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Interventions to support effective communication
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A mixed-methods systematic review

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Interventions to support effective communication between maternity care staff and women in labour: A mixed-methods systematic review.

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Abstract

Objectives: The objectives of this review were (1) to assess whether interventions to support effective communication between maternity care staff and healthy women in labour with a term pregnancy could improve birth outcomes and experiences of care; and (2) to synthesize information related to the feasibility of implementation and resources required.

Design: A mixed-methods systematic review.

Setting and participants: Studies which reported on interventions aimed at improving communication between maternity care staff and healthy women during normal labour and birth,

with no apparent medical or obstetric complications, and their family members were included. 'Maternity care staff' included medical doctors (e.g. obstetricians, anaesthetists, physicians, family doctors, paediatricians), midwives, nurses and other skilled birth attendants providing labour, birth and immediate postnatal care. Studies from all birth settings (any country, any facility including home birth, any resource level) were included.

Findings: Two papers met the inclusion criteria. One was a step wedge randomised controlled trial conducted in Syria, and the other a sub-analysis of a randomised controlled trial from the United Kingdom. Both studies aimed to assess effects of communication training for maternity care staff on women's experiences of labour care. The study from Syria reported that a communication skills training intervention for resident doctors was not associated with higher satisfaction reported by women. In the UK study, patient-actors' (experienced midwives) perceptions of safety and communication significantly improved for postpartum haemorrhage scenarios after training with patient-actors in local hospitals, compared with training using manikins in simulation centres, but no differences were identified for other scenarios. Both studies had methodological limitations.

Key conclusions and implications for practice: The review identified a lack of evidence on impact of interventions to support effective communication between maternity care staff and healthy women during labour and birth. Very low quality evidence was found on effectiveness of communication training of maternity care staff. Robust studies which are able to identify characteristics of interventions to support effective communication in maternity care are urgently needed. Consideration also needs to be given to how organisations prepare, monitor and sustain interventions to support effective communication, which reflect outcomes of priority for women, local culture and context of labour and birth care.

Keywords:

Communication

Intrapartum care

Childbirth

Labour

Obstetric delivery

Interpersonal relations

Introduction

Current national (such as in the United Kingdom) and international guidance proposes that effective communication, support and compassion from maternity care staff can help a woman during labour and birth to feel in control, feel her wishes are respected, and contribute to a positive birth experience (e.g. White Ribbon Alliance 2012, WHO 2016, NICE 2017). The provision of good communication is at the core of recent international and national guidance for improving women's outcomes of birth. The recently published World Health Organization (WHO) framework for improving quality of care for mothers and newborns around the time of childbirth in health facilities recognizes two important components of care: the quality of the provision of care and the quality of care as experienced by women and their families (WHO 2016, Tunçalp et al 2015). The framework contains eight domains of quality, one of which is communication, with the standard that 'communication with women and their families is effective and responds to their needs and preferences' (Standard 4, WHO 2016).

The importance of effective communication in healthcare has long been recognised, and there is extensive literature on this in general healthcare. Recent examples include reviews of the role of communication in decision making (Ames et al 2017) and a review of how patient experiences may impact on clinical safety and effectiveness of outcomes (Doyle et al 2013). In maternity care, authors have explored the role of communication in the provision of respectful care (Vogel et al 2016). Communication is at the core of health professional education, with training and assessment in communication skills included in medical, midwifery and nursing curricula in the United States of America (USA), United Kingdom (UK) and some European countries (Deveugele et al 2005, Butler et al 2008, Bosse et al 2010, King and Hoppe 2013). In some countries, demonstrated competency to provide good communication, including verbal, non-verbal and written communication, is a requirement for registration to practice as a clinician (for example, 'UK Standards for Pre-Registration Education', Nursing and Midwifery Council 2015). However, despite the acknowledged importance of communication, there is no consensus definition of 'effective communication' in general health care or in maternity care.

Global support for scaling up midwifery-led care includes the potential to improve women-centred communication (Homer et al 2014), with women reported as wanting consistent, high quality information, and better communication about their care *between* maternity staff they encounter (National Maternity Review 2016). Despite these endeavours, there is widespread evidence of women's perceptions of the continuing failure by clinicians to effectively communicate with them during labour and birth, with adverse consequences including women not feeling in control and not being listened to (Green and Baston 2003, Care Quality Commission 2013, Alderdice et al 2016). Experiences of poor or disrespectful care, including how women felt they were treated during labour, could trigger the onset of postpartum post-traumatic stress disorder (Ayers et al 2016), impact on a woman's relationship with her infant (Hauck et al 2007) and adversely impact on a woman's experiences and satisfaction with her birth (Mannava et al 2015). Furthermore, if not addressed, these issues could discourage women and communities from using facilities to give birth, particularly in lower-resource settings where access to this care may be vital for maternal and newborn health (Bohren et al 2014, 2015).

