendance refers to "the process by which a woman is provided with adequate care during labour, delivery and the postpartum period" (SMIAG 2000). This process requires both a skilled attendant and an enabling environment. An enabling environment has been described as one that provides supportive regulation, policies and infrastructure, communication, referral, logistics, and supplies, inputs that are necessary for a skilled attendant to provide care (Maclea 2003). A joint statement from the World Health Organization, the International Confederation of Midwives, and the International Federation of Gynecology and Obstetrics defines a skilled birth attendant as an "accredited health professional such as a midwife, doctor or nurse that is trained to proficiency and has the necessary skills to manage a normal pregnancy, childbirth and provide postnatal care as well as the skills to detect, manage and refer any complications in the mother and neonate" (WHO 2004). Possessing a core set of skills would imply that the health professional is able to manage a normal, uncomplicated vaginal delivery. However, studies have demonstrated great variation between countries in the cadre, as well as the level of skills and competence, possessed by skilled birth attendants (Harvey 2007; Adegoke 2012; Utz 2013). In addition, the scope of practice of the skilled birth attendant varies widely to include a few or all components of basic and comprehensive emergency obstetric care. Basic emergency obstetric care is a package of care that provides the seven signal functions needed to provide lifesaving interventions to women with obstetric complications and their babies (WHO 2008). The seven signal functions are: administration of parental antibiotics; administration of oxytocic drugs; administration of anticonvulsants; manual removal of the placenta; removal of retained products of conception; conducting assisted vaginal deliveries; and performing neonatal resuscitation. In addition to the seven signal functions defined as basic care, comprehensive emergency obstetric care provides blood transfusion and surgery. Skilled birth attendants need to possess advanced skills in order to provide comprehensive emergency obstetric care.

In this synthesis, we have focused on care provided during the intrapartum and postpartum period. This includes normal, uncomplicated maternity care, basic and comprehensive emergency obstetric care, as well as postpartum care. By postpartum care we refer to the period immediately after birth and up to six weeks.

How the intervention might work

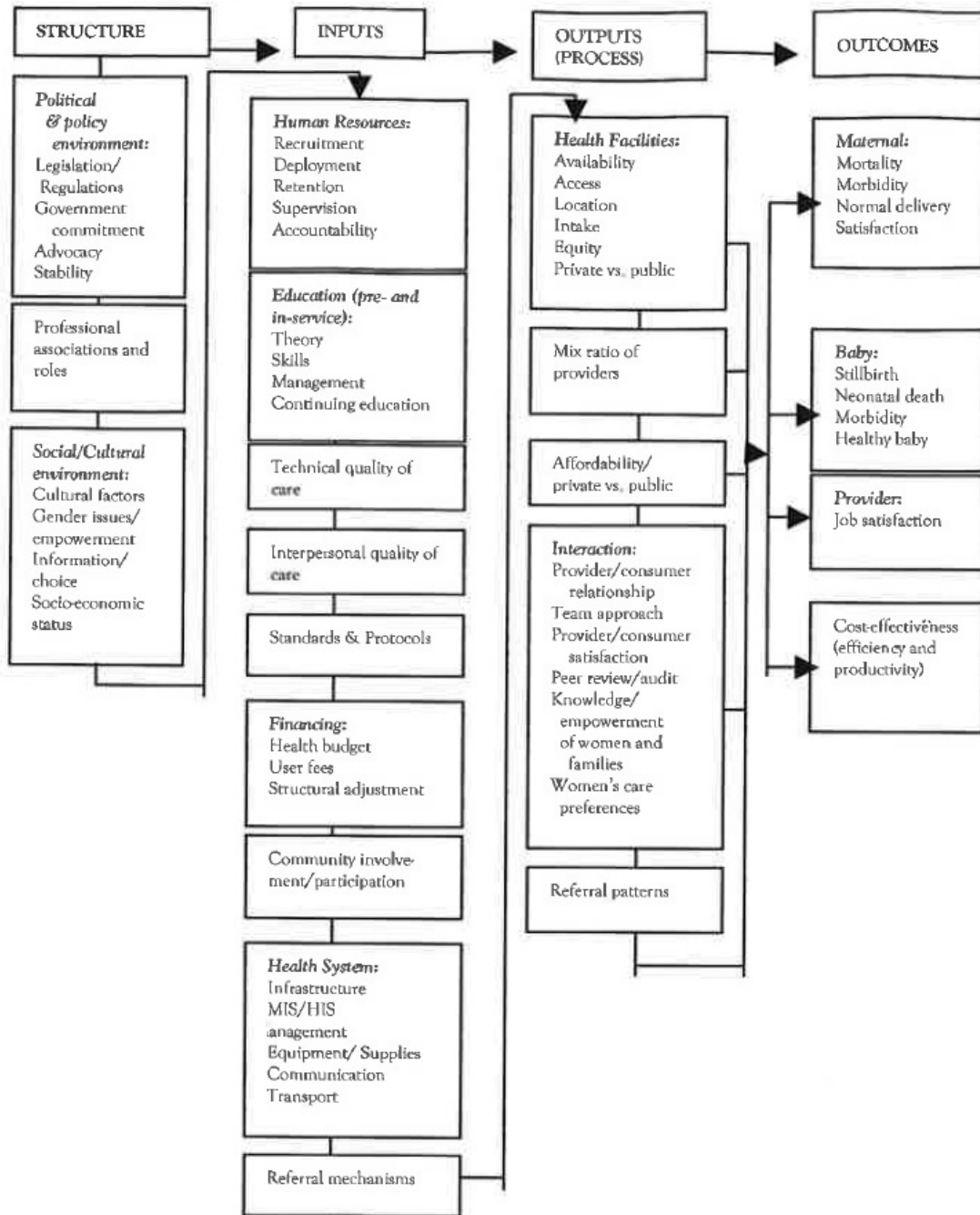
The rationale for promoting skilled birth attendance at delivery is based on evidence that at least 75% of maternal deaths occur from late pregnancy to 48 hours following delivery (Abou-Zahr 1998). The scientific evidence of the impact of skilled birth attendance on maternal mortality is weak due to the ethical issues around randomising mothers to non-skilled attendants. The available evidence is obtained from quasi-experimental studies that show a link between reduced maternal mortality rates and skilled attendance at birth (Maine 1996), and challenges related to confound-

ing mean the causal link between maternal mortality and access to skilled birth attendance is not firmly established. Additional evidence from statistical modelling suggests that 16% to 33% of all maternal deaths could be prevented by skilled birth attendance (Graham 2001). Historical data from Sweden, the United States of America, Malaysia, and China also suggest a correlation between the decline in maternal mortality rates and the increase in skilled attendance at birth (De Brouwere 1998; Koblinsky 1999; Loudon 1992). However, the contribution of factors such as the environment under which these births were conducted and other ongoing social and economic changes is difficult to estimate. The conceptual framework for skilled birth attendance at delivery guided the development of this synthesis (Graham 2001). In this framework, Graham and colleagues suggest key elements that can influence the provision of skilled attendance at birth and thereby

maternal, neonatal, and provider outcomes and cost-effectiveness. These elements are organised into structure, inputs, outputs, and outcomes. First, the framework highlights elements in the structure or environment where care is provided, including the political or policy environment and the social/cultural environment. According to the framework, this environment influences the inputs available, such as human resources, education, technical quality of care, financing, and supplies. These inputs in turn influence the process of care such as health facility access or availability; the mix or ratio of providers; interactions, such as between health workers and clients; and referral processes. Finally, these outputs influence the health outcomes (maternal and baby and provider outcomes and cost-effectiveness). See Figure 1 for the Graham 2001 framework.

Figure 1. Graham 2001 framework.

Figure 1. Conceptual framework for skilled attendance at delivery



Why it is important to do this synthesis

By synthesising existing qualitative evidence, we aimed to identify the range of factors, including barriers and facilitators, in low- and middle-income settings that influence the provision of intrapartum and postnatal care by skilled attendants. Evidence on barriers and facilitators is useful for policymakers and managers seeking to develop implementation strategies to improve the quality of maternity care. The evidence generated in this synthesis provides information for understanding the basic needs and experiences of health personnel when providing maternity care. Health workers' experiences may, in turn, influence the quality of maternal health services provided, as well as the success or failure of strategies to promote facility-based deliveries and recruit and retain skilled birth attendants. Information about the experiences of skilled birth attendants, the ways in which they deliver care, as well as other factors influencing the process of care may not be reported in effectiveness studies. While Cochrane intervention reviews are not designed to answer these types of questions, there is growing acknowledgement that syntheses of qualitative research can make important contributions in this area (Glenton 2013). Our synthesis complements the evidence generated by a Cochrane intervention review entitled 'The effectiveness of policies promoting facility-based deliveries in reducing maternal and infant morbidity and mortality in low and middle-income countries' (Dudley 2009).

OBJECTIVES

To explore the views, experiences, and behaviours of skilled birth attendants and those who support them; to identify factors that influence the delivery of intrapartum and postnatal care in low- and middle-income countries; and to explore the extent to which these factors were reflected in intervention studies.

METHODS

Criteria for considering studies for this synthesis

Types of studies

We included all studies that utilised qualitative methods for data collection (e.g. focus group interviews, individual interviews, observation, document analysis) and that utilised qualitative methods for data analysis (e.g. thematic analysis, framework analysis, grounded theory). We excluded studies that collected data using qualitative methods but did not perform a qualitative analysis (e.g.

open-ended survey questions where the responses are analysed using descriptive statistics). We included mixed-methods studies where it was possible to extract findings derived from qualitative research.

Types of participants

Setting

We included studies based in primary, secondary, and tertiary levels of health care in low- and middle-income countries. We utilised the World Bank 2013 definition of low- and middle-income countries. We chose to focus only on low- and middle-income countries because these are the regions where skilled birth attendance was actively promoted by the global health community in response to high maternal mortality rates (UN 2015).

Participants

We included studies of skilled birth attendants providing intrapartum and postnatal care. We defined a skilled birth attendant as an "accredited health professional such as a midwife, doctor or nurse that is trained to proficiency and has the necessary skills to manage a normal pregnancy, childbirth and provide postnatal care as well as the skills to detect, manage and refer any complications in the mother and neonate" (WHO 2004). We also included studies of auxiliary cadres such as auxiliary nurse midwives and associate clinicians (non-physician clinicians) where these staff were employed at the health facility, worked independently or as part of a team, and were recognised within that setting as skilled birth attendants. In some instances, we were not able to tell if health workers fit our definition of skilled birth attendants, in which case we contacted the authors of the study for more information and included these studies as long as the health workers were recognised as skilled birth attendants in that particular setting. We also included studies that collected data from managers of health units and other providers who support skilled birth attendants as part of the team at a facility. We considered that these providers work closely with skilled birth attendants and have views and experiences of factors that influence the provision of care. We excluded studies of student nurses' or midwives' attitudes and experiences, as we were concerned with factors affecting the delivery of care in routine settings rather than in teaching settings. We also excluded studies that focused exclusively on traditional birth attendants, as these are outside the definition of skilled birth attendants (WHO 2008). In addition, we excluded studies that documented women's views and experiences of care, as this topic is covered in another qualitative evidence synthesis (Bohren 2014).

Where eligible studies included both women's and health workers' views of care, we included these but only extracted data on health worker views.

Phenomenon of interest

We focused on the views, experiences, and behaviours of skilled birth attendants when providing intrapartum and postnatal care. Of particular interest were their views and experiences of factors that facilitate (or hinder) the provision of high-quality care. We use the term 'quality of care' to imply care that meets technical standards of care, is timely, evidence based, effective, safe, equitable, and provides a good experience of care (Dickson 2014; Donabedian 1978; Hulton 2000; Tunçalp 2015).

Although skilled birth attendants have an important role to play along the continuum of care for reproductive, maternal, and newborn health, in this synthesis we have focused on the intrapartum and postpartum period. Studies on antenatal care are part of a separate, complementary Cochrane qualitative evidence synthesis (Downe 2016). Maternity care may have been provided during a normal vaginal delivery or through basic or comprehensive emergency obstetric care when complications arose. As described above, basic emergency obstetric care is a package of care that provides the seven signal functions needed to provide lifesaving interventions to women and their newborn babies if complications arise. In addition to the seven signal functions, comprehensive emergency obstetric care includes surgery and blood transfusion. By 'postpartum care', we refer to the period immediately after birth and up to six weeks.

We did not include studies on abortion and postabortion care and antenatal care. These studies are likely to focus on factors that differ from those identified in studies that focus on intrapartum and postnatal care.

Search methods for identification of studies

Electronic searches

Our search strategies were based on a search strategy developed for two reviews: the Cochrane Review 'Effectiveness of policies promoting facility-based deliveries in reducing maternal and infant morbidity and mortality in low and middle-income countries' (Dudley 2009), and a qualitative evidence synthesis by authors at the World Health Organization: 'Facilitators and barriers to facility-based delivery in low- and middle-income countries: a qualitative evidence synthesis' (Bohren 2014). The search strategy specified key and free text terms related to the perinatal period such as 'maternal health', 'delivery', 'obstetric care' and terms related to 'doctor', 'midwife', 'nurse', or 'physician'. We included a methodological filter for qualitative evidence syntheses and for low- and

middle-income countries (EPOC 2017). See Appendix 1 for all strategies used.

We searched the following databases for eligible studies.

- MEDLINE In-Process & Other Non-Indexed Citations, MEDLINE Daily, and MEDLINE (1946 to 21 November 2016), OvidSP
- Embase Classic + Embase (1947 to 2016 week 47), OvidSP (searched up to 28 November 2016)
- PsycINFO (1806 to November week 3 2016), OvidSP (searched up to 30 November 2016)
- POPLINE, K4Health (1827 to 30 November 2016)
- CINAHL (Cumulative Index to Nursing and Allied Health Literature) (1980 to 30 November 2016), EBSCOhost
- ProQuest Dissertations and Theses (1861 to 15 August 2013)
- Web of Science Conference Proceedings Citation index, ISI Web of Knowledge (1990 to 1 December 2016)
- World Health Organization Reproductive Health Library (searched up to 16 August 2013)
- World Health Organization Global Health Library for WHO databases (Regional Indexes) (searched up to 1 December 2016)

Searching other resources

At the time of developing this synthesis, a related Cochrane intervention review was under development (Dudley 2009). We checked the bibliography of effectiveness studies that were included in this review in order to identify any qualitative studies that were linked to these studies. We only searched bibliographies of effectiveness studies published in the last five years (2008 to 2013). Checking recent studies as opposed to older studies was more likely to lead to identification of eligible studies, given the increase in the number of effectiveness studies that also include qualitative research in recent years (O' Cathain 2013).

Data collection and analysis

Selection of studies

We collated records obtained from the searches and removed duplicates. Two review authors then independently assessed titles and abstracts to identify potentially eligible studies. We retrieved the full-text articles of potentially eligible references, and two review authors independently assessed these to determine their eligibility. Any disagreements between review authors were resolved by discussion or by seeking the opinion of a third review author.

Data extraction and management

We developed a data extraction form to guide the collection of data. We extracted data on the following.

- First author of the study, year of publication, country of study, study setting (urban/rural, level of care).
- Cadre of skilled birth attendant (e.g. nurse, doctor, midwife, or other cadre identified as a skilled birth attendant)
- Data describing the views, experiences, and behaviour of skilled birth attendants when providing intrapartum and postnatal care. In this qualitative evidence synthesis, we regarded the authors of the individual studies to be our 'informants' rather than the participants in these studies. The authors' interpretations, presented for instance through themes and categories, therefore represent our data. While the authors' interpretations were primarily collected from the results sections of each paper, author interpretations were sometimes also found in the discussion sections, and these were also extracted when relevant and when well-supported by data. We used the [Graham 2001](#) framework on factors that influence skilled birth attendance ([Figure 1](#)) to organise these data.

One review author extracted the data and another checked the data for any discrepancies. Disagreements were resolved by discussion or in consultation with a third review author.

Appraisal of the methodological limitations of included studies

Our inclusion criteria specified that to be included a study must have used qualitative methods for both data collection and data analysis. This criterion constitutes a basic quality threshold. We discarded studies that did not meet this standard. We used a modified version of the Critical Appraisal Skills Programme qualitative appraisal checklist to assess methodological limitations of each included study ([Appendix 2](#)) ([Atkins 2008](#)). One review author applied the criteria to each included study, and another review author checked the data for any errors or missing data. Any discrepancies were discussed and agreed upon by the two review authors. We did not exclude any studies on the basis of our assessment of methodological limitations but utilised this information to assess our confidence in the review findings. We were likely to have higher confidence in findings that are drawn from well-conducted studies, as these findings are more trustworthy.

[Table 1](#) includes a summary of the assessment of methodological limitations of included studies.

Assessment of confidence in the review findings

We used the GRADE-CERQual (Confidence in the Evidence from Reviews of Qualitative research) approach to summarise our confidence in the evidence ([Lewin 2016](#)). CERQual assesses confidence in the evidence, based on the following four key components.

1. Methodological limitations of included studies: the extent to which there are concerns about the design or conduct of the primary studies that contributed evidence to an individual review finding.

2. Coherence of the review finding: an assessment of how clear and cogent the fit is between the data from the primary studies and a review finding that synthesises those data. By cogent, we mean well supported or compelling.

3. Adequacy of the data contributing to a review finding: an overall determination of the degree of richness and quantity of data supporting a review finding.

4. Relevance of the included studies to the review question: the extent to which the body of evidence from the primary studies supporting a review finding is applicable to the context (perspective or population, phenomenon of interest, setting) specified in the review question.

After assessing each of the four components, we made a judgement about the overall confidence in the evidence supporting the review finding. We judged confidence as high, moderate, low, or very low. All findings started as high confidence and were then graded down if there were important concerns regarding any of the CERQual components. The starting point of high confidence reflects a view that each review finding should be seen as a reasonable representation of the phenomenon of interest unless there are factors that would weaken this assumption.

Data synthesis

Given that relevant data were likely to be thin and descriptive and not theorised or conceptual ([Noyes 2011](#)), we based our data synthesis on a best fit framework approach ([Carroll 2011](#); [Carroll 2013](#)), using a 'theory' on how skilled birth attendance influences health outcomes as our framework (see [Appendix 3](#)) ([Noyes 2016](#)).

'Summary of qualitative findings' table

Our key findings are presented in the [Summary of findings for the main comparison](#). The table also provides our assessment of confidence in the evidence as well as an explanation of this assessment, based on the GRADE-CERQual approach ([Lewin 2016](#)).

Supplementing the Cochrane intervention review with synthesised qualitative findings

We explored how the findings from our synthesis related to, and helped to explain, the findings of the related Cochrane intervention review ([Dudley 2009](#)). To do this we utilised a matrix model similar to one used previously by [Candy 2011](#) and [Ames 2017](#). Our matrix explored whether the factors that were identified by health workers in our synthesis as important for providing maternity care were reflected in the interventions evaluated in the studies in the related intervention review. This review is in progress, and

the data we used in this synthesis were obtained from the review authors.

To create the matrix we undertook the following steps: first, we went through each of the synthesis findings and identified factors identified by health workers as important for providing maternity care. Where we had presented factors as barriers or facilitators, we rephrased these as neutral descriptions of health services inputs. Secondly, we created a table listing these factors. We then assessed whether these factors were addressed in the interventions evaluated in the studies included in [Dudley 2009](#). As the Dudley review also included interventions targeting mothers and communities, we screened the included studies to identify those where the intervention targeted health workers and health systems. Out of 30 included studies in the Dudley review, 11 targeted health workers

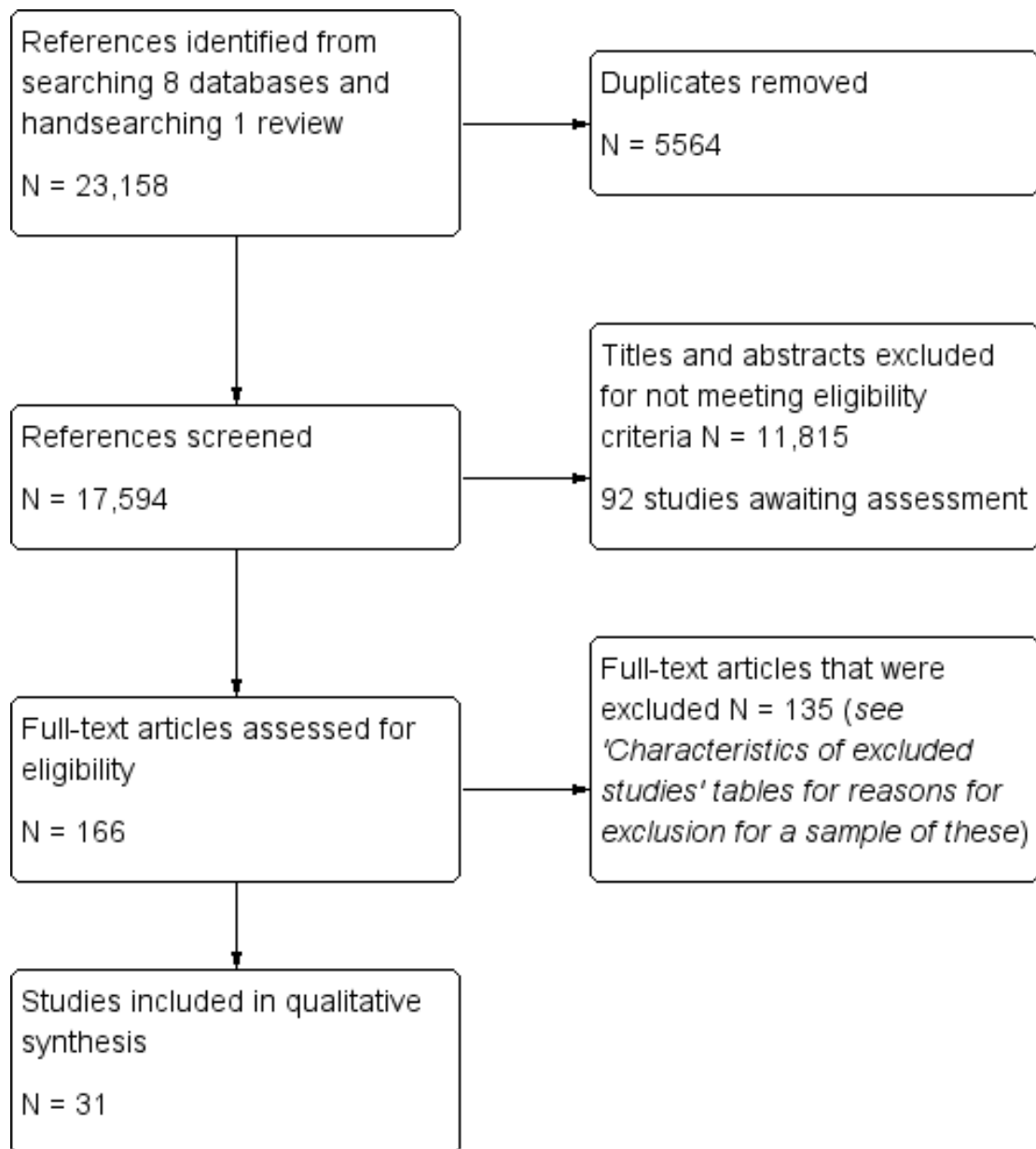
or health system issues and were therefore relevant for this synthesis.

RESULTS

Results of the search

We retrieved and screened 17,594 unique titles and abstracts. We assessed 166 full-text articles for inclusion. Thirty-one of these studies fulfilled the inclusion criteria and were included in this synthesis ([Figure 2](#)).

Figure 2. Study flow diagram.



Description of studies

Study respondents

Participants in the included studies were from a broad range of health worker cadre, including obstetricians, intern doctors, general practitioners, and various nurse midwife cadre (see [Characteristics of included studies](#) tables). Three studies only included midwives, and three included only nurse midwife (dual-trained) cadre. Other participants were clinical officers and medical assistants, paramedics or lady visitors with six months training in midwifery, nursing assistants or auxiliary nurses, physiotherapist, pharmacist, social welfare staff, surgical assistants, and anaesthetists. A few studies included heads of departments, health facility or program managers among participants.

Skilled birth attendant characteristics

Few studies described the core education of participants or if participants had received any additional training. Two studies indicated that the general practitioners had received additional training, that is eight months training in [De Brouwere 2009](#) and one year of specialised training in maternity care in [Molina 2011](#).

Of the four studies that included clinical officers and medical assistants ([Bradley 2009](#); [Graner 2010](#); [Spangler 2012](#); [VSO 2012](#)), only [Bradley 2009](#) reported that clinical officers and medical assistants had shorter pre-service training and lower qualifications compared to doctors, although they conducted most of the major emergency obstetric operations in the hospitals.

A few studies reported varying levels of information regarding the core/additional training of midwives. In [Hassan-Bitar 2011](#), midwives had university degrees, while midwives in [Fränngård 2006](#) had two to three years' midwifery training after secondary school. Other studies indicated that midwives had two to three years of nurse training and one year of midwifery following primary or secondary school education ([Blum 2006](#); [Ith 2012](#); [Lugina 2001](#); [Mathole 2006](#)).

Two studies reported that nurses held university-level degrees ([DeMaria 2012](#); [Khalaf 2009](#)). In [DeMaria 2012](#), nurses had a four-year university-level training that included one year of midwifery training. In other studies, nurses had two to three years of nursing training, while a few had diploma-level or certificate-level training in midwifery ([Mathole 2006](#); [Mondiwa 2007](#)).

Other studies that mentioned core/additional training of participants indicated that auxiliary nurse midwives had one-year training in nursing after high school ([Foster 2006](#); [Petersson 2006](#)); surgical assistants were auxiliary nurses trained in surgical assistance for three months ([De Brouwere 2009](#)); and lady visitors were paramedics with at least six months' midwifery training ([Blum 2006](#)).

Few studies provided information on the years of experience of the participants, which ranged from a few months to 33 years (see [Characteristics of included studies](#) tables).

Very few studies reported any information on participants' remuneration or salaries. For the few studies where this information was available, monthly salaries ranged from USD 170 to USD 700.

Setting

Sixteen of the studies were conducted in low-income countries: Bangladesh ([Afsana 2001](#); [Anwar 2009](#); [Blum 2006](#); [Pitchforth 2006](#)), Benin ([Fujita 2012](#)), Ethiopia ([Pitchforth 2010](#)), Malawi ([Bradley 2009](#); [Mondiwa 2007](#); [Thorsen 2012](#)), Mozambique ([Petersson 2006](#)), Tanzania ([Lugina 2001](#); [Penfold 2013](#); [Spangler 2012](#)), Uganda ([Fränngård 2006](#); [VSO 2012](#)), and Zimbabwe ([Mathole 2006](#)).

Fifteen of the studies were conducted in middle-income countries: Brazil ([de Carvalho 2012](#)), Cambodia ([Ith 2012](#)), Colombia ([Conde-Agudelo 2008](#); [Molina 2011](#)), Dominican Republic ([Foster 2006](#)), India ([Barua 2011](#)), Iran ([Tabatabaie 2012](#)), Jordan ([Khalaf 2009](#)), Mexico ([DeMaria 2012](#)), Palestine ([Hassan-Bitar 2011](#)), Senegal ([De Brouwere 2009](#)), South Africa ([Lester 2003](#); [Maputle 2010](#)), and Vietnam ([Graner 2010](#)). One study was conducted in Argentina and Uruguay ([Belizan 2007](#)). Argentina is a middle-income country. Uruguay is now categorised as a high-income country, but was categorised as middle-income country at the time of the study.

Most studies did not indicate whether the studies were based in urban or rural settings. Eight studies indicated that participants were based in urban areas, seven studies indicated rural areas, while four studies indicated both urban and rural areas.

Level of care

Most of the studies were conducted among participants who worked at tertiary, secondary, or both levels of care, for example national referral hospitals or district hospitals ([Anwar 2009](#); [Barua 2011](#); [Belizan 2007](#); [Bradley 2009](#); [Conde-Agudelo 2008](#); [de Carvalho 2012](#); [De Brouwere 2009](#); [DeMaria 2012](#); [Foster 2006](#); [Fujita 2012](#); [Hassan-Bitar 2011](#); [Lugina 2001](#); [Maputle 2010](#); [Mondiwa 2007](#); [Petersson 2006](#); [Pitchforth 2006](#); [Pitchforth 2010](#); [Thorsen 2012](#)). A few studies included participants from primary levels of care, including health centres or dispensaries ([Afsana 2001](#); [Fränngård 2006](#); [Graner 2010](#); [Khalaf 2009](#); [Mathole 2006](#); [Molina 2011](#); [Penfold 2013](#); [Spangler 2012](#); [VSO 2012](#)). Participants in two studies provided care at home, but health providers were based at primary care units or private clinics ([Blum 2006](#); [Tabatabaie 2012](#)). In one study, participants worked at a primary care unit located in a hospital ([Lester 2003](#)).

Focus of the included studies

The studies described health workers' views and experiences of a wide range of issues when providing maternity care. These included the delivery of obstetric or perinatal care and/or priorities for improving maternity care (Afsana 2001; Anwar 2009; Graner 2010; Hassan-Bitar 2011; Maputle 2010; Molina 2011; Pettersson 2006; Pitchforth 2010; Spangler 2012); the provision of postpartum care (Khalaf 2009; Lugina 2001); the management of postpartum haemorrhage, (Foster 2006), or eclampsia (Barua 2011); and the provision of care to HIV-infected mothers (Mathole 2006; Mondwiwa 2007).

Participants in some studies described their perceptions of human resource issues, including factors affecting retention, motivation, and performance (Bradley 2009; Ith 2012), professional life (Fränngård 2006), and training/scope of practice (DeMaria 2012); and conditions underlying unethical behaviour and service inadequacies (VSO 2012). One study described health workers' experiences of task shifting of emergency obstetric services (De Brouwere 2009).

Participants in some studies described their experiences of different models of care, including humanised care (Fujita 2012), home-based versus facility-based care (Blum 2006), and midwife-led obstetric unit in a hospital setting (Lester 2003). Some studies described health workers' perceptions of evidence-based care. In one study this was explored as part of the development of guidelines (Belizan 2007), while another study described the state of practice in relation to evidence-based guidelines (Conde-Agudelo 2008). Participants in one study described reasons for the continued use of harmful birth practices (de Carvalho 2012).

Other studies described health workers' perceptions of the functionality and availability of equipment, drugs, and supplies (Penfold 2013); barriers to facility births among private providers (Tabatabaie 2012); health workers' decision-making processes to enable women access to financial assistance (Pitchforth 2006); and facility-based factors that contribute to maternal deaths (Thorsen 2012).

Few studies provided any information on the range of specific tasks delivered by health workers. Where these were reported, the tasks varied widely by cadre and are reported in the [Characteristics of included studies](#) tables.

Methodological limitations of the included studies

Most of the included studies did not report in detail the sampling or data analysis methods used, or researcher reflexivity (see [Table 1](#)). In addition, some studies did not report ethical considerations.

Confidence in the review findings

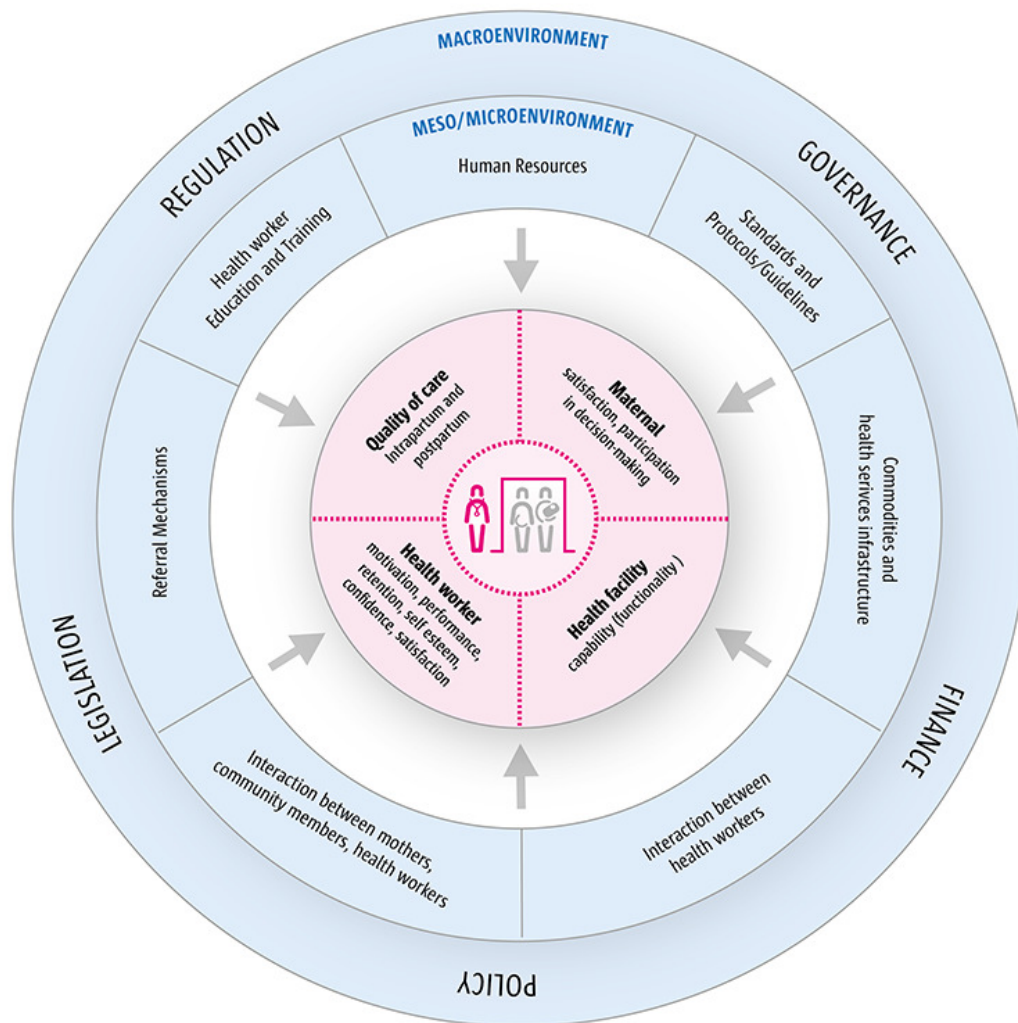
Out of 51 findings, we graded two as high confidence, 16 as moderate confidence, and the remaining findings as low or very low confidence using the CERQual approach. (See [Summary of findings for the main comparison](#)). Our explanation for each CERQual assessment is shown in the Evidence Profiles (See [Table 2](#) to [Table 53](#)).

Synthesis findings

In this section we have reported the categories identified in the synthesis and the findings from the synthesis that belong in each category.

As described above, our analysis was guided by Graham's conceptual framework for skilled birth attendance at delivery (Graham 2001). We did not make major changes to the categories in Graham's framework. However, while Graham grouped these categories as either "structure", "inputs", "outputs", or "outcomes", we chose not to group the categories in this way. This was because we experienced overlap of some categories (e.g. referral processes and mechanisms could be categorised as inputs or outputs), and because grouping the categories in this way downplayed the interrelationships between the categories. We instead chose to group the categories according to the level at which they operate; namely, the macro-environment or the meso- or microenvironment. We did not use two of Graham's categories. We did not find any studies that reported data on the "financing" category. We did not consider the second category, "technical quality of care", to be a separate category, as it is relevant to all other categories as an immediate outcome of the process of providing care. [Figure 3](#) represents our adaptation of Graham's conceptual framework for skilled birth attendance at delivery (Graham 2001), and reflects the findings from this synthesis as well as the categories for which we had no data. Factors tied to the macro-, meso-, and microenvironment may influence available quality of care and health worker performance and motivation; maternal experiences of care; as well as health facility functionality or capability. Some of the maternal experiences of care included satisfaction and participation in decision-making. These factors are discussed further in the section below.

Figure 3. Factors that influence the delivery of intrapartum and postpartum care by skilled birth attendants.



Factors tied to the meso- and microenvironment

We have used the terms 'meso-' and 'microenvironment' to refer to elements within the intermediate and immediate work environment that influenced the delivery of care by health workers. These elements are often interrelated, and separating them would be artificial.

Human resources

Staff shortages were widely reported as a problem (Anwar 2009; Barua 2011; Conde-Agudelo 2008; Fränngård 2006; Graner

2010; Maputle 2010; Spangler 2012), and led to increased workloads (Barua 2011; Hassan-Bitar 2011; Khalaf 2009; VSO 2012), which in turn sometimes compromised quality of care (moderate confidence; Table 2) (Barua 2011, De Brouwere 2009, Khalaf 2009, Maputle 2010, Mathole 2006). For instance, one study reported that heavy workloads limited the time that health workers had for conducting thorough assessments of women, and only women suspected to have complications were examined (Khalaf 2009). Heavy workloads could also lead midwives to omit some aspects of care, such as changing gloves or hand hygiene (Hassan-Bitar 2011, Ith 2012, Mathole 2006), potentially increas-

ing the risk of cross-transmission of infection (Mondiwa 2007). Doctors in one study reported incomplete history-taking and examination of women as a result of heavy workloads (Hassan-Bitar 2011). Health workers' ability to provide timely care (Thorsen 2012), and to manage routine care as well as emergency cases could also be jeopardised (Barua 2011, VSO 2012). When faced with heavy workloads, health workers were sometimes not able to provide privacy to all mothers but only to those who requested it (Khalaf 2009), or felt unable to provide personalised care (Fujita 2012). In addition, shortage of staff could lead health workers to exceed their scope of practice (Bradley 2009), and could influence a facility's ability to provide 24-hour care (Anwar 2009, Fränngård 2006). Women's motivation to attend clinics could also be influenced by heavy workloads and busy clinics (Lugina 2001).

A lack of specialists or experienced staff or teams trained in obstetrics surgery and anaesthesia presented a particular challenge for the delivery of maternity care and supervision of junior staff (moderate confidence; Table 3). For instance, certain tasks, such as emergency obstetric care (Afsana 2001, Anwar 2009, De Brouwere 2009), were not delivered at all in some cases, or were transferred to health workers who were not properly qualified or trained to deliver them (Pitchforth 2010, VSO 2012). When health workers exceeded their scope of practice (informal task-shifting), this could again lead to increased workloads, fear of blame from their managers, as well as poor community relations whenever poor outcomes occurred (VSO 2012). In a number of studies, where experienced health workers were not available, health workers lacked supervision (Blum 2006, Bradley 2009, Fränngård 2006, Hassan-Bitar 2011, Ith 2012, Pitchforth 2010, Spangler 2012), and staff appraisal was not done (Bradley 2009). Where senior staff were available, supervision was reported as being inadequate, largely negative, and corrective in nature, focusing on mistakes and gaps in work rather than quality of work (Blum 2006, Bradley 2009, Fränngård 2006, Hassan-Bitar 2011, Penfold 2013, Spangler 2012). Reasons that were given for poor or lack of supervision included lack of staff and lack of time (Bradley 2009, Fränngård 2006, Hassan-Bitar 2011). Health workers who sometimes attended home deliveries reported that verbal reporting or indirect supervision after conducting home delivery was inadequate, and expressed a need for supervision while in the field so as to enhance their competence, foster confidence in working in difficult conditions, and remove potential blame from the risk during home deliveries (Blum 2006). In another study, a lack of supervision was believed to lead to a climate that fostered inappropriate behaviour (Spangler 2012).

In settings where staff shortages were a major problem, informal task-shifting was possible because health workers had vague job descriptions that led them to perform tasks that were beyond their expertise or scope of practice (very low confidence; Table 4) (Bradley 2009). In one study, health workers were given jobs where the contract included a clause that allowed a manager to assign any job to an employee. As a result, some health workers exceeded

their scope of practice (Bradley 2009).

Staff shortages and work overload could jeopardise health workers' ability to display support, empathy, and friendliness to women in labour (very low confidence; Table 5) (Conde-Agudelo 2008, Maputle 2010). For instance, some midwives had limited time to verify women's preferences when providing care to more than two women at the same time (Maputle 2010). Studies described midwives and nurses as feeling stretched to the limit (VSO 2012), resulting in burnout, reducing staff motivation, and leaving them feeling unable to meet the demands of work (Lugina 2001). Other studies described midwives that felt overwhelmed by expectations to provide postpartum care as well (Khalaf 2009); nurses referring to themselves as machines and describing their work as insane and a cause of stress (Hassan-Bitar 2011); and paramedics describing their work as hectic with long hours and constant responsibility (Afsana 2001).

Staff shortages and increased workloads, combined with difficult living and work conditions, sometimes caused stress and frustration, affected health workers' family life, and led to concerns about personal safety (moderate confidence; Table 6). Staff shortages and increased workloads meant that health workers often worked alone and for long hours (Anwar 2009, Fränngård 2006, VSO 2012), with limited collegial support when emergencies arose, and health workers reported feeling frustrated and stressed (Graner 2010, VSO 2012). A manager in one study described how one midwife had worked alone for five months (VSO 2012). Heavy workloads also had implications for health workers' family life, as they sometimes had to stay at health centres away from husbands and family members (Fränngård 2006), or slept with their children in disused wards to allow them to attend to mothers late into the night (VSO 2012). Limited space and privacy for midwives' accommodation as well as long distances to husbands' work stations could result in relationship problems between spouses (Fränngård 2006). Family relations were further constrained by long work hours and busy schedules (Fränngård 2006, Graner 2010), lack of money for transport to meet partners, and poor communication between villages (Fränngård 2006). Some health workers reported fearing for their personal safety, for instance when working alone in the community (Blum 2006), and felt that they might be at increased risk of HIV transmission due to the pressure of work (Lester 2003).

A wide range of interlinked reasons for staff shortages were suggested. These included limited funds to recruit health workers (Graner 2010, VSO 2012); bureaucracy in the recruitment process (e.g. absence of committees responsible for recruitment at the district level) (VSO 2012); scarcity of health workers, especially in rural areas (VSO 2012); and other factors that deterred the retention of health workers once recruited (moderate confidence; Table 7) (see also section below on factors that influence recruitment, retention, motivation, or performance of health workers) (Anwar 2009). Other reasons for staff shortages were institutional arrangements, for instance when health facilities hired contract staff in or-

der to reduce labour costs (Molina 2011), and inefficient deployment of available staff that created a perception of staff shortages (Pitchforth 2010). Facilities with staff shortages and high workloads were also seen as unattractive places to work, making it difficult for managers to transfer staff from well-served to underserved areas (VSO 2012), thus compounding the problem.

Health workers considered their salaries and benefits to be insufficient for the work done (Fränngård 2006, Hassan-Bitar 2011), for the responsibility and personal risk (Graner 2010), and for the additional responsibilities assigned to them, for instance through informal task-shifting (De Brouwere 2009). In addition, salaries were regarded as insufficient for their personal needs, such as sending their children to school and paying for transport costs to visit their husbands (Fränngård 2006). Low salaries and incentives sometimes led to a lack of motivation and poor performance, absenteeism, and increased rates of dual practice (moderate confidence; Table 8) (Ith 2012, Molina 2011). To supplement their income, health workers sometimes took on other jobs apart from their job at the health facility (i.e. 'dual practice') (Belizan 2007, Ith 2012, Molina 2011), which could also lead to long working hours and fatigue (Molina 2011). Some health workers demanded informal payments for certain procedures, referred mothers on to their own private practice, or provided unnecessary services for a fee (Ith 2012). Dual practice also led to absenteeism (Anwar 2009, Ith 2012), which increased the staffing problem at the health facility, and because doctors spent little time in public hospitals, sometimes led to lack of agreement on clinical practice (Belizan 2007).

Apart from salaries, the following factors were considered by health workers or their managers to facilitate recruitment, retention, motivation, or performance of health workers: good-quality accommodation for health workers (Fränngård 2006, VSO 2012); allowances for extra project-related work (Fränngård 2006); paid vacations for one month of the year (Fränngård 2006); improved access to and funding for continued education/in-service training (Bradley 2009, De Brouwere 2009, Fränngård 2006, VSO 2012); career progression (Bradley 2009, De Brouwere 2009); non-biased evaluations (Hassan-Bitar 2011); performance-related rewards or promotions for those doing better, working longer, or taking on added responsibilities (Anwar 2009, Bradley 2009, De Brouwere 2009, VSO 2012); and verbal recognition by supervisors and management (Ith 2012). Conversely, the following factors were reported as discouraging health workers from working in rural or remote health facilities: facilities that lacked good equipment and did not provide sufficient work experience needed to maintain clinical skills (De Brouwere 2009); poor staff accommodation (VSO 2012); lack of family amenities (Anwar 2009); limited opportunities for private practice (Anwar 2009); and lack of electricity, TV, or internet, coupled with poor roads and lack of transport (VSO 2012). In addition, interference in treatment decisions by local politicians, VSO 2012, and mismanagement by national level officers of posting and transfer to new workstations,

were demotivating to health workers working in rural facilities (moderate confidence; Table 9) (Anwar 2009). Health workers therefore preferred to work in urban areas to provide their children access to better schools, and for better amenities such as communication, water, and electricity. An exception was reported in one study, where a midwife preferred to work in a rural area where her family lived (Fränngård 2006).

Health workers' working environments were sometimes worsened by poor management. For instance, health workers perceived managers as lacking in management capacity and skills, felt unsupported in their work (Bradley 2009, Lester 2003), and complained that concerns about the workplace were sometimes left unheard and no solutions or feedback were given (moderate confidence; Table 10) (Ith 2012, Lester 2003). Health workers complained about unfair duty rosters that led to heavy workloads (VSO 2012), and were also concerned about management bias when staff were selected for promotion (Bradley 2009). Some studies reported that supervisors and management rarely conducted recognition and positive performance appraisal (Ith 2012), leaving health workers with low motivation and low career advancement opportunities (Ith 2012).

Funding mechanisms to provide financial assistance to mothers for out-of-pocket payments were sometimes in place, for instance through government social welfare funds or informal systems established by doctors in obstetric wards. However, bureaucratic processes sometimes denied mothers, especially those facing emergencies, access to the funds they needed to obtain care, and health workers' time was sometimes wasted as they helped mothers to access these funds (very low confidence, Table 11) (Pitchforth 2010).

Health worker education and training

Inadequate pre-service and in-service training sometimes limited health workers' skills and their ability to provide care (high confidence; Table 12). Some studies described how health workers sometimes lacked training in communication and were thus limited in their ability to share information with mothers (Afsana 2001); and sometimes also lacked sufficient training to attend home births (Blum 2006), to manage complicated pregnancies or deliveries, such as HIV in pregnancy (Afsana 2001, Barua 2011, Mathole 2006), and to provide loading doses of magnesium sulphate when managing pre-eclampsia and eclampsia (Barua 2011). Some doctors lacked training in non-pharmacological pain management (Graner 2010), and were thus limited in their ability to manage pain, while others lacked the training to conduct Caesarean sections or repair extensive lacerations (DeMaria 2012). Specialist doctors were therefore necessary to manage complicated cases. Midwives' basic education did not always provide them with the practical skills to work independently in midwife-led obstetric units (Lester 2003), or to manage labour in positions other than the supine position (Afsana 2001). In contrast, one study showed how training and allowing midwives to practice assisting women

in delivering in non-supine positions enabled them to get accustomed to this practice (Fujita 2012).

Health worker competencies and opportunities for on-the-job training were sometimes limited by poor scheduling of education sessions, high cost, inequitable selection of participants, lack of ongoing training and follow-up, and shortage of instructors (moderate confidence; Table 13). For instance, midwives did not benefit from classes that were inappropriately scheduled, such as after working a night shift (Pettersson 2006), or when the content did not apply to midwives' daily reality. Midwives sometimes missed opportunities to upgrade from enrolled to registered midwifery when they lacked adequate funds (Fränngård 2006). Professional status and hierarchy sometimes also meant that the selection of candidates for training was not fair; junior midwives in one study often missed opportunities to upgrade their skills for this reason (Ith 2012). In the same study, training programs were often not combined with support supervision and feedback for improving performance among health workers (Ith 2012), and in another study had a shortage of instructors for upgrading courses in midwifery (Spangler 2012). In addition, the variation in quality of pre-service training resulted in varying levels of need for in-service training, and these needs were not always met, resulting in wide variation in proficiency among health workers (Pettersson 2006, Spangler 2012). In contrast, learning through practical application was reported as facilitating the acquisition of skills and confidence. The experience gained through, for example, internship, social service year, and working in the community was identified as important for building doctors' and midwives' practical experience and confidence in providing care (very low confidence; Table 14) (DeMaria 2012).

Health workers reported several barriers to implementing recommended practice. Firstly, health workers were sometimes unaware of current recommended effective practices (Conde-Agudelo 2008). Secondly, health workers' flexibility, attitudes, and beliefs about medical knowledge and skills sometimes influenced their receptivity to new practice knowledge (Belizan 2007). For example, some health workers were reported as being inflexible or unwilling to implement alternative positions of delivery even though these were preferred by women (Afsana 2001, Pettersson 2006); having attitudes that did not view medical knowledge as dynamic; or holding beliefs that no significant progress had been made and that clinical practice was similar to techniques learnt many years ago (low confidence; Table 15) (Belizan 2007). The lack of knowledge of current recommended practice was not always viewed as problematic by health workers since they had textbook knowledge on case management (Pitchforth 2010). In some cases, health workers were reported as being ignorant of the effectiveness of certain practices or sceptical about the use of evidence-based medicine in obstetrics (Conde-Agudelo 2008). Although conferences provided an opportunity for learning, these were considered by some health workers as repetitive, offering basic information, and leaving them unmotivated to seek new practice knowledge (Belizan 2007). In

situations where health workers were unaware of recommended effective practice, the culture of practice was sometimes based on "norms and routines dictated by opinion leaders" (Conde-Agudelo 2008).

Lack of time, skills, and infrastructure limited health workers' ability to seek knowledge and practice new clinical skills (low confidence; Table 16). For instance, chronic staff shortages meant less time available for health workers to seek information (Belizan 2007, Conde-Agudelo 2008). This was sometimes further compounded by a lack of information sources such as internet access, and poorly facilitated hospital libraries (Belizan 2007). In addition, lack of training and skills in networking, epidemiology, research appraisal, or critical thinking about clinical practice could limit health workers' awareness and receptivity to clinical practice changes (Belizan 2007, Conde-Agudelo 2008, Lugina 2001). In addition, professionals sometimes preferred old, familiar procedures when they lacked the skills to adopt new practices (Afsana 2001, Belizan 2007). In contrast, some doctors, such as those in university residence programmes, hesitated to use methods that did not require interventions, and preferred new technologies and skills and wanted to implement them. University residency programmes were therefore viewed as an opportunity for residents to practice new procedures, but were also a disadvantage when motivated residents did not follow recommendations about when these interventions, such as selective episiotomies, should be used (Belizan 2007). Other factors that health workers considered important for introducing and maintaining new clinical practices were management support, training in implementation of clinical guidelines, the extent to which the changes were promoted by doctors who were considered well informed by their peers, and how those changes were perceived by their peers (Belizan 2007).

Standards and protocols

Where guidelines and protocols were lacking or were inconsistent, or where health workers were not aware or were uncertain of them, patient care and outcomes could be impacted and harm caused (low confidence; Table 17). The included studies showed examples of health workers lacking guidelines and protocols (de Carvalho 2012), for instance for the management of complications in pregnancy such as pre- and post eclampsia (Barua 2011, Mathole 2006); for uncommon diseases in pregnancy and childbirth (Mathole 2006); and for postpartum care (Lugina 2001). This could lead to a lack of direction (Lugina 2001), and inconsistent and harmful care (de Carvalho 2012). Different hospital units sometimes followed different guidelines/protocols for the same procedures (Barua 2011). Occasionally, guidelines were contradicted in the media (Mathole 2006), for instance health workers who were implementing World Health Organization (WHO) guidelines on breastfeeding for the prevention of mother-to-child HIV transmission were confused when the media gave contradictory messages. In another study, health workers were unaware of

health standards of care for reproductive care (Khalaf 2009).

Health workers did not always comply with protocols and guidelines, even when aware of them. For example, when providing postpartum care, health workers did not always monitor bleeding and uterine involution, or check vital signs every 15 minutes (low confidence; Table 18) (Molina 2011). Guidelines and protocols were not followed for a number of reasons. Some health workers felt that guidelines were insufficient without consensus from staff (Belizan 2007). Some studies described how health workers continued to practice ineffective procedures because they were considered routine (Conde-Agudelo 2008); due to lack of time (Lester 2003); because health workers lacked the autonomy not to follow what they knew to be inappropriate care (de Carvalho 2012); because the resources at the institution were not aligned with the protocols for postpartum care (Mathole 2006); or when it was unclear who was responsible for carrying out specific tasks, such as using a partograph (Pettersson 2006).

Health worker compliance with protocols and guidelines was also guided by health workers' perceptions of the consequences of their practice. For example, health workers sometimes used unnecessary diagnostic tests and did not follow recommended practice when they feared malpractice suits. This fear could lead to practitioners retaining practices they believed were 'safer' (very low confidence; Table 19) (Belizan 2007). Some health workers did not use recommended interventions when delivering care due to concerns about negative outcomes for the baby or the mother. Examples included the use of magnesium sulphate administered with anaesthesia during Caesarean sections or when monitoring of serum magnesium sulphate levels was not possible (very low confidence; Table 20) (Barua 2011). Health workers were sometimes reluctant to admit their lack of skills in delivering care for fear of blame and criticism from managers (Barua 2011, Lugina 2001, Pettersson 2006, Thorsen 2012), and were fearful of admitting ignorance about childbearing when they were expected to be knowledgeable (Lugina 2001). This fear of criticism could undermine health worker confidence and performance (low confidence; Table 21) (Pettersson 2006).

Commodities and health services infrastructure

Insufficient stock or lack of drugs and supplies, or both, sometimes influenced the quality of care provided to mothers and their babies (moderate confidence; Table 22). For instance, studies reported insufficient stock and/or lack of drugs such as hydralazine, magnesium sulphate, oxytocin, misoprostol, or antiretrovirals (Anwar 2009, de Carvalho 2012, Fränngård 2006, Ith 2012, Penfold 2013, Pitchforth 2006, Pitchforth 2010). Supplies such as gloves were likewise reported to be insufficient or out of stock in several studies (Fränngård 2006, Graner 2010, Lester 2003, Mathole 2006, Pitchforth 2006, Pitchforth 2010, Spangler 2012, VSO 2012). Health workers in one study had to use less effective alternative

drugs such as diazepam instead of magnesium sulphate when managing eclampsia (Pitchforth 2010). In other studies, a lack of supplies limited good hygiene practices and practice of aseptic techniques (Graner 2010, Mathole 2006), resulting in unsafe practices such as the reuse of disposable gloves, potentially increasing the risk of HIV infection (Graner 2010, Lester 2003), leading to poor outcomes and increasing the length of stay in health facilities (Bradley 2009). The lack of supplies and drugs was attributed in part to the long time it took to replenish these and the wastage that occurred when health facilities received supplies that they had not requested (Penfold 2013). As a result of this lack of drugs or supplies, mothers or their carers had to purchase their own (Foster 2006, Fränngård 2006, VSO 2012), which sometimes led to wasted time in procuring the drug and the creation of informal markets and corruption at health facilities (low confidence; Table 23) (Barua 2011; Spangler 2012).

Lack of equipment also limited health workers' ability to provide quality care to mothers and their babies (high confidence; Table 24). For instance, studies reported a lack of stethoscopes and blood pressure machines (Pettersson 2006), cord clamps and delivery kits (Fränngård 2006, VSO 2012), complete vacuum evacuation sets (Pitchforth 2010), instruments to repair lacerations (Graner 2010), Ambu bags (and oxygen) for neonatal resuscitation (Pettersson 2006), sterilising equipment such as autoclaves (Anwar 2009, Graner 2010), and laboratory and diagnostic tools (Barua 2011). Some mothers and their babies received poor quality care as a result of this lack of equipment. In some studies, obstetricians managed eclamptic mothers without adequate investigative support (Barua 2011); neonates were not resuscitated due to lack of Ambu bags or oxygen (Pettersson 2006); monitoring of mothers and their babies was insufficient due to lack of equipment (Pettersson 2006); and lacerations were left unrepaired due to lack of instruments (Graner 2010).

Lack of blood or poor infrastructure to manage blood transfusion limited health workers' ability to provide appropriate care (moderate confidence; Table 25) (Afsana 2001, Anwar 2009, Ith 2012). Lack of blood sometimes led to unnecessary referral (Afsana 2001), and in one study, resulted in death (Ith 2012). Where blood was available, some rural health facilities lacked the laboratory personnel or facilities for grouping and cross-matching that are necessary for blood transfusion (Anwar 2009). In that study, blood was managed at the district-level health facilities, and mothers needed to attend private diagnostic centers for grouping and cross-matching.

Lack of equipment, supplies, or drugs sometimes wasted health workers' time, increased their workloads and risk of infection, and led to low morale (moderate confidence; Table 26). For instance, a lack of supplies could increase workloads when health workers had to source items from other facilities (Penfold 2013), or could increase the workloads of health workers at receiving facilities whenever unnecessary referrals occurred. Health workers also wasted time trying to improvise in order to provide care (Bradley 2009,

Lester 2003, VSO 2012), in the process sometimes using unrecommended practices that increased their fear as well as the risk of cross-transmission of infection (Bradley 2009, Graner 2010, Lester 2003, Penfold 2013). The lack of supplies could lead to feelings of frustration and hopelessness among health workers and could wear them out (Belizan 2007; Foster 2006). In one study, the lack of antiretroviral therapy in particular left health workers feeling helpless when they watched mothers and their infants die (Mathole 2006).

Poor, incomplete, and non-systematised patient information could lead to delayed or incorrect management of high-risk mothers (Pettersson 2006), or interfere with continuity of care (low confidence; Table 27) (Molina 2011). For instance, when maternity records were missing, incomplete, or non-systematised, high-risk mothers did not always receive timely treatment (Pettersson 2006), or mothers might not be followed as they move from one facility to another (Molina 2011).

Apart from essential equipment, drugs, and supplies, a lack of or unreliable supply of electricity (Anwar 2009, Pitchforth 2010, Spangler 2012, VSO 2012), including a lack of fuel to run generators, and lack of water (Spangler 2012), influenced health workers' ability to provide quality care (moderate confidence; Table 28). In some studies, electricity was described as non-existent, unreliable, or irregular (Anwar 2009, Spangler 2012, VSO 2012), and this interrupted the use of equipment such as ultrasound scans or hospital communication systems, interfered with the warming of babies, and placed health workers at increased risk of infection while working in the dark. In one study, health workers reported delaying repairs of episiotomies to daytime. One study reported that lower-level health centres had no indoor running water and used water from outdoor wells (Spangler 2012).

Lack of space and amenities as well as poor physical layout and organisation of wards also limited the provision of quality care (moderate confidence; Table 29) (Fränngård 2006, Khalaf 2009, Lester 2003, Molina 2011, Pettersson 2006, Pitchforth 2010). For instance, lack of space meant that some women had to deliver on the floor in corridors, and it was not possible to have companions in labour wards (Belizan 2007, Pitchforth 2010). Lack of space could also compromise women's privacy and dignity during labour (Khalaf 2009, Pitchforth 2010). The physical layout and separation of wards was sometimes counteractive to teamwork among health workers and interfered with the observation of mothers and their babies (Pettersson 2006). The lack of space and poor layout of wards could be further worsened by the large demand for delivery care (Molina 2011), in part due to unnecessary referrals from lower-level facilities (Pettersson 2006), or policy changes that did not consider staffing and resources (Lester 2003). The large demand for delivery care could lead to overcrowding in health facilities. Together, overcrowding and limited physical infrastructure sometimes led to poor hand hygiene Ith 2012), a poor, stressful working environment for health workers (Fränngård 2006, Lester 2003), and incorrect diagnoses and medical errors (Khalaf 2009).

A shortage of beds and overcrowding sometimes resulted in an increased risk of cross-infection (Pettersson 2006), for instance when mothers and their babies had to share beds or use the floor. Overcrowding and limited infrastructure could also interfere with personalised care (Khalaf 2009), and limit the mobility of women in labour (Conde-Agudelo 2008, DeMaria 2012). Health workers perceived hierarchical management between local health facility management teams and the national Ministry of Health; poor communication between these levels; and a lack of funds as barriers to the reorganisation of maternal wards (Pettersson 2006). Lack of funds and material resources sometimes prevented health facility managers from regularly maintaining physical infrastructure (low confidence; Table 30) (Ith 2012, Pitchforth 2010). Managers in one study queried the continued expansion of infrastructure when existing health facilities were not fully functional to provide good-quality care (VSO 2012).

Health facilities varied in the availability, functionality, and quality of interventions assigned as signal functions for obstetric care (very low confidence; Table 31) (Afsana 2001, Spangler 2012). In one study, most of these functions, including provision of parenteral antibiotics, anticonvulsants, or neonatal resuscitation, were not available at lower-level facilities (Spangler 2012). In the same study, some of these functions appeared to be available at higher-level facilities, but functionality varied, for instance due to drug stock-outs or unqualified providers of care.

One included study reported health worker perceptions on providing maternity care in health facilities compared to home (Blum 2006). These health workers felt it was easier to deliver care in facilities than at home (very low confidence; Table 32). Some of the positive aspects about delivering care at the health facility were that they were able to do other work while monitoring labour and provide care for several mothers, and that work schedules were more regular and care was available 24 hours a day. Furthermore, at facilities other skilled providers were available to assist when needed and some procedures, such as episiotomies, were easier to perform. In addition, health facilities could provide a secure, controlled, hygienic work environment, where electricity, equipment, and medications were always available.

Referral mechanisms

When primary healthcare workers lacked the knowledge and skills to determine the need for referral or were unable to provide emergency care, poor-quality care could result, such as mothers not being referred or inadequate care being offered at lower-level facilities (very low confidence; Table 33) (Molina 2011).

When health workers referred mothers and their babies to higher levels of care, several factors were reported by health workers to interfere with the referral process. For instance, lack of trust and professional rivalries between midwives, doctors, and obstetrician gynaecologists could delay referral of mothers and their babies (Tabatabaie 2012). Midwives sometimes felt blamed by doctors

when complications arose and hesitated to seek support from the medical teams at the receiving facilities (Tabatabaie 2012). Some midwives did not travel with mothers to the referring facility for fear of blame for any negative occurrences during the referral process (although this was also attributed to the scarcity of other health workers at the lower level) (low confidence; Table 34) (Ith 2012). Respondents also felt that mothers' perceptions of the health system could also make them reluctant to accept referral (moderate confidence; Table 35). For instance, mothers were reported as being sceptical about the cost of care (Blum 2006, Graner 2010, Tabatabaie 2012); concerned about poor management and care at the next-level facility, the procedures used, and the high levels of Caesarean sections; and fearful of complications (Barua 2011, Blum 2006, Graner 2010, Tabatabaie 2012). Mothers may also have already travelled far to reach the facility they perceived as a good one (Lester 2003), or feared unfamiliar urbanised settings (Blum 2006). As a result of mothers' reluctance to accept referral, health workers could spend a lot of time convincing reluctant mothers or their families (Blum 2006), or could feel pressured to conduct high-risk deliveries or unnecessary procedures such as ultrasound scans to assess foetal condition (Graner 2010). In one study, health workers did ultrasound scans at seven to nine months to rule out deformity of the foetus and avoid blame by the mother and her family.