An initial scoping search for this review identified no clear evidence to underpin recent policy recommendations with respect to the impact of effective communication on labour and birth outcomes or women's experiences. This systematic review therefore aimed to assess whether interventions to support effective communication between maternity care staff and healthy women

in labour with a term pregnancy could improve birth outcomes and experiences of care. It also aimed to synthesize information related to the feasibility of implementation and resources required. This formed one of a series of linked reviews commissioned by the WHO to underpin forthcoming global guidance on effective intrapartum care of healthy women going into labour at term (WHO in press). Other reviews in the WHO series included respectful maternity care during labour and birth, pain relief and the presence of a companion of choice at birth. No current or planned reviews on effective communication during labour and birth were identified through a search of the Cochrane Library, Joanna Briggs Institute and PROSPERO.

Methods

A mixed-methods synthesis methodology was planned (see PROSPERO registration CRD42017070485 for detail). The review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al 2009). We refer below to the review questions, search and screening for quantitative and qualitative evidence in line with our protocol. As no qualitative studies met the inclusion criteria, we report below on quality assessment, data extraction, synthesis and findings for the included quantitative papers.

Review questions

The review aimed to address the following questions:

- (1) For women during labour, birth and immediately after birth, do interventions to promote effective communication by maternity care staff compared with usual care improve birth and other outcomes, and do these outcomes vary by type of intervention? (See Box 1 for outcomes of interest).
- (2) How do women, family members and maternity care staff experience interventions to improve effective communication during labour, birth and immediately after birth in global settings where skilled maternity care is available, compared (where appropriate) to usual care (with no targeted communication intervention)?
- (3) What are the characteristics of an effective communication intervention for positive birth outcomes?
- (4) What additional resources are needed in birth settings to implement and sustain effective communication interventions?

Eligibility criteria

Eligible studies included primary research studies published from January 1996 to July 2017, to ensure that data reflected contemporary intrapartum care practices. Studies published in scientific journals, studies in the 'grey literature' (which reported methods and data) and PhD theses were considered for inclusion. We searched for studies on implementation of interventions to improve communication between maternity care staff and women, to improve birth outcomes and/or enhance women's experiences of care in labour, birth or immediately after birth. No study designs were excluded. Systematic reviews on the topic were excluded, but any papers included in an identified review were checked for eligibility. Papers which only reported family members' experiences of interventions were not eligible.

Outcomes of interest

Outcomes of interest including perspectives of women and relevant clinical outcomes replicated those used across the linked WHO reviews referred to earlier (WHO in press). In addition, the review sought to identify evidence about effective communication interventions and women's and family's perspectives of birth (sense of control, shared decision-making), experiences of informed choice, autonomy, feeling safe, including escalation of concerns by women, their families or maternity care and maternity care staff perspectives (see Box 1).

Setting and population

Healthy women during normal labour and birth, with no apparent medical or obstetric complications, and their family members were included. 'Maternity care staff' included medical doctors (e.g. obstetricians, anaesthetists, physicians, family doctors, paediatricians), midwives, nurses, and other skilled birth attendants providing labour, birth and immediate postnatal care. All birth settings (any country, facility and home births, and any resource level) were eligible for inclusion.

Search strategy

An initial limited search of MEDLINE, CINAHL and SCOPUS was conducted to identify studies published in English during 2014-2016, followed by analysis of the text words contained in the title and abstract and index terms used to describe articles. A second search using identified keywords and index terms was undertaken in the following databases: MEDLINE, CINAHL, PsycINFO, EMBASE, Latin American and Caribbean Health Sciences (LILACS), AJOL (for studies conducted in Africa), Cochrane Central Register of Controlled Trials, and SCOPUS. Initial keywords and index terms included intrapartum care, birth, perinatal care, postnatal care, labour stage, communication, informed consent, interpersonal relations, counselling, maternity, midwifery, medical staff, healthcare assistant, healthcare staff, women and mothers. An example of a search strategy from one bibliographic database is provided in Figure 1 which also illustrates the use of truncations and Boolean operators. No language restrictions were placed for this search. The reference list of all included publications and identified reviews were searched for additional studies, and for references to grey reports or literature. A call for grey literature was also circulated via the JISCMail 'midwifery-research' email group, which reaches international researchers usually based in higher education settings. A citation search of included papers was also conducted.