The presence of trust between mothers and midwives could influence mothers' willingness to be referred. Referral could be delayed when facilities lacked trusted midwives or other primary care workers to convince mothers of the need for referral (very low confidence; Table 36) (Tabatabaie 2012). Where midwives or other primary care workers were available, they sometimes lacked the knowledge and communication skills to manage women's reluctance (Tabatabaie 2012).

Lack of transport was reported to hinder referral of women and their babies to higher levels of care (Graner 2010), for instance when health facilities lacked ambulances (Molina 2011), or health facility budgets were insufficient to purchase fuel for vehicles (moderate confidence; Table 37) (Fränngård 2006, VSO 2012). Lack of fuel for vehicles when the need for referral arose was frustrating to nurses and midwives and left them feeling helpless when mothers' and babies' lives were at risk (very low confidence; Table 38) (VSO 2012). When health facilities lacked fuel for vehicles, mothers and their families were sometimes asked to pay their own transport costs, which many families could not afford (low confidence; Table 39) (Fränngård 2006, VSO 2012).

Several situations could lead health workers to refer mothers and shift responsibility to higher levels of care, including when they lacked the skills or confidence to provide care or when they worked in isolation (Blum 2006); when they were concerned about the facility's reputation when poor patient outcomes arose (Barua 2011); or when they lacked supplies, drugs, or equipment to provide care (low confidence; Table 40) (Ith 2012, Penfold 2013). When secondary-level care was not available, mothers were sometimes re-

ferred to tertiary levels of care, which could result in congestion at the receiving facilities (very low confidence; Table 41) (Molina 2011). Unnecessary referrals resulted in increased workloads at higher levels of care (Penfold 2013).

Administrative processes, including approval of mothers' insurance coverage, and poor communication, could influence the efficient referral of mothers and their babies to receiving units (very low confidence; Table 42) (Molina 2011). Lack of feedback from receiving to referring health facilities could influence midwives' practice and patient outcomes. Midwives perceived this information as useful for their practice and patient outcomes (very low confidence; Table 43) (Fränngård 2006).

Interaction between mothers, community members, and health workers

Poor attitudes and unethical behaviour among health workers could influence the quality of care. Examples of this included when health workers were harsh, rude, or impatient with mothers (Afsana 2001, Hassan-Bitar 2011, VSO 2012); when they displayed poor cultural sensitivity, for instance by not maintaining women's privacy (Afsana 2001, Spangler 2012); or when they were absent from their duty stations or involved in the illegal sale of drugs and supplies or expected "back door" payments for services (low confidence; Table 44) (Spangler 2012). Study participants suggested several reasons for these behaviours, including wrong intrinsic reasons for joining the nursing profession (VSO 2012), long, solitary working hours, physical exhaustion, and the perpetual responsibility of looking after mothers (Hassan-Bitar 2011, VSO 2012). These could lead midwives to show tough/harsh behaviour and lack of patience with mothers (Hassan-Bitar 2011, VSO 2012), or could lead them to be absent when expected to provide 24-hour care in health centres (Spangler 2012, VSO 2012). System-wide behavioural and attitudinal problems were thought to explain why health workers displayed underdeveloped cultural sensitivity and weak interpersonal communication (Spangler 2012).

Mothers' participation in decision-making during labour could be limited by health worker attitudes and authoritarian behaviour. Health workers sometimes conducted procedures without asking mothers for their opinion (de Carvalho 2012), or did not seek feedback from mothers about practices or outcomes (Belizan 2007), but expected mothers to co-operate (DeMaria 2012). One reason for this lack of participation appeared to be health workers' attitudes and assumptions about the mother's capabilities, preferences, and role during delivery of her baby (low confidence; Table 45). Health workers in some studies believed that certain decisions about care did not concern the mother (de Carvalho 2012), and did not want to be restrained by the mother's or her companion's preferences (Belizan 2007, Conde-Agudelo 2008). These health workers believed that the woman in labour was in no condition to give her opinion about what was best for her and

the baby (de Carvalho 2012), or that her low socioeconomic status, lack of information, or family problems made her unwilling or unable to provide input (Belizan 2007, Maputle 2010), and that women were comfortable leaving decision-making to health workers (Maputle 2010). Some midwives found this lack of participation stressful, for example when mothers did not voice their opinions about their care (Maputle 2010). Some midwives indicated that they promoted, supported, and respected mothers' preferences as long as they were not harmful to mother and baby (Maputle 2010).

Some health workers did not value communication with mothers, communicated poorly, or said they had problems with communication. Poor communication and interaction could threaten the trust between health workers and mothers (very low confidence; Table 46). Some studies reported that health workers considered communication with mothers as a waste of time (Hassan-Bitar 2011), and described situations where there was insufficient communication between staff and families (de Carvalho 2012, Hassan-Bitar 2011), or where skilled birth attendants were abrasive and demeaning in their interaction with women and showed no concern for women's families, for instance women were reprimanded when they arrived late in labour, refused to expose their genitalia, or had too many children (Blum 2006). Language barriers could interfere with effective communication between mothers and health workers (Maputle 2010, DeMaria 2012). As a result, mothers sometimes appeared not to listen to health workers while health workers mechanically worked through the process of providing care (Maputle 2010). Some health workers acknowledged the need to respect and involve men, women's families, and the community in maternal health, for example in understanding cultural beliefs related to postpartum care (Lugina 2001).

In contrast, other health workers described how they valued the appreciation, respect, trust, and praise they received from mothers (Bradley 2009, VSO 2012), making friends among mothers, or working with the community (Bradley 2009, Fränngård 2006). Midwives in particular were delighted when a baby was given their name and to see the baby grow (low confidence; Table 47) (VSO 2012).

Some studies reported how a mismatch between peoples' expectations of health workers and what health workers were actually able to deliver or thought was appropriate could lead to antagonism. For instance, health workers that delivered home-based care could experience social pressure from families and communities, such as to give injections to speed up delivery as opposed to waiting for labour to progress normally (Blum 2006). Families might not understand why a health worker had to refer the mother to hospital, or the community might prefer a different delivery practice from what the health worker could provide (Blum 2006). Health workers providing maternity care at health facilities were sometimes treated harshly by people from the community when there was a lack of supplies and materials (Hassan-Bitar 2011). In addition, misconceptions that midwives were not working when they took

a break from their work (VSO 2012), or that health workers sold drugs threatened the trust between health workers and the community (low confidence; Table 48) (Blum 2006).

In one study, midwife-led shared care was perceived to improve the interaction between mothers, families, and health workers, and could improve health workers' self esteem and lead to a change in hospital culture with respect to service provision (very low confidence; Table 49) (Fujita 2012). In this study, midwife-led shared care increased communication between midwives, women, and their families; enabled the presence and participation of family members; and increased satisfaction in the care provided. As a result, the need for medication during delivery was minimised, which in turn reduced the financial burden experienced by families. The supportive environment for mothers, the good interaction between mothers and health workers, as well as recognition of professional expertise among midwives increased self esteem. Midwife-led shared care enabled other hospital staff to reflect on their own routine activities and manner of communication with families and clients, leading to a change in hospital culture with respect to service provision (Fujita 2012).

Interaction between health workers

Disrespectful communication, lack of trust, poor teamwork and co-ordination, and inadequate opportunities to discuss clinical practice could lead to poor interprofessional relations. Tensions could also arise when health workers did not recognise each others' capabilities or when they acted in a way that reinforced clinical hierarchies (low confidence; Table 50). Some studies reported instances of disrespectful interprofessional communication (Hassan-Bitar 2011, Pettersson 2006). For instance, when doctors shouted at midwives, midwives could feel humiliated and lack confidence, and lead them to believe that they were not trusted, or that their opinions were not welcomed and could delay the delivery of care (Pettersson 2006). Midwives with lower levels of training reported feeling marginalised and less motivated to provide care because midwives with higher levels of training and doctors used their qualifications, status, and roles to dominate clinical practice (Ith 2012). Tensions were also reported between doctors and clinical officers due to differences in salary, benefits, workload, and status (Bradley 2009). Some studies reported a lack of understanding of competencies and alternative models of care. For instance, doctors did not always have a clear understanding of the midwifery profession, which could result in conflict or professional jealousy (DeMaria 2012). Teamwork could also be threatened when doctors worked in a small number of shifts, and had minimal contact with other professionals (Belizan 2007), or when staff meetings were infrequent (Hassan-Bitar 2011). This sometimes resulted in lack of co-ordination and varying decision-making procedures and standards of care (Belizan 2007, Hassan-Bitar 2011).

Nurses and midwives valued and were motivated by a good team dynamic where health workers provided feedback, supported, and

co-operated to ensure all shifts were covered (low confidence; [Table 51](#)) ([Bradley 2009](#), [Fränngård 2006](#)). For instance, midwives in one study valued good interprofessional collaboration, which made them feel accepted as part of the professional team and provided an opportunity to improve their competence through on-the-spot education provided by obstetricians ([Pettersson 2006](#)). In another study, midwives worked together in a team led by midwives, which increased their ability to share experiences and new practices and their decision-making responsibility, improved their self esteem, provided quality assurance, and improved the quality of care provided ([Lester 2003](#)). In one study, researchers observed that nurses had a strong teamwork ethic and functioned well together to complete work ([Foster 2006](#)).

Factors tied to the microenvironment

We have used the term 'microenvironment' to describe the broad structural context within which health workers and those who support them deliver maternity care. Some of the included studies reported data on health workers' views and perceptions of professional associations and sociocultural factors. None of the studies reported data on health worker views and perceptions of legislation, regulation, financing, or broader governance or policy issues.

Professional associations

Health workers had conflicting views on the role of professional councils (very low confidence; [Table 52](#)). For instance, some perceived professional councils as advocates for their members, while others perceived them as a regulatory bodies with punitive functions ([VSO 2012](#)).

Social/cultural environment

Sociocultural barriers sometimes hindered mothers from receiving care in hospitals (low confidence; [Table 53](#)). For instance, some women preferred not to be examined by male health providers ([Khalaf 2009](#)), or preferred a particular position in which to deliver for cultural reasons, but preference for that birthing position may not have been accepted by the health worker ([Blum 2006](#)). In other instances, mothers did not divulge information that was needed for their care for religious reasons ([Thorsen 2012](#)).

On the other hand, professional midwives and obstetric nurses perceived themselves as empathetic and having a gender advantage for delivering maternity care. They therefore considered themselves better placed than male providers to attend low-risk births ([DeMaria 2012](#)).

Integrating the findings from this synthesis with the findings of relevant Cochrane intervention reviews

Our synthesis identified a number of factors that were considered important by health workers for the delivery of intrapartum and postpartum care. We classified several of these factors as health service inputs, including health worker training; available human resources; access to equipment, drugs, supplies, blood, electricity, water, and transport for referral; physical infrastructure, in particular available space and layout of wards; and interprofessional communication and teamwork. In [Table 54](#) we have presented our matrix model mapping these factors against the interventions in studies included in [Dudley 2009](#). At the time of publication of this synthesis, the Dudley review was not yet completed, so this synthesis includes a matrix table based on the studies that have been included to date. The findings in the matrix may change when the full effectiveness review findings are available. We will consider the data on effects of the intervention when the related review is completed.

Whereas the studies included in this synthesis were conducted among health workers based at health facilities, studies in the Dudley review were largely community-based studies that targeted pregnant women and their families. The studies in the intervention review focused on a different phase of skilled birth attendance, that is demand generation, whereas studies in our synthesis focused on the supply side. Therefore, when linking the findings from this synthesis to the Dudley review, we considered only 11 intervention studies that included health system strengthening components as part of the intervention. We considered these 11 studies comparable to the studies included in this synthesis given the focus on supply-side factors for providing maternity care.

Overall, very few of the factors identified as important in our synthesis appear to have been specifically addressed in the 11 studies in the Dudley review. Most of the studies addressed between one and four of these factors. Eight of these studies included health worker training as part of the intervention. This training was focused largely on the technical skills of the health workers, apart from one study that provided training in project management and another on appreciative inquiry. None of the studies included training on communication for health workers. Additional factors that were included by at least one intervention study were the recruitment of additional health workers, the use of task-shifting or pay for performance approaches, improvement in supplies and provision of equipment, improvements in physical infrastructure such as renovation, and the establishment of emergency obstetric care (EmOC) centres and the upgrading of units to provide 24-hour care.

Only one of the intervention studies included a broad range of health system changes ([Pardeshi 2011](#)). This study assessed the trend in facility deliveries following a seven-year programme to improve access and strengthen health services in rural India. In this study, delivery rooms were constructed, repairs and renovations at the primary healthcare level were done, a blood storage facility was provided at first referral levels, inverters and solar heaters (electricity backup) were made available at the primary care level, vacant

positions were filled, funds were provided for referral transport, and equipment, including oxygen cylinders and baby warmers, was provided.

It is perhaps unsurprising that most interventions included training, given that training courses may be easier to organise and demand less time and resources than other inputs such as infrastructural changes. However, we suggest that future intervention studies also take into account other factors identified by our synthesis. The presence or absence of these factors could also serve as the basis for subgroup analyses in systematic reviews of the effectiveness of these types of interventions.

DISCUSSION

Summary of main results

This synthesis included evidence from 31 studies from low- and middle-income countries on factors that influence the provision of intrapartum and postnatal care among skilled birth attendants and those who support them. Key findings for which we had high or moderate confidence focused on education, human resources, health services infrastructure, referral mechanisms, and interaction between health workers.

The synthesis shows that inadequate pre-service and in-service training limited health workers' skills and their ability to provide quality care (high confidence). While on-the-job training provided opportunities for improving these skills, opportunities were limited by the cost, availability, and varying quality of training (moderate confidence).

The problem of staff shortages was widely reported and could increase health workers' workloads and compromise their ability to provide care. A lack of specialists or experienced staff could lead to problems with supervision and situations where emergency obstetric care was not provided or was provided by less qualified staff. These issues, coupled with poor living and working conditions, caused health workers stress and frustration, and affected their family life. The synthesis highlights a number of possible causes for staff shortages, including inadequate hiring and deployment of staff, limited funding, poor management and bureaucracy, poor salaries, and other factors that influence retention of health workers. In addition, health workers perceived managers as lacking in management capacity and skills and sometimes felt unsupported when concerns about the workplace were left unheard. We had moderate confidence in these findings.

Lack of equipment, insufficient supply, and/or lack of drugs; lack of blood or the limited infrastructure to manage blood transfusion; lack of or unreliable supply of electricity, including a lack of fuel to run generators; and lack of water limited health workers' ability to provide quality care to mothers and their babies. Lack of equipment, supplies, or drugs resulted in low morale among

health workers, wasted health workers' time, and increased their workload and risk of infection. The lack of space and amenities as well as poor physical layout and organisation of maternity wards also limited the provision of quality care. We had high confidence in the finding that lack of equipment limits health workers ability to deliver care, and moderate confidence in all other findings.

Respondents felt that maternal perceptions of the health system sometimes made them reluctant to accept referral. Lack of transport including lack of ambulances or funds to fuel vehicles for transport to higher levels of care hindered referral. We had moderate confidence in these findings.

Health worker interprofessional relations were sometimes limited by disrespectful communication, lack of trust, poor teamwork and co-ordination, and inadequate opportunities to discuss clinical practice. Tensions arose when health providers did not recognise each others' capabilities, and when they acted in ways that reinforced clinical hierarchy. We had moderate confidence in these findings.

Other factors that we considered to be important, but for which we had low or very low confidence in the findings, are as follows:

- how staff shortages and heavy workload interfered with health workers' interaction with mothers;
- lack of protocols/standards of practice or guidelines, or where they were inconsistent or health workers were unaware of them could influence patient care and cause harm;
- lack of time, limited infrastructure and skills in research appraisal influenced health workers' ability to seek knowledge on current recommended practice;
- lack of health worker knowledge and skills to determine the need for referral;
- lack of trust between health workers and mothers and lack of interprofessional trust between health workers at referring and receiving health facilities may delay referral of mothers to higher levels of care. Good interprofessional collaboration and teamwork, e.g. through midwife-led shared care, influenced health worker motivation, decision-making ability, quality of care, and hospital culture with respect to service provision.

Overall completeness and applicability of evidence

This synthesis found that poor quality of pre-service training and other barriers to on-the-job training were among the reasons for variations in health workers' competence and skills. This finding implies that health workers who have had poor-quality pre-service training may not improve their skills during in-service training. Furthermore, a lack of supervision and follow-up of trainees means that the benefits of training may not be fully obtained. Although on-the-job training courses are often available in many settings, managers need to consider how to fully maximise benefits from this training, for instance by ensuring that it reflects the needs of health workers and by developing a coherent strategy to support

and follow up trainees. Some of the training needs identified from this synthesis included: management of complicated pregnancies or deliveries, management of home births, alternative delivery positions, epidemiology, research appraisal, or critical thinking about clinical practice.

This synthesis also illustrates how health workers' abilities to provide care to mothers and their babies were limited by the poor equipment, drugs, supplies, and physical infrastructure available at the health facilities. Our findings reflect system-wide challenges, and how these deficiencies influence the technical quality of care provided by health workers; health worker morale and their sense of personal safety; and show the extra financial costs to mothers and their families. In addition, our synthesis reflects how these systemic challenges influence the implementation of patient-centred, dignified, 24-hour care, and how they can lead to the creation of informal markets at health facilities and other health system challenges such as corruption, absenteeism, and dual practice. The importance of an enabling environment in order for health workers to deliver good-quality care has been emphasised previously (Macleane 2003). Although the United Nations' fifth Millennium Development Goal (MDG) era promoted access to health facilities and skilled birth attendance, basic infrastructure and logistics management at health facilities remain a challenge in several settings (Adair-Rohani 2013).

Our findings suggest that the shortage of personnel and resulting workload led health workers to increase their scope of practice or task-shifting to another cadre. This may have been made possible in part through vague job descriptions that allowed managers to assign any job to a health worker. Whereas formal task-shifting is seen as a remedy for human resource shortages, our findings suggest that informal task-shifting may have implications for quality of care, for example when specialists are lacking and emergency maternity care is provided by poorly trained or unqualified health workers. In addition, our findings indicate that task-shifting may further increase workload for a workforce that already feels underpaid for work done. The review by Colvin 2013 similarly identified inadequate training, unclear job descriptions, and health worker concerns about increased workload as among the challenges to implementing task-shifting. These factors are important for managers to consider when implementing task-shifting.

Several of our findings suggested the importance of building trust between health workers, mothers, and communities, as well as between health worker teams. In a study by Sheppard 2004, health worker communication skills and women's perceptions of institutional barriers are identified as factors that may influence the building of trust between patients and health workers. With regard to trust between health workers, a review by Zwarenstein 2009 suggests that incorporating routines such as interprofessional meetings and ward rounds into clinical practice supports health worker interaction and can improve healthcare processes and outcomes. At the start of this synthesis process, we did not intend to document health worker perceptions regarding respectful care of women dur-

ing childbirth. However, there was increasing interest in this topic among the global health community during the development of this synthesis (Bohren 2015). While it is neither ethical nor acceptable for health workers to disrespect women, our findings may at least partly explain why this phenomenon occurs. Our findings indicate that poor training and harsh working conditions, a lack of supplies, long, solitary hours of work, and disrespect from colleagues may jeopardise health workers' abilities to display support, empathy, and friendliness to women in labour.

Stress, physical exhaustion, and the emotional demands of the job may leave health workers emotionally worn out, and therefore incapable of providing social support to mothers under their care. Other studies have described a similar phenomenon, where health workers distance themselves from their patients, for example by not emotionally connecting with patients under their care as a coping strategy for stressful work conditions (Van Der Walt 1999), or where the health system does not provide health workers with support for such emotional care (Petersen 2002). We also hypothesise that when working under difficult conditions, health workers may place good social interaction and care lower in the hierarchy of quality of care than other medical interventions. In addition, most health workers that provide maternity care are female and may have experienced several forms of disempowerment in the workplace, and are therefore not able to advocate within the health system for better treatment of the women they care for. As a result, poor health worker-mother interaction may be normalised as part of the 'culture' of the health system in some settings, and both health workers and mothers may come to accept this as the norm (Bohren 2017, Rominski 2017, Sadler 2016). The perspective of Leape and colleagues on the nature and causes of disrespectful behaviour by physicians supports this hypothesis (Leape 2012). Here, the authors argue that when some practices become ingrained in the health system, they may not be recognised as wrong and may become routine. Our finding that health workers themselves experienced disrespectful interprofessional communication at the health facility supports this hypothesis.

This synthesis included studies that represented a broad range of cadre and settings in low- and middle-income countries. Participants were drawn from a broad range of cadre from tertiary, secondary, and primary settings, and included managers and others who support health workers to deliver maternity care. Two studies were conducted among facility-based health workers that delivered care in the community or at private clinics. Most studies were conducted in settings that used mixed models of maternity care; two studies were conducted in midwifery-led units. However, several of the findings were only drawn from a narrow range of cadre and settings, which may have influenced our confidence in these findings.

Our synthesis included few studies that addressed health worker perceptions of sociocultural barriers and professional associations, factors in the broad macroenvironment that influence health workers' delivery of care. This synthesis was based on a broad search,

but did not retrieve or include studies that addressed health worker perceptions of upstream system-level factors on governance, policy, financing, logistics, or legislation. Some of these studies may be published in grey literature, which we did not search. These data are important since the broader issues influence the work and life of a health worker at the front-line of the health service, for example how policies or policy changes, or different financing models affect health workers' ability to provide maternity care. Our synthesis focused on intrapartum and postnatal care. However, most of the included studies focused on intrapartum care, with only two focusing on postpartum care. This may reflect the body of literature and attention given to intrapartum care. We did not intend to include qualitative studies that focused on antenatal care, as this topic is covered in a separate review (Downe 2016). In addition, we sought to extract data on both barriers as well as facilitators reported by health workers. However, the included studies largely reported data on barriers, and we identified minimal data on facilitators. Whereas it has been suggested that facilitators are the opposite of barriers, this may not always be the case. However, we did not find sufficient data to support or refute this argument. We used the CERQual approach to assess relevance and adequacy of data from the included studies that contributed to individual findings (see [Methods](#) section). These assessments reflect the applicability and completeness of data contributing to a finding. See additional information in the section below.

Confidence in the findings

Based on our CERQual assessments, we had high confidence in two findings and moderate confidence in 16 findings that the studies were a good representation of the phenomenon of interest. We had several findings where we had low or very low confidence that the studies were a good representation of the phenomenon of interest, and it was therefore difficult to draw conclusions from these findings. Our main concerns were connected to the methodological limitations of the studies, and the relevance and adequacy of the data. Common methodological limitations included a lack of researcher reflexivity as well as poor reporting of ethical considerations, sampling, and data analysis methods. We often assessed the data as being only partially relevant, mainly because the included studies represented few regions, with a focus on hospital settings, and few populations, with a focus on midlevel health workers. Finally, our concerns about adequacy were mainly tied to the limited number of studies and the thinness of the data contributing to many of the findings.

Agreements and disagreements with other studies or reviews

[Table 55](#) summarises the scope of other related reviews when compared to this synthesis. Our findings are complementary to the

findings in the [Filby 2016](#) review. We agree that barriers to providing good quality midwifery care arise from the quality of education of health providers, for example in the regulation of pre-service education, and that this limits professional development. However, our synthesis considers health services infrastructural barriers (e.g. limited staff numbers, lack of transport, weak facility management, and poor working conditions) separately from education or training (all categorised professional barriers in [Filby 2016](#)). We likewise found that salaries were low or insufficient for skilled birth attendants' personal needs, work done, and personal risk. Our finding for instance that health workers fear for their personal safety when they work alone, and that long, lonely hours of work affect their spousal relations, provide additional evidence of social barriers reported in the [Filby review 2016](#).

While our synthesis focused on intrapartum and postnatal care, [Downe 2016](#) covered antenatal care and is therefore complementary to our synthesis. The [Downe 2016](#) review indicated that positive interpersonal behaviour of health providers as well as their clinical, cultural, and social skills and competence are important for pregnant women. Pregnant women also required private spaces that facilitated their interaction with health providers. Our synthesis identifies some of the factors that may undermine health providers ability to provide this care, such as lack of skills in communication, heavy workload, and limited and poorly organised space. In addition, [Downe 2016](#) found that shortage of staff, low salaries and heavy workload, lack of medicines and equipment, and poor conditions in clinics including lack of water and electricity prevented providers from providing good-quality antenatal care.

The [Bradley 2016](#) review suggests that midwives attempted to assert power and control over women in their care, for example when they controlled how women behaved during labour, and that midwives' behaviour was part of a strategy to maintain their professional, technical, and social status. Our finding that health workers did not let mothers participate in decision-making because of health worker attitudes about women's preferences and role during delivery of her baby, and health workers' authoritarian behaviour, supports this hypothesis. However, [Bradley 2016](#) briefly identifies work environments and resources as part of the health system structural drivers underpinning disrespect of mothers. Our synthesis provides additional evidence that points to structural challenges health workers experience when providing care. We hypothesise that these structural challenges in part influence health worker behaviour.

The typology in [Bohren 2015](#) identified health systems conditions and constraints such as physical condition of facilities, shortage of staff and supplies, and lack of privacy as a form of mistreatment of women. Our synthesis supports the [Bohren 2015](#) finding on health systems constraints and likewise identified several barriers in health services infrastructure and human resources that interfered with health workers ability to provide good-quality maternity care. In addition, [Bohren 2015](#) identified poor rapport between women

and providers as another form of mistreatment of women. Included in this category was ineffective communication such as poor communication, dismissal of women's concerns, poor staff attitudes, and language barriers. Our finding that health workers did not value communication, or communicated poorly or had problems with communication (Table 50), supports this finding. Also included in the poor rapport between women and providers category of the Bohren 2015 review were lack of supportive care, for instance denial of birth companions, and lack of autonomy when women preferred an alternative birth position. Our synthesis provided some explanations for these findings. For instance, health workers may not allow companions in delivery rooms when physical space is limited, and in order to provide privacy to other mothers in labour (see Results section on health services and infrastructure). In addition, lack of training in alternative positions of delivery may limit health workers' ability to provide care in positions other than the supine delivery position. However, we also found that health workers had poor attitudes about the labouring mother's role in her care and did not empower mothers to be active participants in their care. Such negative attitudes may interact with structural problems and further limit women-centred care in these settings.

Reflexivity

As recommended as part of primary qualitative research, we reflected on how our backgrounds and positions might have influenced our choice of review topic, study selection, data extraction, analysis, and interpretation of data. SMB, CG, SL, and AF are employed by the Norwegian Public Health Institute, and HN is employed by Uganda National Health Research Organisation. SMB, SL, AF, and HN are trained physicians, while CG is a social scientist. SMB, SL, AF, and HN have all previously worked as clinicians in low- and middle-income settings. In these roles, we have to varying degrees experienced working conditions characterised by poor resources and have seen how this influenced our own motivation and our ability to provide patient-centred care. We are therefore sympathetic to the challenges experienced by health workers in these kinds of settings. We are also of the opinion that discussions about the quality of intrapartum and postnatal care are sometimes characterised by strong criticisms of the behaviour of health workers and of the care they provide, and a failure to adequately reflect on and consider the conditions under which these health workers provide care and the system-level reasons for these conditions.

AUTHORS' CONCLUSIONS

Implications for practice

Below are a set of questions that may help health system or programme managers when implementing or planning for obstetric health services. These questions were drawn from the findings for which we had high or moderate confidence.

1. At your facility, what is the staffing situation in relation to the workload, for instance for providing 24-hour care? Where task-shifting strategies or increasing health workers' scope of practice are suggested as options to improve the staffing situation, how will this impact on health workers' workload and on the overall quality of care? Would recruiting more health workers be a better option instead of moving people around?
2. For facilities that deliver emergency obstetric care, are specialists available when needed? If no specialists are available and tasks have been transferred to non-specialist health workers, have these health workers been provided with training, supervision, and linkages to other centres, for instance for referral or support by telephone?
3. How do health workers at your facility perceive their working and living conditions? Could these be the underlying reasons for absenteeism, decreased morale, poor retention, and recruitment of health workers?
4. For managers at district or higher programme levels, are sufficient funds available for the recruitment of health workers? Is the recruitment process responsive to the local needs with minimal bureaucracy? Recruitment arrangements need to take into account facility arrangements, e.g. 24-hour opening.
5. Do health workers' salaries reflect their training, experience, actual workload and responsibilities, and the need for reasonable living conditions?
6. What are health facility managers' training needs and how can they be supported to attain this training?
7. What are the pre- and/or in-service training needs for the health workers at your facility? Consider if the health workers can manage complicated pregnancies, alternative delivery positions (practice), among others. When planning for in-service training, consider how this training is organised, e.g. scheduling of classes, availability of tutors for upgrading courses, selection of trainees according to health facility, or individual training needs, etc.
8. What are the reasons why women may be reluctant to accept referral to higher levels of care? When exploring how to improve the referral process, health system managers may need to consider these issues in order to make the referral system more responsive to women's needs, e.g. their need of financial support or the need to manage their fears.
9. Does your health facility have a regular and reliable supply of electricity and water all year round? Consider how intersectoral collaboration could help resolve problems with electricity and water supply.
10. Does your health facility have the necessary equipment such as cord clamps, complete delivery kits, as well as sterilising equipment required for good-quality maternity care? In order to deliver quality care, attention needs to be given to ensure

necessary equipment is available and sufficient in number to meet the demands for maternity care.

11. In case your health facility occasionally runs out of supplies, drugs, and blood that are necessary to provide maternity care, what are the underlying reasons for stock-outs of these items and how can these problems be addressed?

12. Is the physical environment at your health facility optimally organised to facilitate health workers' delivery of good-quality care? For instance, what is the location of the postnatal ward in relation to the labour ward for health workers who need to monitor mothers in labour as well as mothers in postpartum and their newborns? Consider collaborating with health workers to organise the available space in view of the number of mothers served.

13. What opportunities are available at the health facility level to foster good interprofessional relations, e.g. opportunities for collaborations, team building, and appreciating each others' competencies?

Implications for research

We drew implications for research from topics where we found no studies, or from findings for which we had low or very low confidence, and we suggest that these be explored further in future research.