Study screening

Identified papers were initially assessed for relevance based on the title by Y-SC, KC and DB. Following the initial assessment, two authors (Y-SC, KC), independently screened all abstracts against inclusion criteria. The abstracts of studies published in languages other than English were translated into English using freely available online software (Google Translate). Y-SC and KC retrieved the full text of all papers considered to be relevant, and independently assessed the papers for relevance according to a priori inclusion criteria as above. A random check of around 1% of the papers at the initial assessment, of around 10% at abstract screening stage, and of 100% at full-text screening stage was undertaken by AGP. Any disagreements were resolved through discussion or through consultation with DB.

Quality appraisal

Two authors (MF, DB) independently assessed the risk of bias of the two included papers which were randomised control trials, adhering to recommendations in the Cochrane Handbook for Systematic Review of Interventions (Higgins and Green 2011). Any disagreements were resolved through discussion. Papers would not have been excluded based on quality appraisal.

Data extraction

Data were extracted from the included papers by MF and Y-SC, and verified by DB. The data extracted included details about the interventions, populations, study methods, and outcomes of significance to the review question(s) (see Table 1).

Assessing the quality of evidence from the review

The GRADE (Grading of Recommendations Assessment, Development and Evaluation) (Guyatt et al 2008, Andrews et al 2013) approach to appraising the quality of quantitative evidence was used for all outcomes identified.

Results

The systematic search identified 37,973 papers. After removing duplicates, 8,161 papers remained, the titles of which were assessed for relevance, after which 366 abstracts were assessed for eligibility. Thirteen papers were retrieved for full-text assessment. Of these, eleven were excluded (see PRISMA diagram Figure 2). No qualitative studies or grey literature publications were identified. Only two papers met the study eligibility criteria (see Table 1), a step wedge randomised controlled trial (RCT) from Syria (Bashour et al 2013) and a sub-analysis of a randomised controlled trial conducted in the UK (Crofts et al 2008). Due to differences in the study designs, contexts of care, study populations and how outcomes were defined and reported in the two studies, meta-analysis could not be undertaken. Data are therefore presented in narrative form.

Bashour et al's (2013) trial evaluated a training package designed to strengthen the communication skills of resident doctors (n=137) at four public maternity hospitals in Damascus. The training content related to characteristics and principles of effective communication, how to overcome barriers to effective communication and improve interactions with women during labour and birth. Data collection included 2,000 women who gave birth between April 2008 and January 2009. Participatory methods were applied in the training workshops, led by a member of the research team described as a national trainer with experience in communication skills who, together with members of the research team, observed and facilitated the training. Each workshop lasted twenty hours in total and was delivered over three days. The training package was rolled out at four time points separated by two months each. Each hospital contributed one cluster to the control arm, and (during the last time period) one to the intervention arm.

Timing of implementation of the training package in each hospital was determined when clusters 'switched' from the control to the intervention arm. The primary outcome was women's satisfaction with interpersonal and communication skills of doctors during their labour and birth, as measured at two weeks postnatally using a modified version of the Medical Interview Satisfaction Scale (MISS-21) (Meakin and Weinman 2002). Secondary outcomes included the communicative behaviour of doctors, as documented using a checklist based on the Al-Galaa observational checklist which was

developed in Egypt to record normal labour and birth practices (Sholkamy et al 2003). Outcomes were measured two to three weeks after implementation of the training package.

Crofts et al's (2008) study explored effects of training on patient-actor perceptions of care from doctors and midwives (n=140) during simulated obstetric emergencies, based on sub-analysis of data from a prospective RCT conducted in six maternity hospitals in the South-West of England. Clinicians were randomized to one of four obstetric emergency training interventions: a one-day course at a local hospital; a one-day course at a simulation centre; a two-day course with teamwork training at a local hospital; and a two-day course with teamwork training at a simulation centre. Training at local hospitals used a patient-actor, while training at the simulation centre was conducted using computerised patient manikins. The two-day training courses included additional teamwork training on communication, roles and responsibilities, and situational awareness (an individual's perception of what is happening around them in terms of surroundings, environment, time, space, and threats to safety which could impact on decision making (Mackintosh et al 2009)) with lectures, video clips and activities to demonstrate each component of team work.

Pre- and post- training, participants were asked to manage three standardised simulated obstetric emergencies (eclampsia, post-partum haemorrhage (PPH), shoulder dystocia) in a room in the labour ward of their own hospital. Outcomes assessed included the quality of care in relation to communication, safety and respect, in the three simulated emergencies three weeks after training. A five-point Likert scale (1 = strongly disagree to 5 = strongly agree) captured patient-actor responses to statements such as "I felt well informed due to good communication". The patient-actors were experienced midwives, blinded to the group allocation. All members of the evaluation team were blinded to the participants' training intervention.

Risk of bias

Both studies had unclear or high risk of bias across several domains (see Table 2). Usual practice was not described in either study. Bashour et al (2013) failed to report the sequence generation process for hospital randomisation, with uncertainty regarding the selection process of outcome assessors (i.e. women giving birth in the study sites) and characteristics of women (only two of the 2,000 women had a caesarean birth). Due to the nature of the study, blinding of study participants was not possible, with insufficient information regarding blinding of outcome assessors (women). In the study by Crofts et al (2008), it was not possible to blind clinician participants to the group allocation or blind outcome assessors (patient-actors) to whether participants were being evaluated before or after training.

There were no missing outcome data in Bashour et al's (2013) trial and a small proportion (5.7%) of missing data in the study by Crofts et al (2008). Both studies had an unclear risk of bias for selective outcome reporting because study protocols were not publicly available.

Effects of intervention

Impact of interventions for effective communication during labour on women's outcomes

The first question addressed by this review was to report evidence on whether effective communication improved clinical or other outcomes, including satisfaction with care (Box 1). Although neither study reported on the impact of effective communication interventions on clinical outcomes, both studies presented quantitative evidence on 'satisfaction' as an outcome.

Bashour et al (2013) asked postnatal women (two weeks after birth) about their satisfaction with communication by doctors during labour. Crofts et al (2008) reported patient-actors' assessments of communication, respect and safety which were recorded immediately after clinical scenarios were completed.

In Bashour et al's (2013) trial, women's satisfaction with their birth experience was reported as a primary outcome. The individual level mean satisfaction score was 3.23 (SD 0.72) in the control and 3.42 (0.73) in the intervention group (possible scores ranged from 1 to 5, higher values indicating satisfaction with care), a non-statistically significant difference. Mean for average satisfaction scores also did not differ between the groups (95% CI -0.08 to 0.15) although of note is that mean scores for each group were not provided. Women's views on specific aspects of their doctor's communication with them in labour (for example, did the doctor identify themselves prior to a medical examination; did the doctor greet them; did the doctor look at them when talking to them) were similar across trial groups.

Crofts et al (2008) evaluated whether patient-actors' perceptions of care in relation to communication, safety and respect differed after clinical staff completed obstetric emergency training. The authors reported a significant improvement in patient-actors' perceptions of care after training, regardless of whether they were cared for by a multi-disciplinary team or an individual provider (PPH: Respect, $p=0.007$, Safety $p<0.001$, Communication $p=0.005$; Eclampsia: Respect, $p=0.017$, Safety $p<0.001$, Communication $p=0.005$; Shoulder dystocia: Respect, $p<0.001$, Safety $p<0.001$, Communication $p<0.001$). Crofts et al (2008) did not report confidence intervals for these findings.

Women's, partners' or clinicians' perceptions or experiences of interventions for effective care in labour

The second review question was designed to identify and synthesise qualitative evidence about the experiences and perceptions of women, family members and maternity care staff in response to interventions to support effective communication during labour and immediately after birth. No qualitative studies were found and neither of the included studies presented qualitative data. Thus no findings for this question are presented.

Characteristics of interventions for effective communication

The third question addressed by this review was to identify characteristics of effective communication interventions for positive birth outcomes, and note any barriers to their implementation. Crofts et al (2008) provided information on characteristics of the training intervention which we report on below.

Setting of training for effective communication during obstetric emergencies

Crofts et al (2008) reported evidence on the site of training (local hospital versus simulation centre). During the simulated PPH scenario, safety and communication scores were significantly higher (indicating better perceptions of care) when the patient-actors were cared for by teams trained locally with a patient-actor compared to teams trained at the simulation centre using a computerised patient manikin (safety $p=0.048$, communication $p=0.035$; confidence intervals were not reported). In the other scenarios, differences in scores did not reach statistical significance.