Other factors in macroenvironment, professional councils, sociocultural factors

- How other factors in the macroenvironment such as governance, policy, financing, etc. influence health workers' ability to provide maternity care
- The roles of professional councils, and how these roles influence health workers' ability to provide maternity care
- Sociocultural factors that influence health workers' ability to provide care

Human resources/health worker education

- How staffing situation and workload influence health workers' ability to empathise and care for women in labour
- Where financial assistance programs to support mothers are available, how these influence quality of care
- How learning through practical application influences health workers' skills and confidence

Standards and protocols

- Factors that influence implementation and adherence to standards and protocols
- Individual health worker and institutional barriers to implementation of current recommended practice and seeking new knowledge

Referral mechanisms

- Interprofessional relationships and how these influence referral
- Health worker knowledge and skills in determining the need for referral
- Health worker and mother trust relationship and how this influences referral
- Reasons for unnecessary referral and how these impact on quality of care at receiving facilities
- How lack of transport for referral at health facilities affects health workers, mothers, families, and communities
- How administrative processes such as authorisation processes and feedback between referring facilities influence the referral process, health workers' practice, and patient outcomes
- How information systems (patient and health facility) affect management and continuity of care of high-risk mothers

Commodities and health services infrastructure

- Reasons why equipment and facilities are not regularly maintained
- Reasons why health facilities vary in availability, functionality, and quality of signal functions and how this can be rectified
- Experiences of health workers who conduct deliveries at home

Interaction between mother, community, and health workers; interaction between health workers

- Ways to facilitate change in the culture of practice, including health worker norms, attitudes, and behaviours. This could include exploring ways of changing health worker communication and interaction with mothers and their families, as well as mothers' participation in decision-making.
- What are people's expectation of the health service and how the service can be improved to meet those expectations
- Midwife-led care and how it influences communication, interaction, and hospital culture
- Strategies to build or encourage teamwork, co-ordination, and good interprofessional communication and how these influence health worker morale and satisfaction

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REFERENCES

References to studies included in this review

- Afsana 2001** *{published data only}*
Afsana K, Rashid SF. The challenges of meeting rural Bangladeshi women's needs in delivery care. *Reproductive Health Matters* 2001;**9**:79–89.
- Anwar 2009** *{published data only}*
Anwar I, Kalim N, Koblinsky M. Quality of obstetric care in public-sector facilities and constraints to implementing emergency obstetric care services: evidence from high- and low-performing districts of Bangladesh. *Journal of Health, Population, and Nutrition* 2009;**27**:139–55.
- Barua 2011** *{published data only}*
Barua A, Mundle S, Bracken H, Easterling T, Winikoff B. Facility and personnel factors influencing magnesium sulfate use for eclampsia and pre-eclampsia in 3 Indian hospitals. *International Journal of Gynecology & Obstetrics* 2011;**115**:231–4.
- Belizan 2007** *{published data only}*
Belizan M, Meier A, Althabe F, Codazzi A, Colomar M, Buekens P, et al. Facilitators and barriers to adoption of evidence-based perinatal care in Latin American hospitals: a qualitative study. *Health Education Research* 2007;**22**: 839–53.
- Blum 2006** *{published data only}*
Blum LS, Sharmin T, Ronsmans C. Attending home vs. clinic-based deliveries: perspectives of skilled birth attendants in Matlab, Bangladesh. *Reproductive Health Matters* 2006;**14**:51–60.
- Bradley 2009** *{published data only}*
Bradley S, McAuliffe E. Mid-level providers in emergency obstetric and newborn health care: factors affecting their performance and retention within the Malawian health system. *Human Resources for Health* 2009;**7**:14.
- Conde-Agudelo 2008** *{published data only}*
Conde-Agudelo A, Rosas-Bermudez A, Gülmezoglu AM. Evidence-based intrapartum care in Cali, Colombia: a quantitative and qualitative study. *BJOG: An International Journal of Obstetrics & Gynaecology* 2008;**115**:1547–56.
- De Brouwere 2009** *{published data only}*
De Brouwere V, Dieng T, Diadiou M, Witter S, Denerville E. Task shifting for emergency obstetric surgery in district hospitals in Senegal. *Reproductive Health Matters* 2009;**17**: 32–44.
- de Carvalho 2012** *{published data only}*
de Carvalho VF, da Costa Kerber NP, Busanello J, Gonçalves BG, da Fonseca Rodrigues E, de Azambuja EP. How the workers of a birthing center justify using harmful practices in natural childbirth. *Revista da Escola de Enfermagem da USP* 2012;**46**:30–7.
- DeMaria 2012** *{published data only}*
DeMaria LM, Campero L, Vidler M, Walker D. Non-physician providers of obstetric care in Mexico: perspectives of physicians, obstetric nurses and professional midwives. *Human Resources for Health* 2012;**10**:1–9.
- Foster 2006** *{published data only}*
Foster J, Regueira Y, Heath A. Decision making by auxiliary nurses to assess postpartum bleeding in a Dominican Republic maternity ward. *Journal of Obstetric, Gynecologic, and Neonatal Nursing* 2006;**35**:728–34.
- Fränngård 2006** *{published data only}*
Fränngård C, Hansveden A, Liljestrand J. Compassion and severe challenges - an exploratory study of being a midwife in rural Uganda. *Midwifery Digest* 2006;**16**:461–6.
- Fujita 2012** *{published data only}*
Fujita N, Perrin XR, Vodounon JA, Gozo MK, Matsumoto Y, Uchida S, et al. Humanised care and a change in practice in a hospital in Benin. *Midwifery* 2012;**28**:481–8.

- Graner 2010** *{published data only}*
Graner S, Mogren I, Duong LQ, Krantz G, Klingberg-Allvin M. Maternal health care professionals' perspectives on the provision and use of antenatal and delivery care: a qualitative descriptive study in rural Vietnam. *BMC Public Health* 2010;**10**:1.
- Hassan-Bitar 2011** *{published data only}*
Hassan-Bitar S, Narrainen S. 'Shedding light' on the challenges faced by Palestinian maternal health-care providers. *Midwifery* 2011;**27**:154–9.
- Ith 2012** *{published data only}*
Ith P, Dawson A, Homer CSE. Challenges to reaching MDG5: a qualitative analysis of the working environment of skilled birth attendants in Cambodia. *International Journal of Childbirth* 2012;**2**:153–62.
- Khalaf 2009** *{published data only}*
Khalaf IA, Abu-Moghli FA, Callister LC, Mahadeen AI, Kaawa K, Zomot AF. Jordanian health care providers' perceptions of post-partum health care. *International Nursing Review* 2009;**56**:442–9.
- Lester 2003** *{published data only}*
Lester B, McInerney P. Midwives' perceptions of a midwife obstetric unit in a hospital setting. *Africa Journal of Nursing and Midwifery* 2003;**5**(1):28–33.
- Lugina 2001** *{published data only}*
Lugina HI, Lindmark G, Johansson E, Christensson K. Tanzanian midwives' views on becoming a good resource and support person for postpartum women. *Midwifery* 2001;**17**:267–78.
- Maputle 2010** *{published data only}*
Maputle SM, Hiss DC. Midwives' experiences of managing women in labour in the Limpopo Province of South Africa. *Curationis* 2010;**33**:5–14.
- Mathole 2006** *{published data only}*
Mathole T, Lindmark G, Ahlberg BM. Knowing but not knowing: providing maternity care in the context of HIV/AIDS in rural Zimbabwe. *African Journal of AIDS Research* 2006;**5**:133–9.
- Molina 2011** *{published data only}*
Molina G, Vargas G, Shaw A. Compromised quality of maternal healthcare in a market economy: Medellín, Colombia 2008–2009. *Colombia Médica* 2011;**42**:294–302.
- Mondiwa 2007** *{published data only}*
Mondiwa M, Hauck Y. Malawian midwives' perceptions of occupational risk for HIV infection. *Health Care for Women International* 2007;**28**:209–23.
- Penfold 2013** *{published data only}*
Penfold S, Shamba D, Hanson C, Jaribu J, Manzi F, Marchant T, et al. Staff experiences of providing maternity services in rural southern Tanzania - a focus on equipment, drug and supply issues. *BMC Health Services Research* 2013;**13**:1.
- Pettersson 2006** *{published data only}*
Pettersson KO, Johansson E, Pelembe Mde F, Dgedge C, Christensson K. Mozambican midwives' views on barriers to quality perinatal care. *Health Care for Women International* 2006;**27**:145–68.
- Pitchforth 2006** *{published data only}*
Pitchforth E, Van TE, Graham W, Dixon-Woods M, Chowdhury M. Getting women to hospital is not enough: a qualitative study of access to emergency obstetric care in Bangladesh. *Quality and Safety in Health Care* 2006;**15**:214–9.
- Pitchforth 2010** *{published data only}*
Pitchforth E, Lilford RJ, Kebede Y, Asres G, Stanford C, Frost J. Assessing and understanding quality of care in a labour ward: a pilot study combining clinical and social science perspectives in Gondar, Ethiopia. *Social Science & Medicine* 2010;**71**:1739–48.
- Spangler 2012** *{published data only}*
Spangler SA. Assessing skilled birth attendants and emergency obstetric care in rural Tanzania: the inadequacy of using global standards and indicators to measure local realities. *Reproductive Health Matters* 2012;**20**:133–41.
- Tabatabaie 2012** *{published data only}*
Tabatabaie MG, Zahra M, AbouAli V. Home birth and barriers to referring women with obstetric complications to hospitals: a mixed-methods study in Zahedan, southeastern Iran. *Reproductive Health* 2012;**9**(5):1–10.
- Thorsen 2012** *{published data only}*
Thorsen VC, Sundby J. Piecing together the maternal death puzzle through narratives: the three delays model revisited. *PLoS ONE* 2012;**7**:e52090.
- VSO 2012** *{published data only}*
Volunteer Services Overseas (VSO), Coalition for Health Promotion and Social Development (HEPS). Our side of the story. Uganda health workers speak up. www.vso.ie/sites/vso.ie/files/documents/Country%20specific%20documents/2012/Africa/Uganda/uganda-our-side-of-the-story-health-workers-speak-up-full-version.pdf 2012 (accessed prior to 10 November 2017).

References to studies excluded from this review

- Ali 2007** *{published data only}*
Ali A, Howden-Chapman P. Maternity services and the role of the traditional birth attendant, bidan kampung, in rural Malaysia. *Journal of Public Health Management and Practice* 2007;**13**(3):278–86.
- Bhate-Deosthali 2011** *{published data only}*
Bhate-Deosthali P, Khatri R, Wagle S. Poor standards of care in small, private hospitals in Maharashtra, India: implications for public-private partnerships for maternity care. *Reproductive Health Matters* 2011;**19**(37):32–41.
- Capelli 2011** *{published data only}*
Capelli I. Risk and safety in context: medical pluralism and agency in childbirth in an eastern Moroccan oasis. *Midwifery* 2011;**27**(6):781–5.
- Carmel 2006** *{published data only}*
Carmel AS. Desirable, achievable, but not easy: the midwife role in Kalongo Pader. *British Journal of Midwifery* 2005;**1**(5):272–3.

- Daniels 2011** *{published data only}*
Daniels L, Jackson D. Knowledge, attitudes and practices of nursing staff regarding the Baby-Friendly Hospital Initiative in non-accredited obstetric units in Cape Town. *South African Journal of Clinical Nutrition* 2011;**24**(1):32–8.
- Fatmi 2005** *{published data only}*
Fatmi Z, Gulzar AZ, Kazi A. Maternal and newborn care: practices and beliefs of traditional birth attendants in Sindh, Pakistan. *Eastern Mediterranean Health Journal* 2005;**11**(1/2):226–34.
- Floyd 2013** *{published data only}*
Floyd L. Helping midwives in Ghana to reduce maternal mortality. *African Journal of Midwifery and Women's Health* 2013;**7**(1):34–8.
- Hutchinson 2010** *{published data only}*
Hutchinson C, Lange I, Kanhonou L, Filippi V, Borchert M. Exploring the sustainability of obstetric near-miss case reviews: a qualitative study in the South of Benin. *Midwifery* 2010;**26**(5):537–43.
- Kabakyenga 2011** *{published data only}*
Kabakyenga JK, Östergren P, Emmelin M, Kyomuhendo P, Pettersson KO. The pathway of obstructed labour as perceived by communities in south-western Uganda: a grounded theory study. *Global Health Action* 2011;**4**(8529). [DOI: 10.3402/gha.v4i0.8529]
- Kesterton 2009** *{published data only}*
Kesterton AJ, Cleland J. Neonatal care in rural Karnataka: healthy and harmful practices, the potential for change. *BMC Pregnancy and Childbirth* 2009;**9**(1):1.
- Kusuma 2007** *{published data only}*
Kusuma YS, Varma GR. Poor obstetric care in tribal and rural areas of Visakhapatnam District. *Indian Journal of Social Work* 2007;**68**(3):402–16.
- Lobis 2011** *{published data only}*
Lobis S, Mbaruku G, Kamwendo F, McAuliffe E, Austin J, de Pinho H. Expected to deliver: alignment of regulation, training, and actual performance of emergency obstetric care providers in Malawi and Tanzania. *International Journal of Gynecology & Obstetrics* 2011;**115**(3):322–7.
- Lori 2012** *{published data only}*
Lori JR, Rominski SD, Gyakobo M, Muriu EW, Kweku NE, Agyei-Baffour P. Perceived barriers and motivating factors influencing student midwives' acceptance of rural postings in Ghana. *Human Resources for Health* 2012;**10**(1):1.
- Mathole 2005** *{published data only}*
Mathole T, Lindmark G, Ahlberg BM. Dilemmas and paradoxes in providing and changing antenatal care: a study of nurses and midwives in rural Zimbabwe. *Health Policy and Planning* 2005;**20**(6):385–93.
- Maupin 2008** *{published data only}*
Maupin JN. Remaking the Guatemalan midwife: health care reform and midwifery training programs in highland Guatemala. *Medical Anthropology* 2008;**27**(4):353–82.
- Mir 2012** *{published data only}*
Mir AM, Gull S. Countdown to 2015: a case study of maternal and child health service delivery challenges in five districts of Punjab. *Journal of the Pakistan Medical Association* 2012;**62**:1308–13.
- Mitchell 2012** *{published data only}*
Mitchell EM, Steeves R. The acceptability of clean delivery kits on the Atlantic coast of Nicaragua: a focused ethnography. *Hispanic Health Care International* 2012;**10**(1):36–41.
- Mizuno 2011** *{published data only}*
Mizuno M. Confusion and ethical issues surrounding the role of Japanese midwives in childbirth and abortion: a qualitative study. *Nursing & Health Sciences* 2011;**13**(4):502–6.
- Moyer 2012** *{published data only}*
Moyer CA, Aborigo RA, Logonia G, Affah G, Rominski S, Adongo PB, et al. Clean delivery practices in rural northern Ghana: a qualitative study of community and provider knowledge, attitudes, and beliefs. *BMC Pregnancy and Childbirth* 2012;**12**(1):1.
- Mukaiindo 2012** *{published data only}*
Mukaiindo AM, Wanyonyi SZ, Stones WR. External cephalic version in East, Central, and Southern Africa. *International Journal of Gynecology & Obstetrics* 2012;**116**(3):228–31.
- Ngo 2011** *{published data only}*
Ngo AD, Hill PS. Quality of reproductive health services at commune health stations in Viet Nam: implications for national reproductive health care strategy. *Reproductive Health Matters* 2011;**19**(37):52–61.
- Richard 2009** *{published data only}*
Richard F, Ouédraogo C, Zongo V, Ouattara F, Zongo S, Gruénais Marc-Eric, et al. The difficulty of questioning clinical practice: experience of facility-based case reviews in Ouagadougou, Burkina Faso. *BJOG: An International Journal of Obstetrics & Gynaecology* 2009;**116**(1):38–44.
- Ridge 2010** *{published data only}*
Ridge AL, Bero LA, Hill SR. Identifying barriers to the availability and use of magnesium sulphate injection in resource poor countries: a case study in Zambia. *BMC Health Services Research* 2010;**10**(1):1.
- Ruiz 2013** *{published data only}*
Ruiz MJ, van Dijk MG, Berdichevsky K, Munguía A, Burks C, García SG. Barriers to the use of maternity waiting homes in indigenous regions of Guatemala: a study of users' and community members' perceptions. *Culture, Health & Sexuality* 2013;**15**(2):205–18.
- Sharan 2005** *{published data only}*
Sharan M, Strobino D, Ahmed S. Intrapartum oxytocin use for labor acceleration in rural India. *International Journal of Gynecology & Obstetrics* 2005;**90**(3):251–7.
- Warren 2013** *{published data only}*
Warren N, Norr KF, Keeney GB. Matroniya: the lived experiences of rural auxiliary midwives in Koutiala, Mali. *Health Care for Women International* 2013;**34**(6):482–98.

Wick 2012 *{published data only}*

Wick L, Hassan S. No safe place for childbirth: women and midwives bearing witness, Gaza 2008-09. *Reproductive Health Matters* 2012;**20**(40):7–15.

References to studies awaiting assessment

Aberese-Ako 2015 *{published data only}*

Aberese-Ako M, Agyepong IA, Gerrits T, Van Dijk H. 'I used to fight with them but now I have stopped!': conflict and doctor-nurse-anaesthetists' motivation in maternal and neonatal care provision in a specialist referral hospital. *PLoS ONE [Electronic Resource]* 2015;**10**:e0135129.

Adegoke 2015 *{published data only}*

Adegoke AA, Atiyaye FB, Abubakar AS, Auta A, Aboda A. Job satisfaction and retention of midwives in rural Nigeria. *Midwifery* 2015;**31**:946–56.

Adolphson 2016 *{published data only}*

Adolphson K, Axemo P, Hogberg U. Midwives' experiences of working conditions, perceptions of professional role and attitudes towards mothers in Mozambique. *Midwifery* 2016;**40**:95–101.

Afari 2014 *{published data only}*

Afari H, Hirschhorn LR, Michaelis A, Barker P, Sodzi-Tettey S. Quality improvement in emergency obstetric referrals: qualitative study of provider perspectives in Assin North District, Ghana. *BMJ Open* 2014;**4**:e005052.

Aguiar 2013 *{published data only}*

Aguiar JM, d'Oliveira AF, Schraiber LB. Institutional violence, medical authority, and power relations in maternity hospitals from the perspective of health workers. *Cadernos de Saude Publica* 2013;**29**:2287–96.

Akeju 2016 *{published data only}*

Akeju DO, Vidler M, Sotunsa JO, Osiberu MO, Orenuga EO, Oladapo OT, et al. Human resource constraints and the prospect of task-sharing among community health workers for the detection of early signs of pre-eclampsia in Ogun State, Nigeria. *Reproductive Health* 2016;**13**:111.

Almeida 2013 *{published data only}*

Almeida LM, Ortiz A. Maternal healthcare inequities in migrants: the perspective of care providers. *Atencion Primaria* 2013;**45**:7–8.

Anastasi 2015 *{published data only}*

Anastasi E, Borchert M, Campbell OM, Sondorp E, Kaducu F, Hill O, et al. Losing women along the path to safe motherhood: why is there such a gap between women's use of antenatal care and skilled birth attendance? A mixed methods study in northern Uganda. *BMC Pregnancy & Childbirth* 2015;**15**:287.

Arnold 2015 *{published data only}*

Arnold R, Teijlingen E, Ryan K, Holloway I. Understanding Afghan healthcare providers: a qualitative study of the culture of care in a Kabul maternity hospital. *BJOG: An International Journal of Obstetrics & Gynaecology* 2015;**122**(2):260–7.

Banchani 2014 *{published data only}*

Banchani E, Tenkorang EY. Implementation challenges of maternal health care in Ghana: the case of health care providers in the Tamale Metropolis. *BMC Health Services Research* 2014;**14**:7.

Bazzano 2015 *{published data only}*

Bazzano AN, Oberhelman RA, Potts KS, Gordon A, Var C. Environmental factors and WASH practices in the perinatal period in Cambodia: implications for newborn health. *International Journal of Environmental Research and Public Health* 2015;**12**(3):2392–410.

Beigi 2015 *{published data only}*

Beigi M, Bahreini S, Valiani M, Rahimi M, Danesh-Shahraki A. Investigation of the causes of maternal mortality using root cause analysis in Isfahan, Iran in 2013–2014. *Iranian Journal of Nursing and Midwifery Research* 2015;**20**(3):315.

Binfa 2016 *{published data only}*

Binfa L, Pantoja L, Ortiz J, Gurovich M, Cavada G, Foster J. Assessment of the implementation of the model of integrated and humanised midwifery health services in Chile. *Midwifery* 2016;**35**:53–61.

Bradley 2015 *{published data only}*

Bradley S, Kamwendo F, Chipeta E, Chimwaza W, de Pinho H, McAuliffe E. Too few staff, too many patients: a qualitative study of the impact on obstetric care providers and on quality of care in Malawi. *BMC Pregnancy and Childbirth* 2015;**15**(1):65.

Brüggemann 2014 *{published data only}*

Brüggemann OM, Ebsen ES, de Oliveira ME, Gorayeb MK, Ebele RR. Reasons which lead the health services not to allow the presence of the birth companion: nurses' discourses. *Texto & Contexto Enfermagem* 2014;**23**:270–7.

Brüggemann 2015 *{published data only}*

Brüggemann OM, Ebele RR, Ebsen ES, Batista BD. In vaginal and cesarean deliveries, a companion is not allowed in the room: discourses of nurses and technical directors. *Revista Gaúcha de Enfermagem* 2015;**36**(SPE):152–8.

Caldas 2016 *{published data only}*

Caldas Nicacio M, dos Santos Heringer AL, Santana Schroeter M, Lenho de Figueiredo Pereira A. Perception of nurse midwives regarding their professional identity: a descriptive study. *Online Brazilian Journal of Nursing* 2016;**15**:205–14.

Cassiano 2015 *{published data only}*

do Nascimento Cassiano A, Araujo MG, de Holanda CS, Kaliny de Souza Costa R. Perception of nurses on humanization in nursing care in immediate puerperium. *Revista de Pesquisa: Cuidado e Fundamental* 2015;**7**(1).

Chandhiok 2015 *{published data only}*

Chandhiok N, Joglekar N, Shrotri A, Choudhury P, Chaudhury N, Singh S. Task-shifting challenges for provision of skilled birth attendance: a qualitative exploration. *International Health* 2015;**7**:195–203.

- Chandhiok 2015a** *{published data only}*
Chandhiok N, Shrotri A, Joglekar NS, Chaudhury N, Choudhury P, Singh S. Feasibility of using partograph by practitioners of Indian system of medicine (AYUSH): an exploratory observation. *Midwifery* 2015;**31**:702–7.
- Chaturvedi 2015** *{published data only}*
Chaturvedi S, De Costa A, Raven J. Does the Janani Suraksha Yojana cash transfer programme to promote facility births in India ensure skilled birth attendance? A qualitative study of intrapartum care in Madhya Pradesh. *Global Health Action* 2015;**8**:27427.
- Chaturvedi 2015a** *{published data only}*
Chaturvedi S, Upadhyay S, De Costa A, Raven J. Implementation of the partograph in India's JSY cash transfer programme for facility births: a mixed methods study in Madhya Pradesh province. *BMJ Open* 2015;**5**: e006211.
- Chipeta 2016** *{published data only}*
Chipeta E, Bradley S, Chimwaza-Manda W, McAuliffe E. Working relationships between obstetric care staff and their managers: a critical incident analysis. *BMC Health Services Research* 2016;**16**:441.
- Colomar 2014** *{published data only}*
Colomar M, Cafferata ML, Aleman A, Castellano G, Elorrio EG, Althabe F, et al. Mode of childbirth in low-risk pregnancies: Nicaraguan physicians' viewpoints. *Maternal & Child Health Journal* 2014;**18**:2382–92.
- Costa 2016** *{published data only}*
Costa MLL, Lotufo FA, Parpinelli MA, Osis MJ, Surita FG, Cecatti JG. 125 Risk perception of obstetrician for the prescription of magnesium sulfate in severe preeclampsia and eclampsia: a qualitative study in the public health system in Brazil: magnesium sulphate. *Pregnancy Hypertension* 2016;**6**:241.
- Dahlberg 2015** *{published data only}*
Dahlberg M, Sodergard B, Thorson A, Alfvén T, Awiti-Ujiji O. Being perceived as 'a real woman' or following one's own convictions: a qualitative study to understand individual, family, and community influences on the place of childbirth in Busia, Kenya. *Culture, Health & Sexuality* 2015;**17**: 326–42.
- de Oliveira 2014** *{published data only}*
de Oliveira RJ, da Copelli FH, Pestana AL, dos Santos JL, Gregorio VR, Erdmann AL. Intervening conditions on governance of the nursing practice at an obstetrics centre. *Revista Gaucha de Enfermagem* 2014;**35**:47–54.
- Dickerson 2014** *{published data only}*
Dickerson AE, Foster JW, Andes KL. A profile of midwifery in Paraguay. *Midwifery* 2014;**30**:1048–55.
- Dixon 2016** *{published data only}*
Dixon LZ. Delivering health: in search of an appropriate model for institutionalized midwifery in Mexico. *Dissertation Abstracts International Section A: Humanities and Social Sciences* 2016;**76**.
- Elikplim 2016** *{published data only}*
Elikplim PK, Adomah-Afari A. Health providers' perception of quality of care for neonates in health facilities in a municipality in Southern Ghana. *International Journal of Health Care Quality Assurance* 2016;**29**:907–20.
- Eriksson 2014** *{published data only}*
Eriksson J, Larsson E, Baker T. Quality of anaesthesia for caesarean sections at Muhimbili National Hospital, Dar es Salaam, Tanzania. *European Journal of Anaesthesiology* 2014;**31**:192.
- Erlandsson 2014** *{published data only}*
Erlandsson K, Sayami JT, Sapkota S. Safety before comfort: a focused enquiry of Nepal skilled birth attendants' concepts of respectful maternity care. *Evidence Based Midwifery* 2014;**12**:59–64.
- Ezeonwu 2014** *{published data only}*
Ezeonwu M. Policy strategies to improve maternal health services delivery and outcomes in Anambra State, Nigeria. *Health Care for Women International* 2014;**35**:828–44.
- Ford 2016** *{published data only}*
Ford C, Ngegbai A, Holden J. Experience working and training in a maternity unit in Freetown, Sierra Leone. *BJOG: An International Journal of Obstetrics and Gynaecology* 2016;**123**:115.
- Ganguly 2014** *{published data only}*
Ganguly P, Jehan K, de Costa A, Mavalankar D, Smith H. Considerations of private sector obstetricians on participation in the state led "Chiranjeevi Yojana" scheme to promote institutional delivery in Gujarat, India: a qualitative study. *BMC Pregnancy & Childbirth* 2014;**14**: 352.
- Ganle 2014** *{published data only}*
Ganle JK. Reaching out to a community to improve maternal health in Ghana: the story of one midwife. *Global Health Science & Practice* 2014;**2**:366–9.
- Ganle 2014a** *{published data only}*
Ganle JK, Parker M, Fitzpatrick R, Otupiri E. A qualitative study of health system barriers to accessibility and utilization of maternal and newborn healthcare services in Ghana after user-fee abolition. *BMC Pregnancy & Childbirth* 2014;**14**: 425.
- Ganle 2016** *{published data only}*
Ganle JK, Fitzpatrick R, Otupiri E, Parker M. Addressing health system barriers to access to and use of skilled delivery services: perspectives from Ghana. *International Journal of Health Planning & Management* 2016;**31**:e235–53.
- Gebrehiwot 2014** *{published data only}*
Gebrehiwot T, San Sebastian M, Edin K, Goicolea I. Health workers' perceptions of facilitators of and barriers to institutional delivery in Tigray, Northern Ethiopia. *BMC Pregnancy & Childbirth* 2014;**14**:137.
- Guerra-Reyes 2014** *{published data only}*
Guerra-Reyes L. Changing birth in the Andes: safe motherhood, culture and policy in Peru. *Dissertation Abstracts International Section A: Humanities and Social Sciences* 2014;**75**.

- Guerra-Reyes 2016** *{published data only}*
 Guerra-Reyes L. Implementing a culturally appropriate birthing policy: ethnographic analysis of the experiences of skilled birth attendants in Peru. *Journal of Public Health Policy* 2016;**37**:353–68.
- Horiuchi 2016** *{published data only}*
 Horiuchi S, Shimpuku Y, Iida M, Nagamatsu Y, Eto H, Leshabari S. Humanized childbirth awareness-raising program among Tanzanian midwives and nurses: a mixed-methods study. *International Journal of Africa Nursing Sciences* 2016;**5**:9–16.
- Hussein 2016** *{published data only}*
 Hussein SAAA, Dahlen HG, Duff M, Schmied V. The barriers and facilitators to evidence-based episiotomy practice in Jordan. *Women and Birth* 2016;**29**(4):321–9.
- Iravani 2016** *{published data only}*
 Iravani M, Janghorbani M, Zarean E, Bahrami M. Barriers to implementing evidence-based intrapartum care: a descriptive exploratory qualitative study. *Iranian Red Crescent Medical Journal* 2016;**18**:e21471.
- Ith 2013** *{published data only}*
 Ith P, Dawson A, Homer CS, Klinken Whelan A. Practices of skilled birth attendants during labour, birth and the immediate postpartum period in Cambodia. *Midwifery* 2013;**29**:300–7.
- Jamil 2015** *{published data only}*
 Jamil Piro T, Ghiyasvandian S, Salsali M. Iraqi nurses' perspectives on safety issues in maternity services. *Nursing & Midwifery Studies* 2015;**4**:e29529.
- Jaribu 2016** *{published data only}*
 Jaribu J, Penfold S, Manzi F, Schellenberg J, Pfeiffer C. Improving institutional childbirth services in rural Southern Tanzania: a qualitative study of healthcare workers' perspective. *BMJ Open* 2016;**6**:1–9.
- Jones 2016** *{published data only}*
 Jones B, Michael R, Butt J, Hauck Y. Tanzanian midwives' perception of their professional role and implications for continuing professional development education. *Nurse Education in Practice* 2016;**17**:116–22.
- Kabakian-Khasholian 2014** *{published data only}*
 Kabakian-Khasholian T, Shayboub R, Ataya A. Health after childbirth: patterns of reported postpartum morbidity from Lebanon. *Women and Birth* 2014;**27**:15–20.
- Kana 2015** *{published data only}*
 Kana S, Sebalda L, Shigeko H, Yoko S, Junko T, Shimoda K, et al. Midwives' intrapartum monitoring process and management resulting in emergency referrals in Tanzania: a qualitative study. *BMC Pregnancy & Childbirth* 2015;**15**:1–10.
- Karamela 2014** *{published data only}*
 Karamela L, Beal J. Lanyero Karamela: a midwife of Uganda. *Midwifery Today with International Midwife* 2014;**109**:28–9.
- Kassab 2016** *{published data only}*
 Kassab M, Alnuaimi K, Mohammad K, Creedy D, Hamadneh S. Midwives' experiences, education, and support needs regarding basic newborn resuscitation in Jordan. *Clinical Nursing Research* 2016;**25**:291–309.
- Lang'at 2015** *{published data only}*
 Lang'at E, Mwanri L. Healthcare service providers' and facility administrators' perspectives of the free maternal healthcare services policy in Malindi District, Kenya: a qualitative study. *Reproductive Health* 2015;**12**:59.
- Lin 2013** *{published data only}*
 Lin CW, Lie D, Malhotra R, Allen JC Jr, Tay JSL, Thiam CT, et al. What factors influence midwives' decision to perform or avoid episiotomies? A focus group study. *Midwifery* 2013;**29**:943–9.
- Ling 2013** *{published data only}*
 Ling DAI, Xue-hua CAO, Li-hua MIN, Hong LUO. A qualitative study on the male nurse practice in obstetrics and gynecology department. *Chinese Journal of Practical Nursing* 2013;**29**:1–3.
- Litorp 2015** *{published data only}*
 Litorp H, Mgaya A, Mbekenga CK, Kidanto HL, Johnsdotter S, Essen B. Fear, blame and transparency: obstetric caregivers' rationales for high caesarean section rates in a low-resource setting. *Social Science & Medicine* 2015;**143**:232–40.
- Lotfi 2014** *{published data only}*
 Lotfi R, Tehrani FR, Dovom MR, Torkestani F, Abedini M, Sajedinejad S. Development of strategies to reduce cesarean delivery rates in Iran 2012–2014: a mixed methods study. *International Journal of Preventive Medicine* 2014;**5**:1552–66.
- Malham 2015** *{published data only}*
 Malham SA, Hatem M, Leduc N. A case study evaluation of an intervention aiming to strengthen the midwifery professional role in Morocco: anticipated barriers to reaching outcomes. *Journal of Multidisciplinary Healthcare* 2015;**8**:419–32.
- Mannah 2014** *{published data only}*
 Mannah MT, Warren C, Kuria S, Adegoke AA. Opportunities and challenges in implementing community based skilled birth attendance strategy in Kenya. *BMC Pregnancy & Childbirth* 2014;**14**:279.
- Melberg 2016** *{published data only}*
 Melberg A, Diallo AH, Ruano AL, Tylleskar T, Moland KM. Reflections on the unintended consequences of the promotion of institutional pregnancy and birth care in Burkina Faso. *PLoS ONE [Electronic Resource]* 2016;**11**:e0156503.
- Meroz 2015** *{published data only}*
 Meroz M, Gesser-Edelsburg A. Institutional and cultural perspectives on home birth in Israel. *Journal of Perinatal Education* 2015;**24**:25–36.
- Milne 2015** *{published data only}*
 Milne L, van Teijlingen E, Hundley V, Simkhada P, Ireland J. Staff perspectives of barriers to women accessing birthing services in Nepal: a qualitative study. *BMC Pregnancy & Childbirth* 2015;**15**:142.