Clinical training plus teamwork training compared with clinical training only

Crofts et al (2008) evaluated whether patient-actors' perceptions of care in relation to communication, safety and respect were influenced by additional training in teamwork (clinical versus clinical and teamwork). The teamwork training comprised a one-day course including lectures, video clips and non-clinical activities which emphasised the importance of effective communication between members of the multi-professional team. There were no significant differences in patient-actors' perception scores across all scenarios.

Feasibility and acceptability of intervention implementation

The final review question concerned the extent to which an intervention might be considered sustainable, and the resources needed for implementation. No additional quantitative or qualitative studies were found that addressed these aspects. Neither of the included studies presented data on resource requirements needed to undertake the respective training interventions.

However, issues relevant to feasibility, including acceptability to clinicians, were considered. Bashour et al (2013) included a formal evaluation of the training workshops provided for doctors (n=137), and although 97% indicated that they would recommend the workshop, 82% reported time pressure, work overload and hospital routine would be barriers to implementation.

Crofts et al (2008) had relatively low uptake of the training by relevant clinicians. Reasons for this, based on a small number of clinicians' views (n=4), included other clinical commitments and illness. Of the 240 staff approached and asked to participate, 158 consented, 18 of whom subsequently withdrew before the first evaluation. Of the remaining 140 participants, 136 attended training and 132 the post-training assessment, with the drop-outs all due to illness.

GRADE assessment: confidence in findings

The quality of evidence for women's satisfaction with their labour and birth was very low when assessed using GRADE criteria, as this result was based on one study (Bashour et al 2013) which had a number of methodological problems. The quality of the evidence for perceptions of care was also rated as very low, again because the result was based on only one study (Crofts et al 2008) with several methodological limitations (see Table 3).

Discussion

The current review only identified two studies of communication interventions specifically aimed at exploring the impact of improving communication between maternity care staff and women during labour and birth, with quality of evidence assessed as very low quality. The evidence gap persists, despite nearly two decades since a review of effectiveness of interventions in maternity care to improve communication between health professionals and women reported a lack of evidence for labour and the postnatal period (Rowe et al 2002). The absence of evidence in the current review was particularly surprising as the importance of 'good communication' has been consistently highlighted in recent studies and successive national and international policy publications.

Evidence of what contributes to 'effective communication' remains undefined despite this also being promoted as a core skill for maternity care staff. In Nicholls and Webb's (2006) integrative review which included 33 methodologically diverse studies, the authors reported that good communication

skills were considered to be a principal attribute of a good midwife. A later Delphi study from the same researchers which presented women's, midwives' and midwifery educators' perceptions of a 'good midwife' found 'communication skills' was one of the highest scored statements (Nicholls et al 2011). Communication is persistently cited as a component of high quality maternity care in major policy frameworks to improve women's experiences and other outcomes of maternity care, including WHO Quality of Care Framework for Maternal and Newborn Health (WHO 2016), Lancet Framework for Quality Maternal and Newborn Care (Renfrew et al 2014), and respectful maternity care (White Ribbon Alliance 2012).

Training to improve communication between maternity care staff and women during labour

Both studies included in the review evaluated effectiveness of training interventions to improve communication. Bashour et al (2013) showed that the training package in communication skills for doctors was not associated with higher satisfaction with labour scores recorded by women, despite high satisfaction with the training workshops reported by the doctors who attended.

Although Crofts et al (2008) reported that improvements in all scores in the three clinical scenarios were statistically significant after training, this was based on a pre- and post- intervention analysis with no comparison groups. Perceptions of safety and communication significantly improved after training with patient-actors, compared with training using manikins for postpartum haemorrhage scenarios, but it is unclear why no statistically significant improvements were found in perceptions of communication in the eclampsia and shoulder dystocia scenarios using different training methods and settings (patient-actors in local hospitals vs manikins in simulation centres). Furthermore, Crofts et al (2008) found no benefits of additional teamwork training on patient-actors' perceptions of care related to safety, communication and respect. Although there seems to be some evidence for simulation training on obstetric emergencies in maternal and neonatal outcomes (Crofts et al 2011), more robust evaluation is needed to establish not only outcomes of communication and team skills through simulation-based training but content and 'dose' of simulation training needed to support effective communication.

Considerations for Implementation of communication training

In Bashour et al's (2013) trial, possible barriers to implementation of a communication intervention in the clinical environment included long working hours, crowded wards, and high volume of patients. Low social status of women, environment of birth, lack of midwifery support and cultural attitudes were also likely to have impacted on feasibility of implementation. Crofts et al (2008) had a low take-up of training due to staff illness and clinical commitments. As Bashour et al (2013) suggest, wider systems change is likely to be needed alongside communication training if outcomes are to improve. How organisations prepare, monitor and sustain interventions to enhance communication, including time to embed and sustain change in practice, require further investigation.

The environment and context of maternity care in the two studies (i.e. centres in Syria and UK) are likely to be different to those in other settings. Bashour et al (2013) reported that labour and childbirth largely took place in overcrowded hospitals (two participating hospitals had over 10,000 births per year) and in most cases, the women were not allowed to be accompanied by any relatives during labour and birth. Eye-to-eye contact was not acceptable between the woman and her care provider if this was a male. This suggests that there is a need to consider context and culturally specific communication training when developing and implementing interventions. Communication interventions which reflect 'cultural norms' as perceived by local women and maternity care staff, could more appropriately inform outcomes of importance for both groups.

Women's, family members' and maternity care staff's experiences and views of communication interventions

No qualitative evidence was found on women's, family members' or maternity care staff's experiences or views of interventions to improve communication during labour. Considering the limited research identified, this is perhaps not surprising. How communication is defined, when and how outcomes are assessed and whether assessment is to provide an overall view of maternity care, or to inform a specific component of care (for example, antenatal screening tests) differs between published studies (Rowe et al 2002, Nieuwenhuijze et al 2013, O'Brien et al 2017). A review of literature from developing countries which aimed to identify determinants of women's satisfaction with maternity care showed that therapeutic communication which included components such as listening, politeness, prompt pain relief, kindness, approachability and a smiling demeanour, could enhance maternal satisfaction with care (Srivastava et al 2015).

A systematic qualitative review of evidence of what women want and need during childbirth highlighted that women expected staff to be sensitive, caring and kind, and fear of staff being distant, insensitive or rude (Downe et al, under review). A recently conducted qualitative evidence synthesis aimed to develop a conceptualization of respectful maternity care during childbirth in health facilities globally from the perspectives of key stakeholders (including women, providers, and administrators); this review included 67 studies from 32 countries ranging from high to low income settings (Shakibazadeh et al 2017). One of the domains of respectful maternity identified was 'engaging with effective communication' which was assessed as including interventions such as 'talking and listening to women', 'practicing and encouraging effective non-verbal communication', 'being honest', 'availability of interpreters due to language proficiency and cultural differences', and 'providing empathy'. These were clearly important to women and their maternity carers in a range of settings. However, the extent to which women experienced this level of care and how it could be supported by their care providers remains unknown. Furthermore, there was evidence that negative impacts of maltreatment during labour and birth included increased risk of maternal and infant morbidity and mortality (Mannava et al 2015), and may dissuade women in some country settings from planning a subsequent birth in a facility setting (Kumbani et al 2013, Moyer et al 2014).

National maternity surveys in England of women's experiences of maternity care, including care in labour, have included questions on communication, including '*At the very start of your labour, did you feel that you were given appropriate advice and support when you contacted a midwife or the hospital?*', '*Thinking about your care during labour and birth, were you spoken to in a way you could understand?*' (e.g. Care Quality Commission 2015, 2013). In the USA, national surveys of women's experiences of childbearing have also included questions relevant to communication in labour, including women's views of involvement in decision making (Maternity Center Association 2002, Declercq et al 2007). These illustrate how effective communication may be perceived from the perspectives of different stakeholders, including maternity service funders or providers.

Communication in maternity care is usually more likely to be assessed as part of a 'package' of questions aimed at supporting overall feedback, as illustrated by these national surveys. This is perhaps why this current review which *specifically* targeted communication interventions between maternity care staff and healthy women at term during labour, birth and the immediate postnatal period found so few relevant studies.

Recent studies have started to explore the extent to which women, partners and families feel able to 'speak up' when, for example, women are aware of a deterioration in their health (Carter et al 2017) or that their safety is at risk as a consequence of staff failing to listen and respond to them (Rance et al 2013). This area of work could potentially support and inform effective communication in labour to enhance women's experiences and outcomes of birth. Organisational support to achieve and

sustain effective communication by maternity care staff is likely to be crucial, with evidence of level, type and characteristics of intervention urgently needed.

Implications for future research

This review identified a lack of studies on interventions to support effective communication between healthy women with a term pregnancy in labour and maternity care staff, despite communication being referred to as a 'core' component of high quality, respectful maternity care. This is a major and unexpected research gap that needs to be addressed. The gap suggests an assumption that benefits are self-evident, or taken for granted by stakeholders; potentially research has not been prioritized for this area. We suggest there is an urgent need to improve understanding of key components of effective communication and robust studies to test these. The evidence identified in this review was assessed as very low quality, and the two included studies provided contrasting findings.