- Mirkuzie 2016** *{published data only}*
Mirkuzie AH, Sisay MM, Bedane MM. High proportions of obstetric referrals in Addis Ababa: the case of term premature rupture of membranes. *BMC Research Notes* 2016;9:40.
- Mkoka 2014** *{published data only}*
Mkoka DA, Goicolea I, Kiwara A, Mwangi M, Hurtig AK. Availability of drugs and medical supplies for emergency obstetric care: experience of health facility managers in a rural District of Tanzania. *BMC Pregnancy & Childbirth* 2014;14:108.
- Morgan 2014** *{published data only}*
Morgan A, Jimenez Soto E, Bhandari G, Kermode M. Provider perspectives on the enabling environment required for skilled birth attendance: a qualitative study in western Nepal. *Tropical Medicine & International Health* 2014;19:1457–65.
- Natarajan 2016** *{published data only}*
Natarajan A, Ahn R, Nelson BD, Eckardt M, Kamara J, Kargbo S, et al. Use of prophylactic uterotonics during the third stage of labor: a survey of provider practices in community health facilities in Sierra Leone. *BMC Pregnancy & Childbirth* 2016;16:23.
- Natarajan 2016a** *{published data only}*
Natarajan A, Alaska Pendleton A, Nelson BD, Ahn R, Oguttu M, Dulo L, et al. Provider experiences with improvised uterine balloon tamponade for the management of uncontrolled postpartum hemorrhage in Kenya. *International Journal of Gynecology & Obstetrics* 2016;135:210–3.
- Ng'ang'a 2014** *{published data only}*
Ng'ang'a N. Manager and provider perspectives of the work environment experienced by associate clinicians, nurses and midwives who deliver emergency obstetric care in Tanzania. *Dissertation Abstracts International: Section B: The Sciences and Engineering* 2014;74.
- Nnebue 2014** *{published data only}*
Nnebue CC, Ebenebe UE, Adogu PO, Adinma ED, Ifeadike CO, Nwabueze AS. Adequacy of resources for provision of maternal health services at the primary health care level in Nnewi, Nigeria. *Nigerian Medical Journal* 2014;55:235–41.
- Oguntunde 2015** *{published data only}*
Oguntunde O, Charyeva Z, Cannon M, Sambisa W, Orobato N, Kabo IA, et al. Factors influencing the use of magnesium sulphate in pre-eclampsia/eclampsia management in health facilities in Northern Nigeria: a mixed methods study. *BMC Pregnancy and Childbirth* 2015;15(1).
- Okereke 2015** *{published data only}*
Okereke E, Tukur J, Aminu A, Butera J, Mohammed B, Tanko M, et al. An innovation for improving maternal, newborn and child health (MNCH) service delivery in Jigawa State, northern Nigeria: a qualitative study of stakeholders' perceptions about clinical mentoring. *BMC Health Services Research* 2015;15:64.
- Onta 2014** *{published data only}*
Onta S, Choulagai B, Shrestha B, Subedi N, Bhandari GP, Krettek A. Perceptions of users and providers on barriers to utilizing skilled birth care in mid- and far-western Nepal: a qualitative study. *Global Health Action* 2014;7:24580.
- Ouedraogo 2014** *{published data only}*
Ouedraogo A, Kiemtore S, Zamane H, Bonane BT, Akotioinga M, Lankoande J. Respectful maternity care in three health facilities in Burkina Faso: the experience of the Society of Gynaecologists and Obstetricians of Burkina Faso. *International Journal of Gynecology & Obstetrics* 2014;127(Suppl 1):S40–2.
- Pallangyo 2017** *{published data only}*
Pallangyo EN, Mbekenga C, Kallestal C, Rubertsson C, Olsson P. "If really we are committed things can change, starting from us": Healthcare providers' perceptions of postpartum care and its potential for improvement in low-income suburbs in Dar es Salaam, Tanzania. *Sexual and Reproductive Healthcare* 2017;11:7–12.
- Pallotti 2016** *{published data only}*
Pallotti P. A midwife in Malawi. *Midwifery Matters* 2016:11–3.
- Petrites 2016** *{published data only}*
Petrites AD, Mullan P, Spangenberg K, Gold KJ. You have no choice but to go on: how physicians and midwives in Ghana cope with high rates of perinatal death. *Maternal & Child Health Journal* 2016;20:1448–55.
- Progianti 2014** *{published data only}*
Progianti JM, Pereira AL, Sé CC. Obstetric nurses' practice on emergency wards under the Cegonha Carioca Program. *Revista Enfermagem UERJ* 2014;22:792–7.
- Rabor 2015** *{published data only}*
Rabor FM, Taghipour A, Najmabadi KM. Voices of mother's interaction with midwives in natural childbirth: a qualitative study. *Health* 2015;7:153–60.
- Ramadurg 2016** *{published data only}*
Ramadurg U, Vidler M, Charanthimath U, Katageri G, Bellad M, Mallapur A, et al. Community health worker knowledge and management of pre-eclampsia in rural Karnataka State, India. *Reproductive Health* 2016;13:113.
- Ronderos 2014** *{published data only}*
Ronderos M, Quevedo C, Ariza K, Rodriguez JM, Matallana MA, Trujillo JM, et al. Policymaking process of a maternal near-miss surveillance model in Colombia: local effects of global policies generated by an epistemic community. *Annals of Global Health* 2014;80(3):232–3.
- Sakeah 2014** *{published data only}*
Sakeah E, McCloskey L, Bernstein J, Yeboah-Antwi K, Mills S, Doctor HV. Can community health officer-midwives effectively integrate skilled birth attendance in the community-based health planning and services program in rural Ghana?. *Reproductive Health* 2014;11:90.
- Sanchez 2014** *{published data only}*
Sanchez G, Del Hierro F, Alvear S, Hendrickx K, Remmen R. Obstetrical skill in mandatory rural year in Ecuador,

- South America. A qualitative analysis. *European Journal of General Practice* 2014;**20**(1):43.
- Sanfelice 2014** *{published data only}*
Sanfelice CF, Abbud FD, Pregnotatto OS, Silva MG, Shimo AK. From institutionalized birth to home birth. *Revista da Rede de Enfermagem do Nordeste* 2014;**15**:362–70.
- Sarfraz 2014** *{published data only}*
Sarfraz M, Hamid S. Challenges in delivery of skilled maternal care - experiences of community midwives in Pakistan. *BMC Pregnancy & Childbirth* 2014;**14**:59.
- Schack 2014** *{published data only}*
Schack SM, Elyas A, Brew G, Pettersson KO. Experiencing challenges when implementing active management of third stage of labor (AMTSL): a qualitative study with midwives in Accra, Ghana. *BMC Pregnancy & Childbirth* 2014;**14**:193.
- Sheikh 2016** *{published data only}*
Sheikh S, Qureshi RN, Khowaja AR, Salam R, Vidler M, Sawchuck D, et al. Health care provider knowledge and routine management of pre-eclampsia in Pakistan. *Reproductive Health* 2016;**13**:107–13.
- Tibandebage 2016** *{published data only}*
Tibandebage P, Kida T, Mackintosh M, Ikingura J. Can managers empower nurse-midwives to improve maternal health care? A comparison of two resource-poor hospitals in Tanzania. *International Journal of Health Planning & Management* 2016;**31**:379–95.
- Turner 2013** *{published data only}*
Turner T, Short J, Group Sea-Orchid Study. Barriers to and enablers of evidence-based practice in perinatal care in the SEA-ORCHID project. *Journal of Evaluation in Clinical Practice* 2013;**19**:591–7.
- World Health Organization 2016** *{published data only}*
World Health Organization. Midwives voices, midwives realities: Findings from a global consultation on providing quality midwifery care. Geneva, Switzerland 2016.
- Wu 2013** *{published data only}*
Wu LC, Lie D, Malhotra R, Allen JC Jr, Tay JS, Tan TC, et al. What factors influence midwives' decision to perform or avoid episiotomies? A focus group study. *Midwifery* 2013;**29**:943–9.
- Yakubu 2014** *{published data only}*
Yakubu J, Benyas D, Emil S, Amekah E, Adanu R, Moyer C. It's for the greater good: midwives' perspectives on maltreatment during labor and delivery in rural Ghana. *Annals of Global Health* 2014;**80**(3):213.
- Yawson 2016** *{published data only}*
Yawson AE, Awoonor-Williams JK, Sagoe-Moses I, Aboagye PK, Yawson AO, Senaya LK, et al. Bottleneck analysis approach to accelerate newborn care services in two regions in Ghana: implications for national newborn care. *Public Health* 2016;**141**:245–54.
- Zakane 2014** *{published data only}*
Zakane SA, Gustafsson LL, Tomson G, Loukanova S, Sie A, Nasiell J, et al. Guidelines for maternal and neonatal "point of care": needs of and attitudes towards a computerized clinical decision support system in rural Burkina Faso. *International Journal of Medical Informatics* 2014;**83**:459–69.
- Zhang 2015** *{published data only}*
Zhang J, Haycock-Stuart E, Mander R, Hamilton L. Navigating the self in maternity care: how Chinese midwives work on their professional identity in hospital setting. *Midwifery* 2015;**31**:388–94.

Additional references

Abou-Zahr 1998

Abou-Zahr C. Maternal mortality overview. In: Murray CJL, Lopez AD editor(s). *Health Dimensions of Sex and Reproduction: Global Burden of Disease and Injury Series*. Vol. 3, Geneva: World Health Organization, 1998:111–64.

Adair-Rohani 2013

Adair-Rohani H, Zukor K, Bonjour S, Wilburn S, Kuesel AC, Hebert R, et al. Limited electricity access in health facilities of sub-Saharan Africa: a systematic review of data on electricity access, sources, and reliability. *Global Health: Science and Practice* 2013;**1**(2):249–61.

Adegoke 2012

Adegoke A, Utz B, Msuya SE, Van Den Broek N. Skilled birth attendants: who is who? A descriptive study of definitions and roles from nine sub Saharan African countries. *PLoS ONE* 2012;**7**(7):e40220.

Ames 2017

Ames HMR, Glenton C, Lewin S. Parents' and informal caregivers' views and experiences of communication about routine childhood vaccination: a synthesis of qualitative evidence. *Cochrane Database of Systematic Reviews* 2017, Issue 2. [DOI: 10.1002/14651858.CD011787.pub2]

Atkins 2008

Atkins S, Lewin S, Smith H, Engel M, Fretheim A, Volmink J. Conducting a meta-ethnography of qualitative literature: lessons learnt. *BMC Medical Research Methodology* 2008;**8**:21. [PUBMED: 18416812]

Bohren 2014

Bohren M, Hunter EC, Munthe-Kaas HM, Souza JP, Vogel J, Gülmezoglu AM. Facilitators and barriers to facility-based delivery in low- and middle-income countries: a qualitative evidence synthesis. *Reproductive Health* 2014;**11**(1):71.

Bohren 2015

Bohren MA, Vogel JP, Hunter EC, Lutsiv O, Makh SK, Souza JP, et al. The mistreatment of women during childbirth in health facilities globally: a mixed-methods systematic review. *PLoS Medicine* 2015;**12**(6):e1001847.

Bohren 2017

Bohren MA, Vogel JP, Tunçalp Ö, Fawole B, Titiloye MA, Olutayo AO, et al. Mistreatment of women during childbirth in Abuja, Nigeria: a qualitative study on perceptions and experiences of women and healthcare providers. *Reproductive Health* 2017;**14**(1):9.

Bradley 2016

Bradley S, McCourt C, Rayment J, Parmar D. Disrespectful intrapartum care during facility-based delivery in sub-Saharan Africa: a qualitative systematic review and thematic synthesis of women's perceptions and experiences. *Social Science & Medicine* 2016;**169**:157–70.

Campbell 2016

Campbell OMR, Calvert C, Testa A, Strehlow M, Benova L, Keyes E, et al. The scale, scope, coverage, and capability of childbirth care. *Lancet* 2016;**388**(10056):2193–208.

Candy 2011

Candy B, King M, Jones L, Oliver S. Using qualitative synthesis to explore heterogeneity of complex interventions. *BMC Medical Research Methodology* 2011;**11**(1):1.

Carroll 2011

Carroll C, Booth A, Cooper K. A worked example of “best fit” framework synthesis: a systematic review of views concerning the taking of some potential chemopreventive agents. *BMC Medical Research Methodology* 2011;**11**(1):29.

Carroll 2013

Carroll C, Booth A, Leaviss J, Rick J. “Best fit” framework synthesis: refining the method. *BMC Medical Research Methodology* 2013;**13**(1):37.

Colvin 2013

Colvin CJ, de Heer J, Winterton L, Mellenkamp M, Glenton C, Noyes J, et al. A systematic review of qualitative evidence on barriers and facilitators to the implementation of task-shifting in midwifery services. *Midwifery* 2013;**29**(10):1211–21. [DOI: 10.1016/j.midw.2013.05.001; Epub 2013 Jun 12]

De Brouwere 1998

De Brouwere V, Tonglet R, Van Lerberghe W. Strategies for reducing maternal mortality in developing countries: what can we learn from the history of the industrialized West? *Tropical Medicine & International Health* 1998;**3**(10):771–82. [PUBMED: 9809910]

Dickson 2014

Dickson KE, Simen-Kapeu A, Kinney MV, Huicho L, Vesel L, Lackritz E, et al. Every Newborn: health-systems bottlenecks and strategies to accelerate scale-up in countries. *Lancet* 2014;**384**(9941):438–54.

Donabedian 1978

Donabedian A. The quality of medical care. *Science* 1978;**200**(4344):856–64.

Downe 2016

Downe S, Finlayson K, Tuncalp Ö, Metin Gülmezoglu A. What matters to women: a systematic scoping review to identify the processes and outcomes of antenatal care provision that are important to healthy pregnant women. *BJOG: An International Journal of Obstetrics & Gynaecology* 2016;**123**(4):529–39.

Dudley 2009

Dudley L, Hviding K, Paulsen E. The effectiveness of policies promoting facility-based deliveries in reducing maternal and infant morbidity and mortality in low

and middle-income countries. *Cochrane Database of Systematic Reviews* 2009, Issue 3. [DOI: 10.1002/14651858.CD007918]

EPOC 2017

Effective Practice, Organisation of Care (EPOC). How to report the search process in EPOC protocols, reviews and updates. EPOC Resources for authors, 2017. epoc.cochrane.org/epoc-resources-review-authors (accessed prior to 10 November 2017).

Filby 2016

Filby A, McConville F, Portela A. What prevents quality midwifery care? A systematic mapping of barriers in low and middle income countries from the provider perspective. *PLoS ONE* 2016;**11**(5):e0153391.

Gabrysch 2009

Gabrysch S, Campbell OM. Still too far to walk: literature review of the determinants of delivery service use. *BMC Pregnancy and Childbirth* 2009;**9**:34. [PUBMED: 19671156]

Glenton 2013

Glenton C, Colvin C, Carlsen B, Swartz A, Lewin S, Noyes J, et al. Barriers and facilitators to the implementation of lay health worker programmes to improve access to maternal and child health: qualitative evidence synthesis. *Cochrane Database of Systematic Reviews* 2013, Issue 10. [DOI: 10.1002/14651858.CD010414.pub2]

Graham 2001

Graham WJ, Bell JS, Bullough CH. 'Can skilled attendance at delivery reduce maternal mortality in developing countries?'. In: Van Lerberghe W, Kegels G, De Brouwere V editor(s). *Studies in Health Services Organisation & Policy*. Vol. 17, ITG Press, 2001:97–130.

Graham 2012

Graham WJ, Varghese B. Quality, quality, quality: gaps in the continuum of care. *Lancet* 2012;**379**(9811):e5–6.

Harvey 2007

Harvey SA, Wong Blandón YC, McCaw-Binns A, Sandino I, Urbina L, Rodríguez C, et al. Are skilled birth attendants really skilled? A measurement method, some disturbing results and a potential way forward. *Bulletin of the World Health Organization* 2007;**85**(10):783–90.

Hulton 2000

Hulton L, Matthews Z, Stones RW. A framework for the evaluation of quality of care in maternity services. University of Southampton, 2000; Vol. [<http://www.scocstats.soton.ac.uk/choices>]. Accessed June 2017.

Koblinsky 1999

Koblinsky MA, Campbell O, Heichelheim J. Organizing delivery care: what works for safe motherhood?. *Bulletin of the World Health Organization* 1999;**77**(5):399–406. [PUBMED: 10361757]

Koblinsky 2016

Koblinsky M, Moyer CA, Calvert C, Campbell J, Campbell OM, Feigl AB, et al. Quality maternity care for every

- woman, everywhere: a call to action. *Lancet* 2016;**388** (10057):2307–20.
- Leape 2012**
Leape LL, Shore MF, Dienstag JL, Mayer RJ, Edgman-Levitan S, Meyer GS, et al. Perspective: a culture of respect, part 1: the nature and causes of disrespectful behavior by physicians. *Academic Medicine* 2012;**87**(7):845–52.
- Lewin 2016**
Lewin S, Booth A, Glenton C, et al. Applying the GRADE-CERQual approach: Introduction to the series. *Implementation Science* Submitted for Publication.
- Loudon 1992**
Loudon I. The transformation of maternal mortality. *BMJ (Clinical research ed.)* 1992;**305**(6868):1557–60. [PUBMED: 1286386]
- Maclean 2003**
Maclean GD. The challenge of preparing and enabling 'skilled attendants' to promote safer childbirth. *Midwifery* 2003;**19**(3):163–9. [PUBMED: 12946332]
- Maine 1996**
Maine D, Akalin MZ, Chakraborty J, de Francisco A, Strong M. Why did maternal mortality decline in Matlab?. *Studies in Family Planning* 1996;**27**(4):179–87. [PUBMED: 8875731]
- Noyes 2011**
Noyes J, Lewin S. Chapter 6: Supplemental guidance on selecting a method of qualitative evidence synthesis, and integrating qualitative evidence with Cochrane intervention reviews. In: Noyes J, Booth A, Hannes K, Harden A, Harris J, Lewin S, Lockwood C (editors). *Supplementary Guidance for Inclusion of Qualitative Research in Cochrane Systematic Reviews of Interventions. Version 1* (updated August 2011). Cochrane Collaboration Qualitative Methods Group, 2011. Available at cqrmg.cochrane.org/supplemental-handbook-guidance.
- Noyes 2016**
Noyes J, Hendry M, Booth A, Chandler J, Lewin S, Glenton C, et al. Current use was established and Cochrane guidance on selection of social theories for systematic reviews of complex interventions was developed. *Journal of Clinical Epidemiology* 2016;**75**:78–92.
- O’Cathain 2013**
O’Cathain A, Thomas KJ, Drabble SJ, Rudolph A, Hewison J. What can qualitative research do for randomised controlled trials? A systematic mapping review. *BMJ Open* 2013;**3**(6):e002889.
- Pardeshi 2011**
Pardeshi GS, Dalvi SS, Pergulwar CR, Gite RN, Wanje SD. Trends in choosing place of delivery and assistance during delivery in Nanded District, Maharashtra, India. *Journal of Health, Population and Nutrition* 2011; Vol. 29, issue 1: 71–6.
- Petersen 2002**
Petersen I, Swartz L. Primary health care in the era of HIV/AIDS. Some implications for health systems reform. *Social Science & Medicine* 2002;**55**(6):1005–13.
- Rominski 2017**
Rominski SD, Lori J, Nakua E, Dzomeku V, Moyer CA. When the baby remains there for a long time, it is going to die so you have to hit her small for the baby to come out: justification of disrespectful and abusive care during childbirth among midwifery students in Ghana. *Health Policy and Planning* 2017;**32**(2):215–24.
- Sadler 2016**
Sadler M, Santos Mário JDS, Ruiz-Berdún D, Rojas Gonzalo L, Skoko E, Gillen P, et al. Moving beyond disrespect and abuse: addressing the structural dimensions of obstetric violence. *Reproductive Health Matters* 2016;**24**(47):47–55.
- Say 2007**
Say L, Raine R. A systematic review of inequalities in the use of maternal health care in developing countries: examining the scale of the problem and the importance of context. *Bulletin of the World Health Organization* 2007;**85**(10): 812–9. [PUBMED: 18038064]
- Sheppard 2004**
Sheppard VB, Zambrana RE, O’malley AS. Providing health care to low-income women: a matter of trust. *Family Practice* 2004;**21**(5):484–91.
- Silverman 2000**
Silverman D. *Doing Qualitative Research*. First Edition. London: SAGE Publications Ltd, 2000.
- SMIAG 2000**
Safe Motherhood Inter-Agency Group. *Skilled attendance at delivery: a review of the evidence*. New York: Family Care International. 2000.
- Thaddeus 1994**
Thaddeus S, Maine D. Too far to walk: maternal mortality in context. *Social Science & Medicine* 1994;**38**(8): 1091–110. [PUBMED: 8042057]
- Tunçalp 2015**
Tunçalp Ö, Were WM, MacLennan C, Oladapo OT, Gülmezoglu AM, Bahl R, et al. Quality of care for pregnant women and newborns - the WHO vision. *BJOG: An International Journal of Obstetrics & Gynaecology* 2015;**122**(8):1045–9.
- UN 2015**
The United Nations Inter-Agency and Expert Group on MDG indicators. *The Millennium Development Goals report 2015*. [www.un.org/millenniumgoals/2015`MDG`Report/pdf/MDG%202015%20rev%20\(July%201\).pdf](http://www.un.org/millenniumgoals/2015%20MDG%20Report/pdf/MDG%202015%20rev%20(July%201).pdf) (accessed 4 January 2017).
- UN 2015b**
United Nations. *Sustainable Development Goals 2015*. sustainabledevelopment.un.org/sdgs (accessed 9 January 2017).

Utz 2013

Utz B, Siddiqui G, Adegoke A, Broek N. Definitions and roles of a skilled birth attendant: a mapping exercise from four South-Asian countries. *Acta Obstetrica et Gynecologica Scandinavica* 2013;**92**(9):1063–9.

Van Der Walt 1999

Van Der Walt H, Swartz L. Isabel Menzies Lyth revisited institutional defences in public health nursing in South Africa during the 1990s. *Psychodynamic Counselling* 1999;**5**(4):483–95.

WHO 2004

World Health Organization. Making pregnancy safer: the critical role of a skilled attendant: a joint statement by WHO, ICM, FIGO. whqlibdoc.who.int/publications/2004/9241591692.pdf (accessed 15 April 2012).

WHO 2008

WHO Department of Reproductive Health and Research. Proportion of births attended by a skilled health worker 2008 update. www.who.int/reproductivehealth/publications/maternal_perinatal_health/2008_skilled_attendants/en/ (accessed prior to 10 November 2017).

World Bank 2013

The World Bank. <http://data.worldbank.org/country>. Accessed September 2013.

Zwarenstein 2009

Zwarenstein M, Goldman J, Reeves S. Interprofessional collaboration: effects of practice-based interventions on professional practice and healthcare outcomes. *Cochrane Database of Systematic Reviews* 2009, (3). [DOI: 10.1002/14651858.CD000072.pub2]

* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Afsana 2001

Notes	<p>Methods: qualitative approach using in-depth interviews, participant observation, focus group, and informal discussions</p> <p>Participants: 4 physicians and 7 female paramedics (trained nurses who had also been trained in midwifery care, although length of training not clear)</p> <p>Setting: health centres, Bangladesh.</p> <p>Health worker tasks: the study was not clear on the specific tasks conducted by the doctors or paramedics, but indicated that services available at the health centre included basic essential obstetric care, antenatal care, postnatal care, outpatient care, and laboratory services</p> <p>Years of experience: not reported.</p> <p>Study objectives: to determine how to improve existing health centre services and create a new model of service delivery. The study reported on rural women's needs and expectations in relation to delivery care and experience of delivery care. Views of staff and observation of patient-provider relations were also included</p>
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Anwar 2009

Notes	<p>Methods: mixed-methods study (quantitative and qualitative methods). Used in-depth interviews with participants</p> <p>Participants: 6 obstetricians, 2 anaesthetists, 2 nurses, 2 family welfare visitors, 4 programme managers and family planning officers, 2 civil surgeons</p> <p>Setting: public, basic, and comprehensive emergency obstetric facilities, Bangladesh</p> <p>Health worker tasks: not reported.</p> <p>Years of experience: not reported.</p> <p>Study objectives: to describe the provision of maternity care in 2 divisions in Bangladesh. Specifically, to explore the quality of care in the public sector obstetrics facilities in 2 divisions of the country (Khulna and Sylhet), and to understand the constraints encountered and possible solutions in implementing comprehensive emergency obstetric care programmes in rural areas of the 2 divisions</p>
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Barua 2011

Notes	<p>Methods: qualitative component embedded in a randomised trial, focus group discussions conducted with providers</p> <p>Participants: nurses, clinicians, i.e. residents, obstetrician and gynaecologists. 56 to 70 participants</p> <p>Setting: university teaching hospital (tertiary, referral level), 2 secondary-level hospitals, India</p> <p>Health worker tasks: not reported.</p> <p>Years of experience: not reported.</p> <p>Study objectives: to identify factors at the health facility and professionals' level that might influence treatment of pre-eclampsia and eclampsia</p>
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Belizan 2007

Notes	<p>Methods: focus group discussions and interviews.</p> <p>Participants: administrators were obstetrician/gynaecologist specialists, heads of maternity units, and university professors. Practitioners were obstetrician and gynaecologist physicians, residents in last 2 years of residency, and midwives. In total participants comprised 16 physicians and 15 midwives. Practitioners were predominantly female (7 male, 9 female); midwives were in general older than practitioners (mean age physicians was 35.2, range 31 to 42; mean age midwives was 40.3, range 29 to 57)</p> <p>Setting: public hospitals, Argentina/Uruguay.</p> <p>Health worker tasks: not reported.</p> <p>Years of experience: practitioners had been practicing between 1 and 33 years. Mean years of speciality for physicians was 5.9 (range 1 to 13 years); mean years of speciality for midwives was 13.6 (range 1 to 33 years). Midwives were in general older than practitioners and had longer clinical experience</p> <p>Study objectives: qualitative study conducted alongside a multifaceted trial to facilitate development, implementation, and maintenance of evidence-based guidelines to increase use of selective episiotomy and active management of third stage of labour in selected hospitals in Latin America</p>
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Blum 2006

Notes	<p>Methods: key informant and in-depth interviews, group discussions</p> <p>Participants: 13 nurse-midwives and lady family planning visitors</p> <p>Setting: home-based maternity care, Bangladesh.</p> <p>Health worker tasks: attendants provided skilled maternity care. They conducted normal deliveries, medical treatment of problem pregnancies, e.g. with antihypertensive drugs, but did not conduct assisted deliveries. In addition, they provided neonatal care and were responsible for referral, and accompanying mothers to referral facilities. They also provided antenatal and postnatal care in women's homes, trained traditional birth attendants on safe delivery and referrals, and provided health education on maternal health</p> <p>Years of experience: not reported.</p> <p>Study objectives: to examine the feasibility of home-based versus facility-based delivery from the perspective of skilled birth attendants</p>
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Bradley 2009

Notes	<p>Methods: exploratory qualitative study using focus group discussions</p> <p>Participants: medical grade groups (clinical officers and medical assistants, nursing grade groups), registered nurses/midwives, nurse midwife technician, and enrolled nurse midwives</p> <p>Setting: rural mission hospitals, Malawi.</p> <p>Health worker tasks: midlevel providers are cadres of healthcare providers that undertake roles and tasks for doctors and nurses, but whose pre-service training is shorter and they have lower qualifications. In Malawi these are clinical officers, medical assistants, registered nurse/midwife, nurse midwife technician, and enrolled nurse/midwife. Clinical officers conducted the bulk of major emergency obstetric operations (93% in government hospitals and 78% in mission hospitals)</p> <p>Years of experience: not reported.</p> <p>Study objectives: to explore perceptions of midlevel providers regarding factors affecting their performance and retention in the Malawian health system</p>
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Conde-Agudelo 2008

Notes	<p>Methods: mixed methods - both quantitative and qualitative methods (semi-structured interviews)</p> <p>Participants: 36 intrapartum providers: 16 obstetricians, 13 general practitioners, 7 midwives</p> <p>Setting: public and private hospitals, of which 44% were university teaching hospitals, Colombia</p> <p>Health worker tasks: not reported.</p> <p>Years of experience: not reported.</p> <p>Study objectives: to measure the rate of use of selected intrapartum obstetric practices and to explore the factors associated with their use</p>
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De Brouwere 2009

Notes	<p>Methods: an evaluation study using key informant interviews, focus group discussions</p> <p>Participants: 3 regional medical officers, 3 district medical officers, 4 trained medical officers, 5 anaesthetists, and 5 surgical assistants</p> <p>Setting: district hospitals, Senegal.</p> <p>Health worker tasks: medical officers provided emergency obstetric care including general obstetrics, postabortion care, instrumental extraction, laparotomy for ectopic pregnancy, Caesarean sections</p> <p>Years of experience: not reported.</p> <p>Study objectives: to assess retrospectively the effects of task-shifting on numbers, rates, and maternal and neonatal outcomes of major obstetric surgical interventions in the district populations before and after the posting of teams trained in emergency obstetric surgery. The objective of the qualitative component of the study was to understand the difficulties and satisfactions the medical officers, anaesthetists, and surgical assistants experienced in their new roles and their views of the training</p> <p>Notes: salary/incentives: general practitioners received USD 100 in addition to their salaries, while surgical assistants were given USD 60 extra per month, and anaesthetist technicians top up of USD 70. No information was provided about basic salaries</p>
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de Carvalho 2012