The constraints in practice reported in the two studies (Crofts et al 2008, Bashour et al 2013) demonstrate the importance of a systems perspective which reflects political, cultural, social and economic factors and impact on the preparation, delivery, impact and sustainability of the intervention. Research is needed from different resource and infrastructure settings to build a body of evidence to inform global policy and practice. As no qualitative studies on women's or providers' experiences of such interventions were identified, effectiveness studies might usefully incorporate high quality qualitative evidence. In the context of resource limitations in many maternity settings, evidence on resource use, feasibility of implementation for staff and providers, and implementation of different approaches to support effective communication would also be useful. Suggestions for future research are presented in Box 2.

Strengths and limitations

This review was undertaken using a robust search strategy with the guidance of a University information specialist to identify all relevant evidence to answer the review questions. Included papers were subject to critical review and appraisal to meet planned aims and objectives. No restrictions on languages or countries of origin were placed, although the searches were conducted in English. Although the two included studies were randomised trials, methodological limitations resulted in high risk of bias and very low quality evidence, which prevented conclusive recommendations for practice being made. Due to heterogeneity of included studies, findings could not be statistically pooled which further prevented generalisability of the results. As the current review targeted interventions to promote effective communication between maternity care staff and healthy women at term during labour, birth and the immediate postnatal period, our remit was specific. This meant that research evidence which considered communication in other areas of maternity care, newborn and child health care or health care more generally was not included. A future broader review on maternal and newborn health might usefully provide evidence to inform research and training as a basis for communication interventions and allow integration of evidence from other related areas including breastfeeding.

Conclusion

There is a dearth of evidence on interventions to inform effective communication between maternity care staff and healthy women with term pregnancies during labour, birth and immediate postnatal period. Policy ambitions which recommend effective communication to support high

quality, safe maternity care may not be achievable unless robust research is undertaken which reflects women's preferences, birth setting, care providers and the context of care in which labour and birth take place.

Potential barriers to implementation of effective communication interventions would need to be addressed at individual, health facility and system level if outcomes associated with benefit are to be achieved. Some barriers (ie high workload) may be common across all settings, whilst other barriers (e.g. role of women in society) are likely to be specific to particular cultures or settings and would need to be addressed individually. Research is needed to define what an effective communication intervention in labour means to women and their families, what outcomes women and their families consider to be high priority, how outcomes are assessed and timing of assessment in relation to the birth.

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References

- Alderdice, F., Hamilton, K., McNeill, J., Lynn, F., Curran, R., Redshaw, M. (2016) Birth NI: A Survey of Women's Experience of Maternity Care in Northern Ireland. School of Nursing and Midwifery, Queen's University of Belfast, Belfast. Available from: <http://www.qub.ac.uk/schools/SchoolofNursingandMidwifery/FileStore/Filetoupload,670193,en.pdf?platform=hootsuite> (accessed on 18th December 2017)
- Ames, H.M.R., Glenton, C., Lewin, S., 2017. Parents' and informal caregivers' views and experiences of communication about routine childhood vaccination: a synthesis of qualitative evidence. *Cochrane Database of Systematic Reviews*, Issue 2. Art. No.: CD011787. doi: 10.1002/14651858.CD011787.pub2.
- Andrews, J., Guyatt, G., Oxman, A.D., Alderson, P., Dahm, P., Falck-Ytter, Y., Nasser, M., Meerpohl, J., Post, P.N., Kunz, R., Brozek, J., Vist, G., Rind, D., Akl, E.A., Schünemann, H.J., 2013. GRADE guidelines: 14. Going from evidence to recommendations: The significance and presentation of recommendations. *Journal of Clinical Epidemiology* 66(7): 719-725.
- Ayers, S., Bond, R., Bertullies, S., Wijma, K., 2016. The aetiology of post-traumatic stress following childbirth: a meta-analysis and theoretical framework. *Psychological Medicine* 46(6):1121-34.
- Bashour, H.N., Kanaan, M., Kharouf, M.H., Abdulsalam, A.A., Tabbaa, M.A., Cheikha, S.A., 2013. The effect of training doctors in communication skills on women's satisfaction with doctor–woman relationship during labour and delivery: a stepped wedge cluster randomised trial in Damascus. *BMJ Open* 3:e002674. doi: 10.1136/bmjopen-2013-002674.
- Bohren, M.A., Hunter, E.C., Munthe-Kaas, H.M., Souza, J.P., Vogel, J.P., Gülmezoglu, A.M., 2014. Facilitators and barriers to facility-based delivery in low- and middle-income countries: a qualitative evidence synthesis. *Reproductive Health*.11:71. doi: 10.1186/1742-4755-11-71.
- Bohren, M.A., Vogel, J.P., Hunter, E.C., Lutsiv, O., Makh, S.K., Souza, J.P., Aguiar, C., Saraiva Coneglian, F., Diniz, A.L., Tunçalp, Ö., Javadi, D., Oladapo, O.T., Khosla, R., Hindin, M.J., Gülmezoglu, A.M., 2015. The mistreatment of women during childbirth in health facilities globally: A mixed-methods systematic Review. *PLoS Medicine*. 12(6):e1001847. doi: 10.1371/journal.pmed.1001847.
- Bosse, H.M., Nickel, M., Huwendiek, S., Jünger, J., Schultz, J.H., Nikendei, C., 2010. Peer role-play and standardised patients in communication training: a comparative study on the student perspective on acceptability, realism, and perceived effect. *BMC Medical Education* 10: 27. doi: 10.1186/1472-6920-10-27.
- Butler, M., Fraser, D., Murphy, R., 2008. What are the essential competencies required of a midwife at the point of registration? *Midwifery* 24: 260-269.
- Care Quality Commission, 2013. National findings from the 2013 survey of women's experiences of maternity care. Care Quality Commission, Newcastle Upon Tyne.
- Care Quality Commission, 2015. Survey of women's experiences of maternity care. Care Quality Commission, Newcastle Upon Tyne.