Notes	<p>Methods: interviews.</p> <p>Participants: 6 obstetricians, 6 resident physicians, 5 nurses, and 6 nursing technicians</p> <p>Setting: university teaching hospital, Brazil.</p> <p>Health worker tasks: resident physicians were responsible for conducting deliveries, but the whole team was included in the study to obtain their perception of how the practices were performed</p> <p>Years of experience: not reported.</p> <p>Study objectives: to understand the reasons why workers of a birthing centre in southern Brazil use natural birthing practices considered harmful by the WHO</p>
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DeMaria 2012

Notes	<p>Methods: both quantitative and qualitative methods (semi-structured interviews)</p> <p>Participants: 26 interviews with 7 professional midwives, 8 obstetric nurses, 3 obstetrician gynaecologists, 8 general practitioners</p> <p>Setting: 3 government public hospitals, 2 non-government hospitals. 3 with pure models of care, i.e. allopathic medical model, midwifery, obstetric nurse; 2 with mixed models, i.e. medical and midwifery, and medical and obstetric nurses. Mexico</p> <p>Health worker tasks: not reported.</p> <p>Years of experience: not reported.</p> <p>Study objectives: to compare and contrast 3 types of provider perspectives, i.e. their respective training, scope of practice, and perception and/or integration into the public system as skilled birth attendants</p>
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Foster 2006

Notes	<p>Methods: ethnographic decision tree modelling using a semi-structured guide</p> <p>Participants: auxiliary nurses staffing the maternity ward of the study hospital. All were women, average 38.9 years of age, majority completed high school and auxiliary training (58%), rest (42%) had completed high school, auxiliary training, and some college</p> <p>Setting: hospital, which level of care unclear, Dominican Republic</p> <p>Health worker tasks: auxiliary nurses provided a range of services. Apart from monitoring and resuscitation of the mother during the intrapartum period, they augmented labour and attended normal deliveries of singleton births as well as twin deliveries and breech deliveries. In addition, they performed and repaired episiotomies and lacerations, and manually explored the uterus or removed placenta. In the postpartum period, they monitored vital signs, administered uterotonics, bimanual compression of the uterus, and administered antibiotics following Caesarean section deliveries</p> <p>Years of experience: had on average 9.2 years of experience, average of 5.6 years on maternity ward</p> <p>Study objectives: to understand the decision-making process of auxiliary nurses regarding postpartum bleeding among women in the Dominican Republic</p>
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Fränngård 2006

Notes	<p>Methods: in-depth interviews and focus group discussions with midwives</p> <p>Participants: all midwives were women in their 20s or early 30s, except 1 who was in her 50s</p> <p>Setting: district hospital and health centre level IV facilities, Uganda</p> <p>Health worker tasks: not reported.</p> <p>Years of experience: not reported.</p> <p>Study objectives: to explore rural Uganda midwives' experiences, with a focus on their professional life</p> <p>Notes: salary/incentives: participants earned USD 170 (before taxation) per month</p>
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Fujita 2012

Notes	<p>Methods: open-ended, semi-structured, in-depth interviews</p> <p>Participants: midwives working in antenatal care and conducting freestyle delivery, obstetricians working with midwives, head of each category of professionals, and the hospital director. Interviewed 6 midwives, 1 nurse assistant, 4 obstetricians, 1 paediatrician, 1 physiotherapist, 2 other co-medical staff, 1 hospital director. Midwives age range 30 to 50 years</p> <p>Setting: tertiary hospital, Benin.</p> <p>Years of experience: midwives' years of experience ranged from 10 to 30 years</p> <p>Study objectives: to describe the process of introduction and implementation of humanised care and to determine how the practice affects midwives, obstetricians, and other service providers in the hospital</p>
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Graner 2010

Notes	<p>Methods: focus group discussions.</p> <p>Participants: 21 midwives all female, 2 medical doctors (1 female), 6 assistant physicians (1 female). Age range of midwives was 23 to 52 years. Age range of doctors and assistant physicians was 35 to 48 years</p> <p>Setting: primary health care, Vietnam.</p> <p>Health worker tasks: medical doctors or assistant physicians provided general medical care and management of units. Midwives and nurses were responsible for providing antenatal care and delivery at the communal health station</p> <p>Years of experience: mean years of experience for midwives was 14 +/- 8.1 years but ranged from 2 months to 30 years. Mean years of experience for doctors/assistant physicians was 13.5 +/- 7.8 years (range 5 to 28 years)</p> <p>Study objectives: to explore the perspectives and experiences of midwives, assistant physicians, and medical doctors on the content and quality of maternal health care</p>
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Hassan-Bitar 2011

Notes	<p>Methods: used both quantitative and qualitative methods. In-depth interviews and field observation notes</p> <p>Participants: maternal healthcare workers: 9 midwives, 14 nurses, 8 doctors</p> <p>Setting: public referral hospital, Palestine.</p> <p>Health worker tasks: doctors were responsible for managing complicated cases, surgery, suture episiotomies and tears. Study included long list of tasks but in summary midwives' core duties included vaginal delivery, while nurses provided pre- and postdelivery nursing care</p> <p>Years of experience: all doctors had more than 5 years experience. All nurses and midwives employed less than 5 years</p> <p>Study objectives: to explore the challenges and barriers faced by Palestinian maternal healthcare providers to the provision of quality maternal healthcare services</p>
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Ith 2012

Notes	<p>Methods: descriptive qualitative study, used focus group discussions</p> <p>Participants: 25 skilled birth attendants including 8 primary midwives, 13 secondary midwives, 1 primary nurse midwife, and 3 doctors with midwifery skills</p> <p>Setting: provincial hospital, 2 regional hospitals, and 2 health centres, Cambodia</p> <p>Health worker tasks: not reported.</p> <p>Study objectives: to explore the working environment of skilled birth attendants in 1 region of Cambodia and the factors affecting their motivation and performance</p> <p>Notes: salary/incentives: in addition to general increases in salaries for all health workers, skilled birth attendants were directly paid a cash incentive of USD 10 to 15 from the government for every live birth born in a hospital or health centre. Although no detailed information about their basic salary was provided, it was indicated that health workers considered their salaries and incentives inadequate</p>
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Khalaf 2009

Notes	<p>Methods: focus group discussions</p> <p>Participants: 30 healthcare providers, of whom more than two-thirds were diploma or associate degree nurses, 30% were baccalaureate-prepared nurses, 30% were physicians, 40% were midwives, and 30% were nurses. Mean age was 35.4 years, range 21 to 55 years. The majority were females</p> <p>Setting: maternal and child health centres, Jordan.</p> <p>Health worker tasks: not reported.</p> <p>Years of experience: nearly two-thirds had 5 or more years experience in providing postpartum health care</p> <p>Study objectives: to gain an understanding of Jordanian healthcare providers' perspectives on the delivery of postpartum health care to augment the literature documenting the perspectives of postpartum women regarding their health care</p> <p>Notes: salary: 50% of participants had an income of USD 350 to 700 (not clear if this was monthly income), and 36% had an income over USD 700</p>
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Lester 2003

Notes	<p>Methods: exploratory descriptive study employing a qualitative approach using a focus group discussion</p> <p>Participants: 5 registered midwives working in a midwife obstetric unit. 1 midwife was in charge of the unit</p> <p>Setting: maternity obstetric unit located in a large academic hospital providing primary health care, South Africa</p> <p>Health worker tasks: the midwives provided safe delivery and immediate care for pregnant women, but no additional information was provided</p> <p>Years of experience: some midwives had never worked in a midwife-only unit, some had no midwifery experience at all, others had worked under supervision for many years previously</p> <p>Study objectives: to determine how midwives adjusted to work in the new unit and how they perceived their function given that this was a unique maternity obstetric unit. Explored advantages and disadvantages of being located in a hospital</p>
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Lugina 2001

Notes	Methods: focus group discussions. Participants: 49 midwives, all women, age range 30 to 50 years, including registered and enrolled midwives, some were leaders. 40 of the 49 were service providers Setting: municipal hospitals, Tanzania. Health worker tasks: enrolled midwives were sometimes in charge of a shift with a registered midwife overseeing several units. Both enrolled and registered midwives provided maternal and child health care Years of experience: not reported. Study objectives: to describe midwives' views on their role in postpartum care
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Maputle 2010

Notes	Methods: unstructured phenomenological in-depth interviews. Participants: all midwives managing women in labour in the obstetric unit. 12 midwives were sampled Setting: tertiary hospital in Limpopo, South Africa. Health worker tasks: the midwives managed labour, but no other details were provided Years of experience: had at least 2 years' experience in the labour ward Study objectives: to explore and describe the experiences of midwives managing women during labour at a tertiary care hospital in Limpopo province
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Mathole 2006

Notes	Methods: interviews using questionnaires (no additional information was provided) Participants: 25 midwives/nurses, 21 of whom were female. 6 were registered nurses (i.e. had 3-year nurse training), 3 of these had midwifery training. 12 were certified nurses (i.e. had 2-year nurse training), of whom 5 had midwifery qualification, 7 were nursing students. All participants seemed to provide maternity care Setting: health centres in the district, Zimbabwe. Health worker tasks: the nurses and midwives provided maternity care, but no additional information was provided Years of experience: midwives had between half a year to 30 years of experience Study objectives: to describe midwives' views on their role in postpartum care
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Molina 2011

Notes	Methods: in-depth interviews with health workers and focus group discussions with mothers Participants: doctors and nurses with at least 1 year of specialised experience in maternity care who were directly involved in management of maternal health services Setting: primary, secondary, and tertiary levels of care, Colombia Years of experience: doctors and nurses had at least 1 year of specialised experience in maternity care Study objectives: to analyse the quality of maternal health services in Medellin, Colombia, within the context of the social security system, from the perspective of mothers, physicians, and nurses involved in provision of services
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Mondiwa 2007

Notes	<p>Methods: exploratory qualitative study.</p> <p>Participants: 7 midwives, 2 aged 21 to 30 years and 5 aged 31 to 40 years. 3 were nurses who had completed further midwifery education with a university certificate in midwifery or hospital diploma. 4 were nurse/midwife technicians, having a 3-year diploma with both nursing and midwifery training</p> <p>Setting: large government hospital, Malawi.</p> <p>Years of experience: 5 participants had more than 5 years of experience as a midwife, while 2 participants had 3 to 4 years of experience. All had worked in labour ward for more than 2 years</p> <p>Study objectives: to explore Malawian midwives' perceptions of occupational risk of HIV infection and the influence of these perceptions on occupational risk upon midwifery practice in the intrapartum period</p>
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Penfold 2013

Notes	<p>Methods: mixed-methods study comprising cross-sectional survey of health facilities and qualitative focus group discussions and in-depth interviews</p> <p>Participants: 54 staff participated, who were mainly female (11 males), with a median age 40 to 49 years (range 24 to 60). 10 were clinical officers, 10 nurse midwives, 8 nursing officers, 10 public health nurses, 3 maternal child health aides. Also had reproductive and child health co-ordinators from 3 council health management teams</p> <p>Setting: 200 facilities including 4 hospitals, 15 health centres, 156 dispensaries in 6 districts, Tanzania</p> <p>Health worker tasks: health workers provided maternal, newborn, and child health services, or managed maternal services or health departments. No additional details were provided</p> <p>Years of experience: the health workers had been in current position less than 10 years (range 6 months to 30 years)</p> <p>Study objectives: examined the experiences of professional staff providing maternal care in public rural health facilities in south Tanzania, focusing on issues arising in the context of poorly maintained equipment and insufficient key drugs and other supplies. Also aimed to quantify the availability of functioning equipment and medical supplies</p>
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Pettersson 2006

Notes	<p>Methods: in-depth interviews.</p> <p>Participants: 16 midwives from the labour ward, including 1 auxiliary nurse midwife, 1 regular midwife, 14 with maternal/infant health training</p> <p>Setting: Central Hospital, Mozambique.</p> <p>Health worker tasks: midwives provided institutional perinatal health care, no specific tasks were reported</p> <p>Years of experience: length of employment ranged from 11 months to 15 years (mean 6.7 years)</p> <p>Study objectives: to explore midwives' perceptions of factors obstructing or facilitating their ability to provide quality perinatal care at a central labour ward</p>
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Pitchforth 2006

Notes	<p>Methods: mixed-methods qualitative approach involving ethnographic observations and interviews with staff and women</p> <p>Participants: 7 doctors of varying seniority, person in charge of obstetric admissions and eclampsia ward, 3 nurses, social welfare office staff, 1 pharmacist. Women with different obstetric complications</p> <p>Setting: a medical college hospital, Bangladesh.</p> <p>Health worker tasks: not reported.</p> <p>Years of experience: not reported.</p> <p>Study objectives: to establish whether and how poor women seeking emergency obstetric care were identified as being in need of financial support; how decisions were made about who would receive support; and what mechanisms (formal or informal) were in place to provide that support</p>
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Pitchforth 2010

Notes	<p>Methods: observations on labour ward, interviews with healthcare professionals, service user interviews, and modified nominal group technique with key stakeholders</p> <p>Participants: 81 midwives, 4 medical interns, 1 GP, 12 women (service users), 6 stakeholders (head midwifery, medical director, head of pharmacy, GP, obstetrician, head of maternity)</p> <p>Setting: teaching hospital, Ethiopia.</p> <p>Health worker tasks: GPs sometimes worked with intern doctors and managed complicated cases and surgical procedures. Admissions, routine care, and observations were done primarily by medical interns and midwives</p> <p>Years of experience: not reported.</p> <p>Study objectives: to combine clinical and social science perspectives and methods to best assess and understand issues affecting quality of clinical care and to identify priorities for change</p>
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Spangler 2012

Notes	<p>Methods: mixed method: survey, interviews, ethnographic participant observation</p> <p>Participants: health workers providing formal obstetric services including nurse-midwives, nurses, clinical or rural officers, advanced medical officers, physicians, and various types of aides</p> <p>Setting: district hospitals, health centres, and dispensaries, Tanzania</p> <p>Health worker tasks: not reported.</p> <p>Years of experience: not reported.</p> <p>Study objectives: to assess obstetric care in a rural community in Tanzania</p>
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Tabatabaie 2012

Notes	<p>Methods: quantitative and qualitative methods (in-depth, semi-structured interviews)</p> <p>Participants: 4 midwives worked in state hospitals and private clinics, 1 worked in private clinic</p> <p>Setting: home births, Iran.</p> <p>Health worker tasks: conduct home births, referral.</p> <p>Years of experience: not reported.</p> <p>Study objectives: to determine factors that hinder midwives and parturient women from using hospitals when complications occur during home births in Zahedan (capital and most populous city of Sistan and Baluchestan province in southeastern Iran)</p>
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Thorsen 2012

Notes	<p>Methods: descriptive, retrospective case study design, qualitative methods. Conducted chart extractions using medical record extraction form, facility-based interviews using open-ended semi-structured interviews, community-based interviews using verbal autopsy and contributing factors questionnaire</p> <p>Participants: healthcare workers providing care to the deceased, their family members and guardians; and traditional birth attendants</p> <p>Setting: 1 secondary and 1 tertiary hospital, Malawi.</p> <p>Health worker tasks: not reported.</p> <p>Years of experience: not reported.</p> <p>Study objectives: to identify facility- and community-based factors that contribute to maternal deaths based on the three-delays model</p>
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VSO 2012

Notes	<p>Methods: descriptive, retrospective case study design, qualitative methods (small group discussions and interviews in the workplace using open-ended questions)</p> <p>Participants: 122 health workers, including medical doctors, clinical officers, nurses, midwives, and nursing assistants. They included front-line workers, facility managers, and local government district health officers. In addition, 24 stakeholders from civil society organisations, trade unions, professional associations, and regulatory councils contributed their perspectives</p> <p>Setting: 18 hospitals and health centres, Uganda.</p> <p>Health worker tasks: not reported.</p> <p>Years of experience: not reported.</p> <p>Objectives: to explore with front-line health workers and their managers the conditions underlying accusations of unethical behaviour and service inadequacies. The overall objective was to give opinion-formers and healthcare service users a realistic picture of what life is like as a health worker in Uganda, in order to increase understanding and modify expectations</p> <p>Notes: this study does not focus exclusively on maternity care, but has a general focus on providing care among a wide range of cadre including some skilled birth attendants</p>
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GP: general practitioner

WHO: World Health Organization

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Ali 2007	Focuses on role of traditional birth attendants and maternal perceptions, not skilled providers
Bhate-Deosthali 2011	Qualitative study, but did not use qualitative methods for data analysis
Capelli 2011	Not skilled birth attendants working in primary, secondary, or tertiary care
Carmel 2006	Not qualitative study
Daniels 2011	Not qualitative study

(Continued)

Fatmi 2005	Focuses on traditional birth attendants, not skilled providers
Floyd 2013	Not qualitative study
Hutchinson 2010	Health workers' perceptions of "near-miss-audits"
Kabakyenga 2011	Focuses on women and community perspectives
Kesterton 2009	Focus on neonatal care practice, maternal and other carers perspectives
Kusuma 2007	Focus on maternal perceptions
Lobis 2011	Mixed-methods study, but did not use qualitative methods for data analysis
Lori 2012	Focuses on midwife trainees perceptions of place of work post-training
Mathole 2005	Focus on changing antenatal care routines, not intrapartum and postpartum care
Maupin 2008	Focuses on training program for midwives, not on delivery of routine care
Mir 2012	Mixed-methods study, hardly any qualitative data presented
Mitchell 2012	Not skilled birth attendants working in primary, secondary, or tertiary care
Mizuno 2011	Focuses on terminating pregnancy, which may include factors that differ from studies included in our review
Moyer 2012	Not skilled birth attendants working in primary, secondary, or tertiary care
Mukaindo 2012	Not qualitative study
Ngo 2011	Focuses on women's experiences, not skilled birth attendants
Richard 2009	Focuses on health workers' perceptions of audits
Ridge 2010	Qualitative study, but did not use qualitative methods for data analysis
Ruiz 2013	Focuses on women's experiences, not those of skilled birth attendants
Sharan 2005	Focuses on women's experiences, not those of skilled birth attendants
Warren 2013	Not skilled birth attendants working in primary, secondary, or tertiary care
Wick 2012	Focus on maternity care during war, which would include factors that differ from routine maternity care

DATA AND ANALYSES

This review has no analyses.

ADDITIONAL TABLES

Table 1. Methodological limitations of included studies based on modified Critical Appraisal Skills Program (CASP) tool

Author year	Is study qualitative re-search?	Re-search questions clear?	Ethi-cal is-sues?	Is qual-ita-tive ap-proach justified?	Is ap-proach ap-pri-ate for re-search ques-tion?	Is study con-text clearly de-scribed	Role of re-searcher de-scribed	Sam-pling method clearly de-scribed	Sam-pling strategy ap-pri-ate?	Method of data col-lection clear?	Method of data col-lection ap-pro-pri-ate to ques-tion?	Method of data anal-ysis clear?	Method of data anal-ysis suit-able?	Are claims sup-ported by evi-dence?	Over-all as-sess-ment
Has-san-Bitar 2011	Yes	Yes	Yes	No	Yes	Yes	No	No	Not clear	Yes	Yes	Yes	Yes	Yes	Medium
Bradley 2009	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Not clear	Yes	Yes	Yes	Good
Pitch-forth 2010	Yes	Yes	Yes	Yes	Yes	Yes	Not clear	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Good
Pet-ters-son 2006	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not clear	Yes	Yes	Yes	Yes	Yes	Yes	Good
Kha-laf 2009	Yes	Yes	Yes	Yes	Yes	Yes	Not clear	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Good
Graner 2010	Yes	Yes	Yes	Yes	Yes	Yes	Not clear	Not clear	Not sure	Yes	Yes	Yes	Yes	Yes	Good
Lug-ina 2001	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Good

Table 1. Methodological limitations of included studies based on modified Critical Appraisal Skills Program (CASP) tool
(Continued)

Span- gler 2012	Mixed meth- ods	Yes	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No	Not clear	Yes	Low
de Car- valho 2012	Yes	Yes	Yes	No	Not clear	Not clear	No	No	No	Yes	Yes	Not clear	Not clear	Yes	Low
Be- lizan 2007	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Medium
Fränng: 2006	Yes	No	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Low
Fujita 2012	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Not clear	Yes	Yes	Yes	Yes	Yes	Medium
Blum 2006	Yes	Not clear	No	No	Not clear	Yes	Not clear	Yes	Yes	Yes	Yes	Not sure	Yes	Yes	Low
An- war 2009	Mixed meth- ods	Yes	No	No	Not clear	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Medium
Conde- Agudel: 2008	Mixed meth- ods	Yes	Yes	Yes	Yes	Yes	No	Not clear	Not clear	Yes	Yes	Yes	Yes	Yes	Medium
De- Maria 2012	Mixed meth- ods	Clear ob- jec- tives	Yes	Yes	Yes	Yes	Not clear	No	Not clear	Yes	Yes	Yes	Yes	Yes	Medium
Ma- putle 2010	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Good
VSO 2012	Yes	No	No	No	Not clear	Not suffi- cient	Not clear	No	Not clear	Yes	Un- clear	No	Not clear	Yes	Low

Table 1. Methodological limitations of included studies based on modified Critical Appraisal Skills Program (CASP) tool
(Continued)

Thorsei 2012	Yes	Ob- jec- tives clear	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Medium
Tabatal 2012	Mixed meth- ods	Ob- jec- tives clear	Yes	Yes	Yes	Yes	Not clear	Not clear	Not clear	Yes	Yes	Yes	Yes	Yes	Medium
Pitch- forth 2006	Mixed meth- ods	Ob- jec- tives clear	Yes	No	Yes	Yes	No	Not clear	Not clear	Yes	Yes	Yes	Yes	Yes	Medium
Math- ole 2006	Yes	Yes	Yes	No	Not clear	Not suffi- cient	Not clear	Yes	Yes	Yes	Yes	Yes	Yes	Yes	medium
Molina 2011	Yes	Ob- jec- tive is clear but ques- tions are not stated.	No	No	Not clear	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Low
Pen- fold 2013	Mixed meth- ods	Aim is clear.	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Good
Barua 2011	Yes	Clear ob- jec- tives	Yes	No	Not clear	Yes	Not clear	Un- clear	Not clear	Yes	Yes	Yes	Yes	No	Low
Fos- ter 2006	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Good
Lester 2003	Yes	Yes	Yes	Yes	Yes	Not suffi- cient	No	Yes	Yes	Yes	Yes	Yes	Not clear	Yes	Low

Table 1. Methodological limitations of included studies based on modified Critical Appraisal Skills Program (CASP) tool (Continued)

Mondiv 2007	Yes	Ob- jec- tive clear	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Good
De Brouwe 2009	Mixed meth- ods	Ob- jec- tive clear	No	No	Not clear	Yes	No	Un- clear	Not clear	Yes	Yes	Yes	Yes	No	Low
Af- sana 2001	Yes	Ob- jec- tive clear	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Medium
Ith 2012	Yes	ob- jec- tive clear	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Good

Table 2. CERQual evidence profile: finding 1

<p>Staff shortage was a widely reported problem, and led to increased workloads, which in turn sometimes compromised quality of care. For instance, heavy workload limited health worker time for history taking and thorough assessment of women, and hand hygiene was sometimes compromised. Staff shortages and work overload jeopardised health workers' ability to provide timely care and manage routine care as well as emergency cases. In addition, shortage of staff sometimes led health workers to exceed their scope of practice and influenced a health facility's ability to provide 24-hour care</p>	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Minor concerns because reflexivity was not reported in 13 studies; ethical consideration was not reported in 6 studies; and a small number of studies did not report sampling strategy or data analysis methods. However, these may not influence the finding
<i>Coherence</i>	Minor concerns because 1 study reported that doctors were able to rest despite the workload, another study indicated nurses did not exceed scope of practice. These data imply that the finding may relate only to a few cadre
<i>Relevance</i>	No to very minor concerns, as data were drawn from a wide range of settings and covered different levels of care
<i>Adequacy</i>	No to very minor concerns because many studies reported data on this finding, though some studies provided thin data
Overall CERQual assessment	

Table 2. CERQual evidence profile: finding 1 (Continued)

Moderate confidence	Due to minor concerns about coherence; and minor concerns about methodological limitations
Contributing studies/setting	
<p>Middle E&N Africa (2), Africa (9), E. Asia (2), S. Asia (3), Latin America & Caribbean (1)</p> <p>Hassan-Bitar 2011: Palestine, public referral hospital Bradley 2009 Malawi, rural mission hospitals Khalaf 2009: Jordan, maternal and child health centres Graner 2010: Vietnam, primary health care Lugina 2001: Tanzania, municipal hospitals Spangler 2012: Tanzania, district hospitals, health centres, and dispensaries Fränngård 2006: Uganda, district hospital and health centre IVs Fujita 2012: Benin, tertiary hospital Anwar 2009: Bangladesh, basic and comprehensive emergency obstetric care facilities, public Maputle 2010: South Africa, tertiary care hospital VSO 2012: Uganda, hospitals and health centres Conde-Agudelo 2008: Colombia, public and private hospitals Thorsen 2012: Malawi, a secondary and tertiary hospital Mathole 2006: Zimbabwe, health centres in the district Barua 2011: India, university teaching hospital (tertiary, referral level), 2 secondary-level hospitals Afsana 2001: Bangladesh, health centre Ith 2012: Cambodia, public maternity settings in provincial hospital, two regional hospitals and two health centres</p>	

Table 3. CERQual evidence profile: finding 2

<p>A lack of specialists or experienced staff, including absence of health workers with key skills such as anaesthetics, could influence the provision of care and supervision of junior staff. When no specialists were available, some tasks for instance emergency obstetric care were not delivered at all, or tasks were transferred to health workers who were not properly qualified or trained to deliver them. When senior experienced health workers were not available, junior health workers sometimes lacked supervision</p>	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Moderate concerns because reflexivity was not reported in 9 studies; ethical considerations were not reported in 5 studies; and several studies did not report sampling strategy or data analysis methods
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	No to very minor concerns
<i>Adequacy</i>	No to very minor concerns
Overall CERQual assessment	
Moderate confidence	Due to moderate concerns about methodological limitations

Table 3. CERQual evidence profile: finding 2 (Continued)

Contributing studies/setting
<p>Africa (7), Middle E&N Africa (2), S. Asia (3) Hassan-Bitar 2011: Palestine, public referral hospital Bradley 2009: Malawi, rural mission hospitals Khalaf 2009: Jordan, maternal and child health centres Spangler 2012: Tanzania, district hospitals, health centres, and dispensaries Fränngård 2006: Uganda, district hospital and health centre IVs Anwar 2009: Bangladesh, basic and comprehensive emergency obstetric care facilities, public VSO 2012: Uganda, hospitals and health centres Afsana 2001: Bangladesh, health centre Blum 2006: Bangladesh, home-based maternity care Penfold 2013: Tanzania, hospitals, health centres, dispensaries De Brouwere 2009: Senegal, district hospitals Pitchforth 2010: Ethiopia, teaching hospital</p>

Table 4. CERQual evidence profile: finding 3

Health workers had vague job descriptions that sometimes led them to perform tasks that were beyond their expertise or scope of practice	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Minor concerns. Although reflexivity and ethical considerations were not reported, these may not have influenced the finding
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Serious concerns. Data were from only 1 region.
<i>Adequacy</i>	Serious concerns. Data were from 1 study with thin data.
Overall CERQual assessment	
Very low confidence	Due to minor concerns about methodological limitations; and serious concerns about relevance and adequacy
Contributing studies/setting	
<p>(Africa 1) Bradley 2009: Malawi, rural mission hospitals</p>	

Table 5. CERQual evidence profile: finding 4

Staff shortages and work overload could jeopardise health workers' ability to display support, empathy, and friendliness to women in labour	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Minor concerns because reflexivity was not reported in 2 studies; ethical considerations were not reported in 1 study; and sampling strategy was not clear in 2 studies. However these may not influence the finding
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Moderate concerns because data were from a limited number of regions and level-of-care settings
<i>Adequacy</i>	Moderate concerns because data were from 3 studies with very thin data
Overall CERQual assessment	
Very low confidence	Due to minor concerns about methodological limitations; and moderate concerns about relevance and adequacy
Contributing studies/setting	
<p>Africa (2), Latin America & Caribbean (1) Maputle 2010: South Africa, tertiary care hospital Conde-Agudelo 2008: Colombia, public and private hospitals, 44% were university teaching hospitals VSO 2012: Uganda, hospitals and health centres</p>	

Table 6. CERQual evidence profile: finding 5

Staff shortages and increased workload as well as living and work conditions sometimes caused stress and frustration, affected family life, and led to concerns about personal safety among health workers	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Moderate concerns because reflexivity was not reported in 4 studies; ethical considerations were not reported in 3 studies; and some studies did not report sampling or data analysis methods
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Minor concerns because data referred mainly to midlevel providers of care

Table 6. CERQual evidence profile: finding 5 (Continued)

<i>Adequacy</i>	Minor concerns because data were from several studies, though some studies had thin data
Overall CERQual assessment	
Moderate confidence	Due to moderate concerns about methodological limitations; and minor concerns about relevance and adequacy
Contributing studies/setting	
<p>Africa (3), S. Asia (2), E. Asia & Pacific (1) <i>Graner 2010</i>: Vietnam, primary health care <i>Fränngård 2006</i>: Uganda, district hospital and health centre IVs <i>Blum 2006</i>: Bangladesh, home-based maternity care <i>Lester 2003</i>: South Africa, maternity obstetric unit located in large academic hospital <i>Anwar 2009</i>: Bangladesh, basic and comprehensive emergency obstetric care facilities, public <i>VSO 2012</i>: Uganda, hospitals and health centres</p>	

Table 7. CERQual evidence profile: finding 6

<p>A wide range of interlinked reasons for staff shortages were suggested. These included limited funds to recruit health workers, bureaucratic processes of the recruitment process (e.g. absence of committees responsible for recruitment at the district level), scarcity of health workers especially in rural areas, and other factors that deter retention of health workers once recruited (see Table 9). In addition, institutional arrangements (e.g. when health facilities hire contract staff in order to reduce labour costs) and inefficient deployment of available staff may create staff shortages. Facilities with staff shortages and work overload were also seen as unattractive places to work, making it difficult for managers to transfer staff from well-served to underserved areas, thus compounding/increasing the problem</p>	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Minor concerns because reflexivity was not reported in 4 studies, and ethical considerations were not reported in 3 studies. However, these may not influence the finding
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Minor concerns because some studies refer to institutional-level factors, while others refer to district-level factors
<i>Adequacy</i>	Moderate concerns because data were from few studies with thin data
Overall CERQual assessment	
Moderate confidence	Due to moderate concerns about adequacy; and minor concerns about relevance and methodological limitations

Table 7. CERQual evidence profile: finding 6 (Continued)

Contributing studies/setting
<p>Africa (2), Latin America and Caribbean (1), E. Asia (1), S. Asia (1) Graner 2010: Vietnam, primary health care Anwar 2009: Bangladesh, basic and comprehensive emergency obstetric care facilities, public VSO 2012: Uganda, hospitals and health centres Pitchforth 2010: Ethiopia, teaching hospital Molina 2011: Colombia, primary, secondary, and tertiary care facilities</p>

Table 8. CERQual evidence profile: finding 7

<p>Health workers' salaries and benefits were considered insufficient for the work done, the responsibility and personal risk, and the additional responsibilities assigned, e.g. through informal task-shifting. In addition, salaries were insufficient for health workers' personal needs, e.g. to send their children to school and for transport costs to visit their husbands Low salaries and incentives sometimes led to a lack of motivation and poor performance, absenteeism, and increased rates of dual practice</p>	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Moderate concerns, as reflexivity was not reported in 7 studies; ethics consideration was not reported in 3 studies; and sampling or data analysis methods were not reported in 4 studies
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Minor concerns because 1 study included health workers on contract, which may be a different arrangement from other studies
<i>Adequacy</i>	Minor concerns because several studies had thin data.
Overall CERQual assessment	
Moderate confidence	Due to moderate concerns about methodological limitations; and minor concerns about relevance and adequacy
Contributing studies/setting	
<p>Middle E&N Africa (1), E. Asia (2), Latin America & Caribbean (2), Africa (2), S. Asia (1) Hassan-Bitar 2011: Palestine, public referral hospital Belizan 2007: Argentina/Uruguay, public hospitals Anwar 2009: Bangladesh, basic and comprehensive emergency obstetric care facilities, public Fränngård 2006: Uganda, district hospital and health centre IVs Ith 2012: Cambodia, provincial and regional hospitals, health centres De Brouwere 2009: Senegal, district hospitals Graner 2010: Vietnam, primary health care Molina 2011: Colombia, primary, secondary, and tertiary care providers offering obstetric services</p>	

Table 9. CERQual evidence profile: finding 8

<p>Factors reported by health workers or their managers as influencing recruitment, retention, motivation, or performance of health workers were: good-quality accommodation for health workers provided by government, allowances for extra project-related work, paid vacations for one month of the year, improved access to and funding for continued education/in-service training, career progression, non-biased evaluations or performance-related rewards or promotions, e.g. for those doing better, working longer, or taking on added responsibilities, and verbal recognition by supervisors and management. The following factors were reported as discouraging health workers from working in rural or remote health facilities: facilities that lack good equipment and do not provide sufficient work needed to maintain clinical skills, lack of family amenities, limited opportunities for private practice, lack of electricity, TV, or internet, coupled with poor roads and lack of transport. In addition, interference in treatment decisions by local politicians, and mismanagement of posting and transfer from the national level, were demotivating to health workers working in rural facilities</p>	
<p>Assessment for each CERQual component</p>	
<p><i>Methodological limitations</i></p>	<p>Minor concerns because reflexivity was not reported in 6 studies; ethical considerations were not reported in 4 studies; and sampling methods were not reported in 3 studies. However, these may not have influenced the finding</p>
<p><i>Coherence</i></p>	<p>No to very minor concerns</p>
<p><i>Relevance</i></p>	<p>Minor concerns, as 1 study reports managers' perceptions of factors health workers describe as influencing recruitment and retention</p>
<p><i>Adequacy</i></p>	<p>No to very minor concerns, though some studies reported thin data for specific parts of the finding</p>
<p>Overall CERQual assessment</p>	
<p>Moderate confidence</p>	<p>Due to minor concerns for methodological limitations and relevance</p>
<p>Contributing studies/setting</p>	
<p>Africa (4), E. Asia (1), Middle East & N Africa (1), S. Asia (1) Hassan-Bitar 2011: Palestine, public referral hospital Bradley 2009: Malawi, rural mission hospitals Anwar 2009: Bangladesh, basic and comprehensive emergency obstetric care facilities, public VSO 2012: Uganda, hospitals and health centres Fränngård 2006: Uganda, district hospital and health centre IVs Ith 2012: Cambodia, provincial and regional hospitals, health centres De Brouwere 2009: Senegal, district hospitals</p>	

Table 10. CERQual evidence profile: finding 9

Health workers perceived managers as lacking in management capacity and skills and sometimes felt unsupported. Health workers also complained that concerns about the workplace were sometimes left unheard, and no solutions or feedback given	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Minor concerns, as reflexivity was not reported in 4 studies, and ethical considerations were not reported in 3 studies
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Moderate concerns, as only 3 regions were represented; data were from health workers' views of management; and 1 study referred to lack of management support at a midwife-led unit in a hospital setting
<i>Adequacy</i>	Minor concerns because some studies had thin data.
Overall CERQual assessment	
Moderate confidence	Due to moderate concerns about relevance; and minor concerns about methodological limitations and adequacy
Contributing studies/setting	
<p>Africa (4), S. Asia (1), E. Asia (1) Bradley 2009: Malawi, rural mission hospitals VSO 2012: Uganda, hospitals and health centres Ith 2012: Cambodia, provincial and regional hospitals, health centres Anwar 2009: Bangladesh, basic and comprehensive emergency obstetric care facilities, public Lester 2003: South Africa, maternity obstetric unit located in large academic hospital Mondiwa 2007: Malawi, large government hospital</p>	

Table 11. CERQual evidence profile: finding 10

Helping women access financial assistance for out-of-pocket payments was sometimes time-consuming for health workers	
Assessment for each CERQual component	
<i>Methodological limitations</i>	No to very minor concerns, though reflexivity was not reported
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Serious concerns because only 1 region and teaching hospital population were represented
<i>Adequacy</i>	Serious concerns because data are from 1 study with very thin data

Table 11. CERQual evidence profile: finding 10 (Continued)

Overall CERQual assessment	
Very low confidence	Due to serious concerns about relevance and adequacy
Contributing studies/setting	
S. Asia (1)	
Pitchforth 2006: Bangladesh, teaching hospital	

Table 12. CERQual evidence profile: finding 11

Inadequate pre-service and in-service training sometimes limited health workers' skills and ability to provide care. For instance, some health workers lacked training to attend home births or manage complicated pregnancies or deliveries, e.g. HIV in pregnancy or eclampsia. In contrast, training allowed midwives to practice assisting women to deliver in non-supine positions and enabled them to get accustomed to this practice	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Minor concerns because ethical considerations were not reported in 3 studies; reflexivity was not reported in 5 studies; and sampling strategy was not clear in 2 studies
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	No to very minor concerns
<i>Adequacy</i>	No to very minor concerns
Overall CERQual assessment	
High confidence	-
Contributing studies/setting	
Latin America & Caribbean (1), Africa (3), S. Asia (3), E. Asia & Pacific (1)	
Fujita 2012: Benin, tertiary hospital	
Blum 2006: Bangladesh, home-based maternity care	
DeMaria 2012. Mexico, public and non-governmental hospitals	
Lester 2003: South Africa, maternity obstetric unit located in large academic hospital	
Mathole 2006: Zimbabwe, health centres in the district	
Barua 2011: India, university teaching hospital (tertiary, referral level), 2 secondary-level hospitals	
Afsana 2001: Bangladesh, health centre	
Graner 2010: Vietnam, primary health care	

Table 13. CERQual evidence profile: finding 12

<p>Health worker competencies and opportunities for on-the-job training were sometimes limited by poor scheduling of in-service education sessions, the high cost of continuing education for health workers, inequitable selection for professional development opportunities, lack of ongoing training and follow-up, and shortage of instructors for upgrading courses. In addition, variation in the quality of pre-service training resulted in varying levels of need for in-service training, and these needs were not always met, resulting in wide variation in proficiency among health workers</p>	
<p>Assessment for each CERQual component</p>	
<p><i>Methodological limitations</i></p>	<p>Minor concerns because reflexivity was not reported in 2 studies; ethics considerations were not reported in 1 study; and sampling strategy or data analysis methods were not reported in 2 studies</p>
<p><i>Coherence</i></p>	<p>No to very minor concerns</p>
<p><i>Relevance</i></p>	<p>Minor concerns, as only 2 regions were represented.</p>
<p><i>Adequacy</i></p>	<p>Moderate concerns, as data were from only 4 studies with thin data</p>
<p>Overall CERQual assessment</p>	
<p>Moderate confidence</p>	<p>Due to minor concerns about methodological limitations and relevance; and moderate concerns about adequacy</p>
<p>Contributing studies/setting</p>	
<p>Africa (3), East Asia (1) Petterson 2006: Mozambique, tertiary hospital Spangler 2012: Tanzania, district hospitals, health centres, and dispensaries Ith 2012: Cambodia, provincial and regional hospitals, health centres Fränngård 2006: Uganda, district hospital and health centre IVs</p>	

Table 14. CERQual evidence profile: finding 13

<p>Learning through practical application facilitated acquisition of skills and confidence. The experience gained through, for example, internship, social service year, and working in the community were identified as important for building doctors' and midwives' practical experience and confidence in providing care</p>	
<p>Assessment for each CERQual component</p>	
<p><i>Methodological limitations</i></p>	<p>Moderate concerns, as reflexivity and sampling strategy were not reported</p>
<p><i>Coherence</i></p>	<p>No to very minor concerns</p>

Table 14. CERQual evidence profile: finding 13 (Continued)

<i>Relevance</i>	Moderate concerns, as data refer to hospitals that had different models of care (3 with pure models of care, i.e. allopathic medical model, midwifery, obstetric nurse; 2 with mixed models, i.e. medical/midwifery and medical/obstetric nurses). Only 1 region was represented
<i>Adequacy</i>	Severe concerns, as data were from only 1 study with thin data
Overall CERQual assessment	
Very low confidence	Due to moderate concerns about methodological limitations and relevance; and severe concerns about adequacy
Contributing studies/setting	
Latin America & Caribbean (1)	
DeMaria 2012: Mexico, public and non-governmental hospitals	

Table 15. CERQual evidence profile: finding 14

<p>Health workers reported several barriers to implementing recommended practice. Firstly, health workers were sometimes unaware of current recommended effective practices. Secondly, health workers flexibility, attitudes, and beliefs about medical knowledge and skills sometimes influenced their receptivity to new practice knowledge. For example, health worker attitudes did not view medical education as dynamic; held beliefs that no significant progress had been made and that clinical practice was similar to techniques learnt many years ago; or were not flexible or willing to implement alternative positions of delivery even though these were preferred by women</p>	
Assessment for each CERQual component	
<i>Methodological limitations</i>	No to very minor concerns, as reflexivity was not reported in 3 studies, and sampling strategy was not clear in 1 study
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Moderate concerns, as only hospital populations from 2 regions were represented
<i>Adequacy</i>	Moderate concerns, as only 3 studies with thin data reported this finding
Overall CERQual assessment	
Low confidence	Due to moderate concerns about relevance and adequacy
Contributing studies/setting	

Table 15. CERQual evidence profile: finding 14 (Continued)

<p>Africa (1), Latin Am & Caribbean (2) Belizan 2007: Argentina/Uruguay, public hospitals Pitchforth 2010: Ethiopia, teaching hospital Conde-Agudelo 2008: Colombia, public and private hospitals, 44% were university teaching hospitals</p>

Table 16. CERQual evidence profile: finding 15

<p>Lack of time, infrastructure, and skills limited health workers' ability to seek knowledge and practice new clinical skills. For instance, chronic staff shortages meant less time available for health workers to seek information. This was sometimes further compounded by lack of information sources such as internet access and poorly resourced hospital libraries. In addition, lack of training and skills in networking, epidemiology, research appraisal, or critical thinking about clinical practice limited health workers' awareness and receptivity to clinical practice changes, and this lack of skills led some professionals to prefer old, familiar procedures</p>	
<p>Assessment for each CERQual component</p>	
<p><i>Methodological limitations</i></p>	<p>Minor concerns because reflexivity was not reported in 2 studies, and sampling strategy was not clear in 1 study</p>
<p><i>Coherence</i></p>	<p>No to very minor concerns</p>
<p><i>Relevance</i></p>	<p>Moderate concerns, as only 2 regions were represented, and data were from hospital populations</p>
<p><i>Adequacy</i></p>	<p>Moderate concerns, as had only 3 studies with thin data.</p>
<p>Overall CERQual assessment</p>	
<p>Low confidence</p>	<p>Due to moderate concerns about relevance and adequacy; and minor concerns about methodological limitations</p>
<p>Contributing studies/setting</p>	
<p>Africa (1), Latin Am & Caribbean (2) Belizan 2007: Argentina/Uruguay, public hospitals Conde-Agudelo 2008: Colombia, public and private hospitals, 44% were university teaching hospitals Lugina 2001: Tanzania, municipal hospitals</p>	

Table 17. CERQual evidence profile: finding 16

<p>Lack of guidelines/protocols, or where they were inconsistent or health workers were not aware or were uncertain of them, could impact patient care and outcomes and cause harm</p>	
<p>Assessment for each CERQual component</p>	

Table 17. CERQual evidence profile: finding 16 (Continued)

<i>Methodological limitations</i>	Minor concerns, as reflexivity was not reported in 3 studies; ethical considerations were not reported in 1 study; and sampling strategy and data analysis were not clear in 1 study
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	No to very minor concerns
<i>Adequacy</i>	Moderate concerns, as data were from only 5 studies, several with thin data
Overall CERQual assessment	
Low confidence	Due to moderate concerns about adequacy; and minor concerns about methodological limitations
Contributing studies/setting	
<p>Africa (2), Latin American & Caribbean (1), S. Asia (1), Middle East & North Africa (1) Lugina 2001: Tanzania, municipal hospitals Khalaf 2009: Jordan, maternal and child health centres Barua 2011: India, university teaching hospital (tertiary, referral level), 2 secondary-level hospitals Mathole 2006: Zimbabwe, health centres in the district de Carvalho 2012: Brazil, university teaching hospital</p>	

Table 18. CERQual evidence profile: finding 17

<p>Health workers did not always adhere to protocols/guidelines, even when aware of them. Guidelines/protocols were not followed for a number of reasons. Some health workers felt that guidelines were insufficient without consensus from staff. Some studies described how health workers continued to practice ineffective procedures because they were considered routine; due to lack of time; because health workers lacked the autonomy to avoid using what they knew to be inappropriate care; or because the resources at the institution were not aligned with the protocols for postpartum care, or when it was unclear who was professionally responsible, for example in using the partograph</p>	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Moderate concerns, as reflexivity was not reported in 5 studies; ethics considerations were not reported in 2 studies; and sampling strategy was not clear in 1 study
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Moderate concerns due to partial data from each of the studies; studies were mainly from 1 region and primarily hospitals
<i>Adequacy</i>	Moderate concerns due to thin data in several studies.

Table 18. CERQual evidence profile: finding 17 (Continued)

Overall CERQual assessment	
Low confidence	Due to moderate concerns about methodological limitations, relevance, and adequacy
Contributing studies/setting	
Latin America and Caribbean (4), Africa (1) Petterson 2006 : Mozambique, tertiary hospital Belizan 2007 : Argentina/Uruguay, public hospitals de Carvalho 2012 : Brazil, university teaching hospital Conde-Agudelo 2008 : Colombia, public and private hospitals, 44% were university teaching hospitals Molina 2011 : Colombia, primary, secondary, and tertiary hospitals	

Table 19. CERQual evidence profile: finding 18

Health workers sometimes used unnecessary diagnostic tests and did not follow recommended practice when they feared malpractice suits. This fear could lead to practitioners retaining practices they believed were 'safer'	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Minor concerns, as no reflexivity was reported.
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Moderate concerns, as only 1 region was represented.
<i>Adequacy</i>	Serious concerns, as data were from 1 study with thin data.
Overall CERQual assessment	
Very low confidence	Due to moderate concerns about relevance; serious concerns about adequacy; and minor concerns about methodological limitations
Contributing studies/setting	
Latin America & Caribbean (1) Belizan 2007 : Argentina/Uruguay, public hospitals	

Table 20. CERQual evidence profile: finding 19

Some health workers did not use recommended interventions when delivering care because of concerns about negative outcomes for the baby or the mother. Examples included the use of magnesium sulphate administered with anaesthesia during Caesarean sections or when monitoring of serum magnesium sulphate levels was not possible	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Minor concerns, as reflexivity was not reported.
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Moderate concerns, as data are from only 1 region.
<i>Adequacy</i>	Serious concerns, as included only 1 study with thin data.
Overall CERQual assessment	
Very low confidence	Due to moderate concerns about relevance; serious concerns about adequacy; and minor concerns about methodological limitations
Contributing studies/setting	
S. Asia (1)	
Barua 2011: India, university teaching hospital (tertiary, referral level), 2 secondary-level hospitals	

Table 21. CERQual evidence profile: finding 20

Health workers were sometimes reluctant to admit their lack of skills in delivering care for fear of blame and criticism from managers. This fear of criticism could undermine health worker confidence and performance	
Assessment for each CERQual component	
<i>Methodological limitations</i>	No to very minor concerns, though reflexivity was not reported in 1 study, and sampling was not clear in another
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Minor concerns, as data were from only 1 region and hospital populations
<i>Adequacy</i>	Moderate concerns, as had few studies with thin data.
Overall CERQual assessment	
Low confidence	Due to minor concerns about relevance; and moderate concerns about adequacy

Table 21. CERQual evidence profile: finding 20 (Continued)

Contributing studies/setting
Africa (3) Petterson 2006 : Mozambique, tertiary hospital Lugina 2001 : Tanzania, municipal hospitals Thorsen 2012 : Malawi, a secondary and tertiary hospital

Table 22. CERQual evidence profile: finding 21

Insufficient stock and/or lack of drugs such as hydralazine, magnesium sulphate, oxytocin, misoprostol, and antiretrovirals, and supplies such as gloves, sometimes influenced the quality of care provided to mothers and their babies. For instance, health workers had to use less effective alternative drugs (e.g. diazepam) instead of magnesium sulphate. Lack of supplies sometimes limited good hygiene and practice of aseptic techniques, resulting in unsafe practices (e.g. reuse of disposable gloves), which could increase the risk of HIV infection. The lack of supplies sometimes led to poor outcomes and increased the length of stay in health facilities. Lack of supplies could determine if a new clinical practice was implemented and maintained over time	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Moderate concerns because reflexivity was not reported in 8 studies; ethics considerations were not reported in 4 studies; sampling methods were unclear in 3 studies; and data analysis methods were unclear in 3 studies
<i>Coherence</i>	No or very minor concerns
<i>Relevance</i>	No or very minor concerns
<i>Adequacy</i>	No or very minor concerns, although data were thin, many studies from several regions reported this finding
Overall CERQual assessment	
Moderate confidence	Due to moderate concerns about methodological limitations
Contributing studies/setting	
Africa (8), E. Asia (2), Latin America and Caribbean (3), S. Asia (2) Bradley 2009 : Malawi, rural mission hospitals Pitchforth 2010 : Ethiopia, teaching hospital Graner 2010 : Vietnam, primary health care Spangler 2012 : Tanzania, district hospitals, health centres, and dispensaries de Carvalho 2012 : Brazil, university teaching hospital Belizan 2007 : Argentina/Uruguay, public hospitals Fränngård 2006 : Uganda, district hospital and health centres Anwar 2009 : Bangladesh, basic and comprehensive emergency obstetric care facilities, public VSO 2012 : Uganda, hospitals and health centres Mathole 2006 : Zimbabwe, health centres in the district	

Table 22. CERQual evidence profile: finding 21 (Continued)

Penfold 2013: Tanzania, hospitals, health centres, dispensaries
 Foster 2006: Dominican Republic, hospital
 Lester 2003: South Africa, maternity obstetric unit located in large academic hospital
 Ith 2012: Cambodia, provincial and regional hospitals, health centres
 Pitchforth 2006: Bangladesh, teaching hospital

Table 23. CERQual evidence profile: finding 22

As a result of this lack of drugs or supplies, mothers or their carers had to purchase their own. This sometimes led to wasted time in procuring the drugs and supplies and the creation of informal markets and corruption at health facilities

Assessment for each CERQual component

<i>Methodological limitations</i>	Moderate concerns because reflexivity was not reported in 5 studies; ethics considerations were not reported in 2 studies; sampling methods were not clear in 4 studies; and data analysis methods were not reported in 2 studies. Lack of reflexivity can influence findings, as health workers may not report corruption
<i>Coherence</i>	Minor concerns because all studies refer to women or their carers purchasing their own supplies, but only 1 study refers to informal markets and corruption
<i>Relevance</i>	No to very minor concerns
<i>Adequacy</i>	Moderate concerns due to thin data

Overall CERQual assessment

Low confidence	Due to moderate concerns about methodological limitations and adequacy; and minor concerns about coherence
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Contributing studies/setting

Africa (5), S. Asia (1), Latin America and Caribbean (1)

Pitchforth 2010: Ethiopia, teaching hospital
 VSO 2012: Uganda, hospitals and health centres
 Foster 2006: Dominican Republic, hospital
 Lester 2003: South Africa, maternity obstetric unit located in large academic hospital
 Spangler 2012: Tanzania, district hospitals, health centres, and dispensaries
 Fränngård 2006: Uganda, district hospital and health centres
 Barua 2011: India, university teaching hospital (tertiary, referral level), 2 secondary-level hospitals

Table 24. CERQual evidence profile: finding 23

Lack of equipment limited health workers' ability to deliver quality care to mothers and their babies. As a result of this lack of equipment, mothers and their babies sometimes received poor quality care	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Minor concerns, though reflexivity was not reported in 8 studies; ethical considerations were not reported in 3 studies; sampling was not reported in 4 studies; and data analysis was not reported in 1 study
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	No to very minor concerns
<i>Adequacy</i>	No to very minor concerns
Overall CERQual assessment	
High confidence	-
Contributing studies/setting	
<p>Africa (6), S. Asia (2), East Asia & Pacific (1), Latin America & Caribbean (1) Pitchforth 2010: Ethiopia, teaching hospital Pettersson 2006: Mozambique, tertiary hospital Graner 2010: Vietnam, primary health care Fränngård 2006: Uganda, district hospital and health centres Anwar 2009: Bangladesh, basic and comprehensive emergency obstetric care facilities, public VSO 2012: Uganda, hospitals and health centres Molina 2011: Colombia, primary, secondary, and tertiary care providers offering obstetric services Penfold 2013: Tanzania, hospitals, health centres, dispensaries Barua 2011: India, university teaching hospital (tertiary, referral level), 2 secondary-level hospitals Lester 2003: South Africa, maternity obstetric unit located in large academic hospital</p>	

Table 25. CERQual evidence profile: finding 24

Lack of blood or limited infrastructure to manage blood transfusion prevented health workers from delivering appropriate care	
Assessment for each CERQual component	
<i>Methodological limitations</i>	No to very minor concerns; though ethical considerations were not reported in 2 studies and reflexivity was not reported in 2 studies, these may not influence the finding
<i>Coherence</i>	No to very minor concerns

Table 25. CERQual evidence profile: finding 24 (Continued)

<i>Relevance</i>	Minor concerns because have 3 studies from 2 regions
<i>Adequacy</i>	Moderate concerns due to few studies with thin data
Overall CERQual assessment	
Moderate confidence	Due to moderate concerns about adequacy; and minor concerns about relevance
Contributing studies/setting	
<p>S. Asia (2), E. Asia (1) Anwar 2009: Bangladesh, basic and comprehensive emergency obstetric care facilities, public Afsana 2001: Bangladesh, health centre Ith 2012: Cambodia, public maternity settings in provincial hospital, 2 regional hospitals, and 2 health centres</p>	

Table 26. CERQual evidence profile: finding 25

Lack of equipment, supplies, or drugs sometimes wasted health workers' time, increased their workload and risk of infection, and led to low morale	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Moderate concerns because reflexivity was not reported in 6 studies; ethics considerations were not reported in 3 studies; and sampling and data analysis methods were not clear in 2 studies
<i>Coherence</i>	Minor concerns because some of the studies only reflect a portion of the findings
<i>Relevance</i>	No to very minor concerns
<i>Adequacy</i>	No to very minor concerns; although the data are thin, many studies reported this finding
Overall CERQual assessment	
Moderate confidence	Due to moderate concerns about methodological limitations; and minor concerns about coherence
Contributing studies/setting	
<p>Africa (6), E. Asia (1), Latin America and Caribbean (2) Bradley 2009: Malawi, rural mission hospitals Pitchforth 2010: Ethiopia, teaching hospital Graner 2010: Vietnam, primary health care Belizan 2007: Argentina/Uruguay, public hospitals</p>	

Table 26. CERQual evidence profile: finding 25 (Continued)

VSO 2012: Uganda, hospitals and health centres
 Mathole 2006: Zimbabwe, health centres in the district
 Penfold 2013: Tanzania, hospitals, health centres, dispensaries
 Foster 2006: Dominican Republic, hospital
 Lester 2003: South Africa, maternity obstetric unit located in large academic hospital

Table 27. CERQual evidence profile: finding 26

Poor, incomplete, and non-systematised patient information could lead to delayed or incorrect management of high-risk patients, or interfere with continuity of care

Assessment for each CERQual component

<i>Methodological limitations</i>	No to very minor concerns; though reflexivity and ethical considerations were not reported in 1 study, and sampling methods not reported in 2 studies, these may not have influenced findings
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	No to very minor concerns
<i>Adequacy</i>	Serious concerns because few studies with very thin data reported this finding

Overall CERQual assessment

Low confidence	Due to serious concerns about adequacy
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Contributing studies/setting

Africa (1), Latin America & Caribbean (1)
 Petterson 2006: Mozambique, tertiary hospital
 Molina 2011: Colombia, primary, secondary, and tertiary care providers offering obstetric services

Table 28. CERQual evidence profile: finding 27

Lack of or unreliable supply of electricity, including a lack of fuel to run generators, and lack of water influenced health providers' ability to deliver quality care

Assessment for each CERQual component

<i>Methodological limitations</i>	Moderate concerns because reflexivity was not reported in 4 studies; ethics considerations were not reported in 3 studies; and sampling or data analysis methods were not reported in 2 studies
<i>Coherence</i>	No to very minor concerns

Table 28. CERQual evidence profile: finding 27 (Continued)

<i>Relevance</i>	No to minor concerns, although data mainly represent Africa (3 studies), and electricity and water are vital for delivering quality care
<i>Adequacy</i>	No to minor concerns; although description of the link between electricity/water and quality of care is thin, we consider this to be sufficient
Overall CERQual assessment	
Moderate confidence	Due to moderate concerns about methodological limitations
Contributing studies/setting	
<p>Africa (3), S. Asia (1) Spangler 2012: Tanzania, district hospitals, health centres, and dispensaries Anwar 2009: Bangladesh, basic and comprehensive emergency obstetric care facilities, public VSO 2012: Uganda, hospitals and health centres Pitchforth 2010: Ethiopia, teaching hospital</p>	

Table 29. CERQual evidence profile: finding 28

The lack of space and amenities as well as poor physical layout and organisation of wards limited the delivery of quality care	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Minor concerns because reflexivity was not reported in 7 studies; ethics considerations were not reported in 1 study; sampling methods were not reported in 5 studies; and data analysis methods were not clear in 1 study
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Minor concerns because data were from only 2 regions.
<i>Adequacy</i>	Minor concerns because data for some of the studies were thin
Overall CERQual assessment	
Moderate confidence	Due to minor concerns about adequacy, relevance, and methodological limitations
Contributing studies/setting	
<p>Africa (4), Latin America and Caribbean (4), Middle East & North Africa (1) Khalaf 2009: Jordan, maternal and child health centres Pitchforth 2010: Ethiopia, teaching hospital</p>	

Table 29. CERQual evidence profile: finding 28 (Continued)

Pettersson 2006: Mozambique, tertiary hospital
 Belizan 2007: Argentina/Uruguay, public hospitals
 Fränngård 2006: Uganda, district hospital and health centres
 Conde-Agudelo 2008: Colombia, public and private hospitals
 DeMaria 2012. Mexico, public and non-governmental hospitals
 Molina 2011: Colombia, primary, secondary, and tertiary care providers offering obstetric services
 Lester 2003: South Africa, maternity obstetric unit located in large academic hospital

Table 30. CERQual evidence profile: finding 29

The lack of funds and material resources sometimes prevented health facility managers from regularly maintaining equipment and physical infrastructure

Assessment for each CERQual component

<i>Methodological limitations</i>	Moderate concerns because reflexivity was not reported in 2 studies, and sampling strategy, ethical considerations, and methods of data analysis were not reported in 1 study
<i>Coherence</i>	Minor concerns because we do not know why there was no maintenance in 1 study
<i>Relevance</i>	No to very minor concerns
<i>Adequacy</i>	Moderate concerns because few studies with thin data reported this finding

Overall CERQual assessment

Low confidence	Due to minor concerns about coherence; and moderate concerns about methodological limitations and adequacy
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Contributing studies/setting

Africa (2), E. Asia (1)
 Pettersson 2006: Mozambique, tertiary hospital
 VSO 2012: Uganda, hospitals and health centres
 Ith 2012: Cambodia, provincial, regional hospitals and health centres

Table 31. CERQual evidence profile: finding 30

<p>Health facilities varied in the availability, functionality, and quality of interventions assigned as signal functions for obstetric care. At the lower-level facilities, most of these functions were not available, for instance parenteral antibiotics or anticonvulsants or neonatal resuscitation. At the higher levels, some of these functions appeared to be available, but functionality was variable, for instance when they had drug stock-outs or unqualified providers of care</p>	
<p>Assessment for each CERQual component</p>	
<p><i>Methodological limitations</i></p>	<p>Moderate concerns because reflexivity and ethical considerations were not reported in 2 studies, 1 study was an observational study, no interviews with health providers</p>
<p><i>Coherence</i></p>	<p>No to very minor concerns</p>
<p><i>Relevance</i></p>	<p>Moderate concerns because data were drawn from only 2 regions</p>
<p><i>Adequacy</i></p>	<p>Moderate concerns because few studies with thin data reported this finding</p>
<p>Overall CERQual assessment</p>	
<p>Very low confidence</p>	<p>Due to moderate concerns about methodological limitations, relevance, and adequacy</p>
<p>Contributing studies/setting</p>	
<p>Africa (1), S. Asia (1) Spangler 2012: Tanzania, district hospitals, health centres, and dispensaries Afsana 2001: Bangladesh, health centre</p>	

Table 32. CERQual evidence profile: finding 31

<p>Health workers felt it was easier to deliver care in facilities than at home. Some of the positive aspects of delivering care at the health facility were that health workers were able to do other work while monitoring labour; provide care for several mothers; work schedules were more regular and care was available 24 hours a day. Furthermore, at facilities, other skilled providers were available to assist when needed, and some procedures (e.g. episiotomies) were easier to perform. In addition, health facilities provided a secure, controlled, hygienic work environment, where electricity, equipment, and medications were always available</p>	
<p>Assessment for each CERQual component</p>	
<p><i>Methodological limitations</i></p>	<p>No to very minor concerns, though ethical considerations and reflexivity were not reported</p>
<p><i>Coherence</i></p>	<p>No to very minor concerns</p>
<p><i>Relevance</i></p>	<p>Moderate concerns because data are from only 1 study where a policy change allowed health workers to compare home-based</p>

Table 32. CERQual evidence profile: finding 31 (Continued)

	maternity care to facility-based model of care
<i>Adequacy</i>	Serious concerns because data are from only 1 study with thin data
Overall CERQual assessment	
Very low confidence	Due to moderate concerns about relevance; and serious concerns about adequacy
Contributing studies/setting	
S. Asia (1)	
Blum 2006: Bangladesh, home-based maternity care	

Table 33. CERQual evidence profile: finding 32

Where primary care workers in lower-level facilities lacked the knowledge and skills to determine the need for referral, or were unable to provide emergency care, mothers could receive inadequate care. This lack of skills could also result in unnecessary referrals to other health facilities	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Minor concerns, though reflexivity, ethical considerations, and sampling methods were not reported
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Moderate concerns, as only 1 region is represented.
<i>Adequacy</i>	Serious concerns, as included only 1 study with thin data.
Overall CERQual assessment	
Very low confidence	Due to minor concerns about methodological limitations; moderate concerns about relevance; and serious concerns about adequacy
Contributing studies/setting	
Latin America & Caribbean (1)	
Molina 2011: Colombia, primary, secondary, and tertiary care providers offering obstetric services	

Table 34. CERQual evidence profile: finding 33

Lack of trust and professional rivalries between midwives, doctors, and obstetrician gynaecologists could delay referral of mothers and their babies. Midwives sometimes felt blamed by physicians when complications arose and hesitated to seek support from the medical teams at the receiving facilities. Some midwives did not travel with the mothers to the referring facility for fear of blame for any negative occurrence during the referral process	
Assessment for each CERQual component	
<i>Methodological limitations</i>	No or very minor concerns, though 1 study did not report reflexivity
<i>Coherence</i>	No or very minor concerns
<i>Relevance</i>	Moderate concerns because in 1 study some midwives worked in private facilities but were referring mothers to public facilities, and only 2 regions represented
<i>Adequacy</i>	Moderate concerns, as data are from few studies.
Overall CERQual assessment	
Low confidence	Due to moderate concerns about adequacy and relevance
Contributing studies/setting	
<p>E. Asia (1), Middle East & N Africa (1) Tabatabaie 2012: Iran, home births by midwives from hospitals and private clinics Ith 2012: Cambodia, provincial and regional hospitals, health centres</p>	

Table 35. CERQual evidence profile: finding 34

Maternal perceptions of the health system could make mothers reluctant to accept referral. For instance, mothers were sceptical about the cost of care, poor management and care at the next-level facility, the procedures used, the high levels of Caesarean sections, and fear of complications. Also, mothers may have already travelled far to reach the facility they perceived as a good one, or fear unfamiliar urbanised settings. As a result of mothers' reluctance to accept referral, midwives may feel pressured to conduct high-risk deliveries or spend a lot of time convincing reluctant mothers or their families	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Minor concerns, though reflexivity was not reported in 4 studies, and ethical issues were not reported in 1 study
<i>Coherence</i>	Minor concerns because while all of the studies support how women are reluctant to be referred, not all studies illustrate how this reluctance pressures health workers to conduct risky delivery

Table 35. CERQual evidence profile: finding 34 (Continued)

<i>Relevance</i>	Minor concerns, as data are taken from health worker perceptions about mothers (indirect), and 1 study from Africa was conducted at a primary care unit in a tertiary centre
<i>Adequacy</i>	Minor concerns due to thin data
Overall CERQual assessment	
Moderate confidence	Due to minor concerns about methodological limitations, coherence, relevance, and adequacy
Contributing studies/setting	
<p>E. Asia & Pacific (1), S. Asia (2), Middle East & N Africa (1), Africa (1) Graner 2010: Vietnam, primary health care Blum 2006: Bangladesh, home-based maternity care Tabatabaie 2012: Iran, home births by midwives from hospitals and private clinics Barua 2011: India, university teaching hospital (tertiary, referral level), 2 secondary-level hospitals Lester 2003: South Africa, maternity obstetric unit located in large academic hospital</p>	

Table 36. CERQual evidence profile: finding 35

The presence of trust between mothers and midwives may influence a mother's willingness to be referred. Referral may be delayed when facilities lack midwives or other primary care workers whom the mothers trust that can convince mothers of the need for referral	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Minor concerns, though reflexivity unclear, and no ethical considerations reported
<i>Coherence</i>	Minor concerns, as it was not clear if the data were related to the finding
<i>Relevance</i>	Moderate concerns, as data refer to private providers referring mothers to public facilities
<i>Adequacy</i>	Severe concerns, as only 1 study with thin data was included
Overall CERQual assessment	
Very low confidence	Due to minor concerns about coherence and methodological limitations; moderate concerns about relevance; and serious concerns about adequacy
Contributing studies/setting	

Table 36. CERQual evidence profile: finding 35 (Continued)

Middle East & N Africa (1) Tabatabaie 2012 : Iran, home births by midwives from hospitals and private clinics

Table 37. CERQual evidence profile: finding 36

Lack of transport hinders referral of women and their babies to higher levels of care. This happened for instance when health facilities lacked ambulances, or facility budgets were insufficient to purchase fuel for vehicles	
Assessment for each CERQual component	
<i>Methodological limitations</i>	No to very minor concerns, though reflexivity was not reported in 3 studies, and ethics considerations were not reported in 2 studies
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Minor concerns, as only 3 regions are represented, and in 1 region data are from 1 country
<i>Adequacy</i>	Minor concerns due to very thin data
Overall CERQual assessment	
Moderate confidence	Due to minor concerns about relevance and adequacy
Contributing studies/setting	
E. Asia & Pacific (1), Africa (2), Latin America & Caribbean (1) Graner 2010 : Vietnam, primary health care Fränngård 2006 : Uganda, district hospital and health centres VSO 2012 : Uganda, hospitals and health centres Molina 2011 : Colombia, primary, secondary, and tertiary care providers offering obstetric services	

Table 38. CERQual evidence profile: finding 37

Lack of fuel for vehicles when the need for referral arises is frustrating to nurses and midwives and leaves them feeling helpless when mothers' and babies' lives are at risk	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Minor concerns, though reflexivity, ethics considerations, sampling and data analysis methods were not reported
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Moderate concerns, as only 1 region is represented.

Table 38. CERQual evidence profile: finding 37 (Continued)

<i>Adequacy</i>	Severe concerns because data are from only 1 study.
Overall CERQual assessment	
Very low confidence	Due to minor concerns about methodological limitations; moderate concerns about relevance; and serious concerns about adequacy
Contributing studies/setting	
Africa (1) VSO 2012 : Uganda, hospitals and health centres	

Table 39. CERQual evidence profile: finding 38

When health facilities lacked fuel for vehicles, mothers and their families were sometimes asked to pay their own transport costs. Many families could not afford this	
Assessment for each CERQual component	
<i>Methodological limitations</i>	No to very minor concerns, although reflexivity was not reported in 2 studies, and ethics considerations were not reported in 1 study
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Moderate concerns because data are from only 1 country representing 1 region
<i>Adequacy</i>	Moderate concerns due to very thin data from 2 studies
Overall CERQual assessment	
Low confidence	Due to moderate concerns about relevance and adequacy
Contributing studies/setting	
Africa (2) Fränngård 2006 : Uganda, district hospital and health centres VSO 2012 : Uganda, hospitals and health centres	

Table 40. CERQual evidence profile: finding 39

Several situations could lead health workers to refer mothers and shift responsibility to higher levels of care, including when health workers lacked the skills or confidence to provide care or when they worked in isolation; when they were concerned about the facility's reputation when poor patient outcomes arose; or when they lacked supplies, drugs, or equipment to provide care. Some of these referrals were unnecessary and resulted in increased workloads at higher levels of care	
Assessment for each CERQual component	
<i>Methodological limitations</i>	No or very minor concerns, though ethical considerations were reported in 2 studies, and reflexivity was not reported in 2 studies
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Moderate concerns, as 1 study refers to health worker conducting home-based deliveries without team support
<i>Adequacy</i>	Moderate concerns due to few studies with thin data
Overall CERQual assessment	
Low confidence	Due to moderate concerns about adequacy and relevance
Contributing studies/setting	
S. Asia (3), E. Asia (1) Blum 2006 : Bangladesh, home-based maternity care Anwar 2009 : Bangladesh, basic and comprehensive emergency obstetric facilities, public Barua 2011 : India, university teaching hospital (tertiary, referral level), 2 secondary-level hospitals Ith 2012 : Cambodia, public maternity settings in provincial hospital, 2 regional hospitals, and 2 health centres	

Table 41. CERQual evidence profile: finding 40

When secondary-level care was non-existent, mothers were sometimes referred to tertiary-level care, which resulted in congestion at the tertiary level	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Minor concerns, though reflexivity, ethics consideration, sampling methods were not reported
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Moderate concerns because only 1 region is represented.
<i>Adequacy</i>	Serious concerns because data are from only 1 study with very thin data

Table 41. CERQual evidence profile: finding 40 (Continued)

Overall CERQual assessment	
Very low confidence	Due to minor concerns about methodological limitations; moderate concerns about relevance; and serious concerns about adequacy
Contributing studies/setting	
Latin America and Caribbean (1)	
Molina 2011: Colombia, primary, secondary, and tertiary care providers offering obstetric services	

Table 42. CERQual evidence profile: finding 41

Administrative processes and paperwork and poor communication between referring and receiving levels of care could influence the efficient transfer of mothers and their babies to receiving units	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Minor concerns, though reflexivity, ethics consideration, sampling methods were not reported
<i>Coherence</i>	Moderate concerns because it was unclear whether the data match our finding
<i>Relevance</i>	Moderate concerns because only 1 region is represented.
<i>Adequacy</i>	Serious concerns because data are from only 1 study with very thin data
Overall CERQual assessment	
Very low confidence	Due to minor concerns about methodological limitations; moderate concerns about coherence and relevance; and serious concerns about adequacy
Contributing studies/setting	
Latin America and Caribbean (1)	
Molina 2011: Colombia, primary, secondary, and tertiary care providers offering obstetric services	

Table 43. CERQual evidence profile: finding 42

Lack of feedback between referring and receiving facilities could influence midwives' practice and patient outcomes. Midwives perceived this feedback as useful for improving their practice and patient outcomes	
Assessment for each CERQual component	
<i>Methodological limitations</i>	No to very minor concerns, though reflexivity and sampling methods were not reported
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Moderate concerns because only 1 region is represented.
<i>Adequacy</i>	Severe concerns because data are from only 1 study.
Overall CERQual assessment	
Very low confidence	Due to moderate concerns about relevance; and serious concerns about adequacy
Contributing studies/setting	
Africa (1) Fränngård 2006: Uganda, district hospital and health centres	

Table 44. CERQual evidence profile: finding 43

Poor attitude and unethical behaviour among health workers could influence the quality of care, such as when health workers are harsh, rude, or impatient with mothers; display poor cultural sensitivity, e.g. by not maintaining women's privacy; or when health workers are absent from their duty stations or involved in the illegal sale of drugs and supplies or expect 'back door' payments for services. Some of the suggested underlying reasons for these attitudes and behaviours were wrong intrinsic reasons for joining the profession and physical exhaustion from the long, solitary hours of work	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Moderate concerns because reflexivity was not reported in 3 studies; ethical considerations were not reported in 2 studies; and sampling methods were not clear in 2 studies
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Minor concerns because few regions represented.
<i>Adequacy</i>	Moderate concerns because data are from few studies, some with thin data
Overall CERQual assessment	

Table 44. CERQual evidence profile: finding 43 (Continued)

Low confidence	Due to moderate concerns about methodological limitations and adequacy; and minor concerns about relevance
Contributing studies/setting	
<p>Africa (2), Middle East & N. Africa (1), S. Asia (1) Hassan-Bitar 2011: Palestine, public referral hospital Spangler 2012: Tanzania, district hospitals, health centres, and dispensaries VSO 2012: Uganda, hospitals and health centres Afsana 2001: Bangladesh, health centre</p>	

Table 45. CERQual evidence profile: finding 44

<p>Mothers' participation in decision-making during labour could be limited by health worker attitudes and authoritarian behaviour, for instance when health workers conducted procedures without asking mothers for their opinion, or physicians did not seek feedback from patients about practices or outcomes and expected women to co-operate. Lack of patient participation in decision-making can threaten quality of care. Some of the reasons for this behaviour were related to health workers' attitudes about the woman's preferences and role during delivery of her baby</p>	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Moderate concerns because reflexivity was not reported in 4 studies; ethics considerations were not reported in 1 study; and sampling methods were not clear in 3 studies
<i>Coherence</i>	Minor concerns because there were several reasons authoritarian behaviour and poor attitudes of health workers could explain mothers' non-participation in decision-making. Other explanations could be women's lack of empowerment and cultural reasons on how to behave
<i>Relevance</i>	Moderate concerns because only 2 regions were represented.
<i>Adequacy</i>	Minor concerns because data are from few studies.
Overall CERQual assessment	
Low confidence	Due to minor concerns about coherence and adequacy; and moderate concerns about methodological limitations and relevance
Contributing studies/setting	
<p>Africa (1), Latin America & Caribbean (4) de Carvalho 2012: Brazil, university teaching hospital Belizan 2007: Argentina/Uruguay, public hospitals Maputle 2010: South Africa, tertiary care hospital Conde-Agudelo 2008: Colombia, public and private hospitals</p>	

Table 45. CERQual evidence profile: finding 44 (Continued)

DeMaria 2012: Mexico, public and non-governmental hospitals

Table 46. CERQual evidence profile: finding 45

Some health workers did not value communication, communicated poorly, or said they had problems with communication. Poor communication and interaction could threaten the trust between health workers and mothers, for instance when health workers considered communication with mothers a waste of time and there was insufficient communication between staff and families, or when skilled birth attendants were abrasive and demeaning in their interactions with women and showed no concern for women's families. Language barriers could interfere with effective communication between mothers and health workers. As a result, mothers sometimes appeared not to listen to health workers while health workers mechanically worked through the process of providing care. Health workers acknowledged the need to respect and involve men, women's families, and the community in maternal health, for example in understanding cultural beliefs related to postpartum care

Assessment for each CERQual component

<i>Methodological limitations</i>	Serious concerns because reflexivity was not reported in 3 studies; sampling methods were not clear in 2 studies; ethical considerations were not reported in 1 study; and data analysis methods were not clear in 1 study
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Moderate concerns because only 4 regions were represented.
<i>Adequacy</i>	Moderate concerns because data are from few studies with thin data, and in 2 studies it is unclear if data support finding

Overall CERQual assessment

Very low confidence	Due to moderate concerns about relevance and adequacy; and serious concerns about methodological limitations
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Contributing studies/setting

Africa (2), Latin America & Caribbean (1), Middle East & N. Africa (1)

- Hassan-Bitar 2011: Palestine, public referral hospital
- de Carvalho 2012: Brazil, university teaching hospital
- Blum 2006: Bangladesh, home-based maternity care
- Maputle 2010: South Africa, tertiary care hospital
- Lugina 2001: Tanzania, municipal hospitals

Table 47. CERQual evidence profile: finding 46

Health workers valued the appreciation, respect, trust, and praise from patients, or when they made friends among mothers or worked with the community. Midwives in particular were delighted when a baby was given their name and seeing the baby grow	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Moderate concerns because ethical considerations were not reported in 2 studies; reflexivity was not reported in 3 studies; sampling strategy was not clear in 2 studies; and data analysis methods were not clear in 1 study
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Moderate concerns because only 1 region is represented.
<i>Adequacy</i>	Moderate concerns because data are from few studies with very thin data
Overall CERQual assessment	
Low confidence	Due to moderate concerns about methodological limitations, relevance, and adequacy
Contributing studies/setting	
<p>Africa (3) VSO 2012: Uganda, hospitals and health centres Bradley 2009: Malawi, rural mission hospitals Fränngård 2006: Uganda, district hospital and health centre level IV</p>	

Table 48. CERQual evidence profile: finding 47

Mismatch between people's expectations of health workers and what health workers were actually able to deliver or thought was appropriate could lead to antagonism. For instance, health workers who delivered home-based care could experience social pressure from families and communities, e.g. to give injections to speed up delivery as opposed to waiting for labour to progress normally. Health workers providing obstetric care at health facilities were sometimes treated harshly by people from the community when there was a lack of supplies and materials. In addition, misconceptions that midwives were not working when they took a break from their work or that health workers sold drugs threatened the trust between health workers and the community	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Moderate concerns because reflexivity was not reported in 3 studies; sampling was not reported in 2 studies; ethical considerations were not reported in 2 studies; and data analysis methods were not clear in 1 study
<i>Coherence</i>	No to very minor concerns

Table 48. CERQual evidence profile: finding 47 (Continued)

<i>Relevance</i>	Moderate concerns because data are from only 3 regions, and data seem to relate more to midwives and nurses than to doctors
<i>Adequacy</i>	Moderate concerns due to thin data
Overall CERQual assessment	
Low confidence	Due to moderate concerns about methodological limitations, relevance, and adequacy
Contributing studies/setting	
<p>Middle East & N Africa (1), S. Asia (2), Africa (1) Hassan-Bitar 2011: Palestine, public referral hospital Blum 2006: Bangladesh, home-based maternity care VSO 2012: Uganda, hospitals and health centres Barua 2011: India, university teaching hospital (tertiary, referral level), 2 secondary-level hospitals</p>	

Table 49. CERQual evidence profile: finding 48

<p>Midwife-led shared care was perceived as improving the interaction between mothers, families, and health workers, and could improve health workers' self esteem and lead to a change in hospital culture with respect to service provision. For instance, midwife-led shared care increased communication between midwives, women and their families; enabled the presence and participation of family members; and together increased satisfaction in the care provided. As a result, the need for medication during delivery was minimised, which reduced the financial burden experienced by families. The supportive environment for mothers, the good interaction between mothers and health workers, as well as recognition of professional expertise among midwives increased self esteem. Midwife-led shared care enabled other hospital staff to reflect on their own routine activities and manner of communication with families and clients, leading to a change in hospital culture with respect to service provision</p>	
Assessment for each CERQual component	
<i>Methodological limitations</i>	Minor concerns because reflexivity was not reported, and sampling strategy was not clear
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Moderate concerns because only 1 region was represented.
<i>Adequacy</i>	Serious concerns because data are from only 1 study.
Overall CERQual assessment	
Very low confidence	Due to moderate concerns about relevance; and severe concerns about adequacy
Contributing studies/setting	

Table 49. CERQual evidence profile: finding 48 (Continued)

Africa (1) Fujita 2012: Benin, tertiary hospital
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Table 50. CERQual evidence profile: finding 49

Disrespectful communication, lack of trust, inadequate opportunities to review clinical practice, and poor teamwork and co-ordination could lead to poor interprofessional relations. Also, tensions could arise when health providers did not recognise each others' capabilities and when acting in a way that reinforces clinical hierarchy, for instance disrespectful interprofessional communication between physicians and midwives. Midwives with lower-level training could manage normal birth, but they sometimes felt marginalised and less motivated to provide care because midwives with higher levels of training and doctors used qualification, status, and their roles to dominate clinical practice. Tensions were sometimes reported between doctors and clinical officers due to salary differentials, benefits, workload, and status. There was sometimes a lack of understanding of competencies and alternative models of care	
Assessment for each CERQual component	
<i>Methodological limitations</i>	No to very minor concerns though reflexivity was not reported in 4 studies; ethical considerations were not reported in 1 study; and sampling methods were not clear in 2 studies
<i>Coherence</i>	No to very minor concerns
<i>Relevance</i>	Moderate concerns because models of care, scope of practice, and cadre differed in various settings and may not apply in different context; only 3 regions represented
<i>Adequacy</i>	Moderate concerns because data are from few studies.
Overall CERQual assessment	
Low confidence	Due to moderate concerns about relevance and adequacy
Contributing studies/setting	
Africa (1), Latin Am & Caribbean (1), E. Asia (1) Bradley 2009: Malawi, rural mission hospitals DeMaria 2012: Mexico, public and non-governmental hospitals Ith 2012: Cambodia, provincial, regional hospitals and health centres	

Table 51. CERQual evidence profile: finding 50

<p>Nurses and midwives valued and were motivated by a good team dynamic where health workers provided feedback, supported and co-operated to ensure all shifts were covered. For instance, midwives valued good interprofessional collaboration, which made them feel accepted as part of the professional team and provided them an opportunity to improve their competence through on-spot education provided by obstetricians. When midwives worked together in a team led by midwives, this increased their ability to share experiences and new practices and their decision-making responsibility; improved their self esteem; and provided quality assurance and improved the quality of care provided. This teamwork was especially useful when emergencies arose. In another study, researchers observed that nurses had a strong teamwork ethic and functioned well together to complete work</p>	
<p>Assessment for each CERQual component</p>	
<p><i>Methodological limitations</i></p>	<p>No to very minor concerns, though reflexivity was not reported in 4 studies; ethics considerations were not reported in 2 studies; data analysis methods were not clear in 2 studies; and sampling was not clear in 3 studies</p>
<p><i>Coherence</i></p>	<p>No to very minor concerns</p>
<p><i>Relevance</i></p>	<p>Moderate concerns because only 2 regions are represented.</p>
<p><i>Adequacy</i></p>	<p>Moderate concerns due to thin data</p>
<p>Overall CERQual assessment</p>	
<p>Low confidence</p>	<p>Due to moderate concerns about relevance and adequacy</p>
<p>Contributing studies/setting</p>	
<p>Africa (3), Latin Am & Caribbean (1) Petterson 2006: Mozambique, tertiary hospital Bradley 2009: Malawi, rural mission hospitals Fränngård 2006: Uganda, district hospital and health centre IVs Foster 2006: Dominican Republic, hospital</p>	

Table 52. CERQual evidence profile: finding 51

<p>Health workers had conflicting views on the role of professional councils. For instance, some viewed professional councils as advocates for their members, while others considered them to be a regulatory body with punitive functions</p>	
<p>Assessment for each CERQual component</p>	
<p><i>Methodological limitations</i></p>	<p>Moderate concerns because ethical considerations, reflexivity, sampling and data analysis methods were not reported</p>
<p><i>Coherence</i></p>	<p>No or very minor concerns</p>

Table 52. CERQual evidence profile: finding 51 (Continued)

<i>Relevance</i>	Moderate concerns because data were from only 1 study and represented only 1 region
<i>Adequacy</i>	Serious concerns because data were from only 1 study with thin data
Overall CERQual assessment	
Very low confidence	Due to moderate concerns about methodological quality and relevance; and severe concerns about adequacy
Contributing studies/setting	
Africa (1) VSO 2012 : Uganda, hospitals and health centres	

Table 53. CERQual evidence profile: finding 52

Sociocultural barriers sometimes hindered mothers from receiving care in hospitals. For instance, women preferred not to be examined by male health providers for cultural reasons, preferred a particular position in which to deliver, or for religious reasons did not divulge information that was needed for their care	
Assessment for each CERQual component	
<i>Methodological limitations</i>	No or very minor concerns, though reflexivity was not reported in 4 studies, and ethical considerations were not reported in 2 studies
<i>Coherence</i>	No or very minor concerns
<i>Relevance</i>	Moderate concerns because data were from health worker perceptions about mothers and represented only 3 regions
<i>Adequacy</i>	Moderate concerns because data were from only 3 studies, 2 of which had thin data
Overall CERQual assessment	
Low confidence	Due to moderate concerns about adequacy and relevance
Contributing studies/setting	
Africa (1), Middle East & N Africa (1), S. Asia (1) Khalaf 2009 : Jordan, maternal and child health centres Thorsen 2012 : Malawi, a secondary and tertiary hospital Blum 2006 : Bangladesh, home-based maternity care	

Table 54. Table integrating key findings from this synthesis with interventions in selected studies included in Dudley 2009 review

Intervention studies selected from Dudley 2009 review	Health services inputs identified as important in this synthesis										
	Number of health workers to manage workload	Other human resource strategies	Training of health workers	Communication strategies	Access to available and functional equipment	Sufficient drugs and supplies	Regular reliable electricity or alternative source of power	Blood supply and infrastructure	Transport for referral or alternative mechanism for transport	General infrastructural inputs, e. g. renovating, re-organisation of wards	Other health services input
Manandhar 2004	No information	No information	Training in essential newborn care of government health staff, CHW, and TBA	No information	Equipped primary care centres with Resuscitaires, phototherapy units, warm cots, and neonatal resuscitation equipment	Essential neonatal drugs/discussions on resupply with managers	No information	No information	No information	No information	No information
Lui 2003	No information	Task-shifting - village doctors (assume these are CHW take on health education tasks of midwives)	Training in project management (heads of counties and health teams)	No information	No information	No information	No information	No information	No information	Established EMOC centres for training of BE-MOC staff, technical assistance, referral	Quality improvement of hospital (not clear what this entailed)

Table 54. Table integrating key findings from this synthesis with interventions in selected studies included in Dudley 2009 review (Continued)

Pardeshi 2011	Em- ployed staff to fill va- cant po- sitions. New cadre, general nurse- mid- wife ap- pointed at PHC level	No infor- ma- tion	MOs trained in life- saving anaes- thesia skills, MOs and paramedic trained in es- sential obstetric care	No infor- ma- tion	Pro- vided oxygen cylin- ders, baby warmers	No infor- ma- tion	Inverters and solar heaters (electric- ity backup) at PHC level	Blood storage facility at first- referral levels	Pro- vided funds for trans- port during emer- gencies	Infras- truc- tural im- prove- ments, e. g. deliv- ery rooms con- struc- ted, repairs and ren- ovations at PHC level	Food and escorts (peer sup- porters?) during inpa- tient stay, gave clothes and co- nut to mother at dis- charge
Powell- Jackson 2009	No infor- ma- tion	Pay-for- perfor- mance of health worker, e. g. attend home birth, con- duct fa- cility de- livery	No infor- ma- tion	No infor- ma- tion	No infor- ma- tion	No infor- ma- tion	No infor- ma- tion	No infor- ma- tion	No infor- ma- tion	No infor- ma- tion	No infor- ma- tion
Wu 2011	No infor- ma- tion	No infor- ma- tion	Training of mid- wives on prena- tal care of rural women	No infor- ma- tion	No infor- ma- tion	No infor- ma- tion	No infor- ma- tion	No infor- ma- tion	No infor- ma- tion	No infor- ma- tion	No infor- ma- tion
Tripathy 2010	No infor- ma- tion	No infor- ma- tion	Training of front- line health staff in appre- ciative inquiry	No infor- ma- tion	No infor- ma- tion	No infor- ma- tion	No infor- ma- tion	No infor- ma- tion	No infor- ma- tion	No infor- ma- tion	Health commit- tees for commu- nity in- put into health

Table 54. Table integrating key findings from this synthesis with interventions in selected studies included in Dudley 2009 review (Continued)

												ser- vices de- sign and manage- ment
Col- bourn 2013	No informa- tion	No informa- tion	Training health staff in QI method- ology (used Plan- Do- Study- Act cy- cles)	No informa- tion	No informa- tion	No informa- tion	No informa- tion	No informa- tion	No informa- tion	No informa- tion	No informa- tion	No informa- tion
Kirk- wood 2013	No informa- tion	No informa- tion	Training in essen- tial new- born care	No informa- tion	No informa- tion	No informa- tion	No informa- tion	No informa- tion	No informa- tion	No informa- tion	No informa- tion	Discus- sions about new- born care practice between district, sub- district manage- ment teams, and health workers at fa- cilities to har- monise practice
Amud- han 2013	Re- cruited addi- tional auxiliary nurse midwife	No informa- tion	No informa- tion	No informa- tion	No informa- tion	No informa- tion	No informa- tion	No informa- tion	No informa- tion	No informa- tion	Up- graded PHC to pro- vide 24- hour ser-	No informa- tion

Table 54. Table integrating key findings from this synthesis with interventions in selected studies included in Dudley 2009 review (Continued)

	to PHC level										vice (not clear what this entailed)	
Ensar 2014	No information	No information	No information	No information	Equipped health facilities	Provided supplies for health facilities	No information	No information	Motor-cycle ambulances at health centres. Maintenance by the community	No information	No information	
Pasha 2013	No information	No information	Training of providers in EMONC	No information	No information	No information	No information	No information	No information	No information	Quality improvement activities (maternal and perinatal audits, facility reviews)	

Manandhar 2004: Setting: Nepal, community. Participants: women in reproductive age group.

Lui 2003: Setting: China, community. Participants: poor pregnant women, managers of target county and health bureaus, obstetric medical staff of township hospitals.

Pardeshi 2011: Setting: India, community. Participants: women who had delivered in the five months prior to the survey.

Powell-Jackson 2009: Setting: Nepal. Participants: women with fewer than two children, delivering at a health facility. Doctors, nurses, midwife, health assistant, auxiliary health worker, or maternal child health worker attending a delivery at home or in a public health facility.

Wu 2011: Setting: China, community. Participants: midwives based at township hospitals, pregnant mothers.

Tripathy 2010: Setting: India, community. Participants: women in reproductive age group who had recently given birth; cluster-level village health committees, front-line government health staff.

Colbourn 2013: Setting: Malawi, community. Participants: pregnant women, health workers at dispensaries and health centres.

Kirkwood 2013: Setting: Ghana, community. Participants: pregnant women and their newborn babies; community-based surveillance volunteers.

Amudhan 2013: Setting: India, community. Participants: pregnant women of low socioeconomic status.

Ensar 2014: Setting: Zambia, community. Participants: pregnant women, the community including men, women (including older women), and community leaders.

Pasha 2013: Setting: multicentre trial in India, Pakistan, Kenya, Zambia, Argentina, and Guatemala. Participants: pregnant women and their newborn babies, families at community level, community birth attendants, facility-based healthcare providers.

Abbreviations: BEMOC(basic emergency obstetric care), CHW(community health worker), EMOC(emergency obstetric care),EMONC(emergency obstetric and neonatal care),MO(medical officers), PHC(primary health care), QI(quality improvement), TBA (traditional birth attendant).

Table 55. Table comparing the scope of other related reviews to our synthesis

Author	Title of review	Comparison of the scope of the review and this synthesis
Filby 2016	What prevents quality midwifery care? A systematic mapping of barriers in low and middle income countries from the provider perspective	Review searched a wide range of literature mainly from grey literature, and only included studies where skilled birth attendants had midwifery skills In contrast, our synthesis searched web-based databases and was not limited to providers with midwifery skills, but included a broad range of health providers that delivered obstetric care
Downe 2016	Factors that influence the uptake of routine antenatal care services by pregnant women: a qualitative evidence synthesis	Review covers women's views and experiences, and factors that influence uptake of antenatal care. Includes global literature Our synthesis focuses on health workers' views, behaviours, and experiences when delivering intrapartum and postnatal care, and includes only studies conducted in low- and middle-income countries
Bradley 2016	Disrespectful intrapartum care during facility-based delivery in sub-Saharan Africa: a qualitative systematic review and thematic synthesis of women's perceptions and experiences	Review focused on facility-based deliveries in sub-Saharan Africa and documented women's perceptions and experiences of intrapartum care Our synthesis focuses on health workers' views, behaviours, and experiences when delivering intrapartum and postnatal care, in low- and middle-income country settings
Bohren 2016	The mistreatment of women during childbirth in health facilities globally: a mixed-methods systematic review	Global review that focused on mistreatment of women during childbirth and included the perceptions and experiences of women during childbirth as well as health workers Our synthesis focuses on health workers' views, behaviours, and experiences when delivering intrapartum and postnatal care, in low- and middle-income country settings

CONTRIBUTIONS OF AUTHORS

SMB, CG, and SL devised this synthesis. SMB led the development of this synthesis with input from CG, SL, AF, and HN.

DECLARATIONS OF INTEREST

Susan Munabi-Babigumira, Claire Glenton, and Atle Fretheim are Editors with the Cochrane Effective Practice and Organisation of Care (EPOC) Group. Simon Lewin is Co-ordinating Editor with the EPOC Group. Harriet Nabudere has no interests to report.

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DIFFERENCES BETWEEN PROTOCOL AND REVIEW

Large numbers of studies can threaten the quality of the analysis in qualitative evidence syntheses. In addition, syntheses of qualitative studies aim for greater variation in concepts as opposed to an exhaustive sample that aims to avoid bias. We stated a priori that we would consider between 30 to 40 eligible studies to be sufficient, and a manageable number for this synthesis. We proposed to select a purposive sample from the eligible studies in case over 40 eligible articles were included ([Silverman 2000](#)). In this synthesis, we did not need to sample from the included studies, given that we only had 31 eligible studies. We may consider sampling of included studies in future updates of this review.