Carter, W., Bick, D., Mackintosh, N., Sandall, J.A., 2017. Narrative synthesis of factors that affect women speaking up about early warning signs and symptoms of pre-eclampsia and responses of healthcare staff. *BMC Pregnancy Childbirth* 17(1):63. doi: 10.1186/s12884-017-1245-4.

Crofts, J.F., Bartlett, C., Ellis, D., Donald, F., Winter, C.J., Hunt, L.P., Draycott, T.J., 2008. Patient-actor perception of care: a comparison of obstetric emergency training using manikins and patient-actors. *Quality and Safety in Health Care* 17(1): 20-24.

Crofts, J.F., Winter, C., Sowter, M.C., 2011. Practical simulation training for maternity care – where we are and where next. *BJOG*, 118 (suppl.3): 11-16.

Declercq, E.R., Sakala, C., Corry, M.P., Applebaum, S., 2007. Listening to mothers II: Report of the second national U.S. survey of women's childbearing experiences: Conducted January–February 2006 for Childbirth Connection by Harris Interactive® in partnership with Lamaze International. *The Journal of Perinatal Education* 16(4): 9–14.

Deveugele, M., Derese, A., De Maess-chalck, S., Willems, S., Van Driel, M., De Maeseneer, J., 2005. Teaching communication skills to medical students, a challenge in the curriculum?. *Patient Education and Counselling* 58(3): 265-270.

Downe, S, Finlayson, K, Oladapo, OT, Bonet, M, Gülmezoglu, AM. (under review) What matters to women during childbirth: a systematic qualitative review.

Doyle, C., Lennox, L., Bell, D., 2013. A systematic review of evidence on the links between patient experience and clinical safety and effectiveness. *BMJ Open* 3:e001570. doi:10.1136/bmjopen-2012-001570

Green, J.M., Baston, H.A., 2003. Feeling in control during labor: concepts, correlates, and consequences. *Birth* 30(4):235-247.

Guyatt, G.H., Oxman, A.D., Kunz, R. Yngve, F.-Y., Vist, G.E., Liberati, A., Schünemann, H.J., GRADE Working Group, 2008. Going from evidence to recommendations. *BMJ* 336:1049-51. doi:10.1136/bmj.39493.646875.AE.

Hauck, Y., Fenwick, J., Downie, J., Butt, J., 2007. The influence of childbirth expectations of Western Australian women's perceptions of their birth experience. *Midwifery* 23(3): 235–247.

Higgins, J.P.T. and Green, S., 2011. *Cochrane Handbook for Systematic Reviews of Interventions* Version 5.1.0. The Cochrane Collaboration. Available from: www.handbook.cochrane.org (accessed on 18th June 2017).

Homer, C.S., Friberg, I.K., Dias, M.A., ten Hoop-Bender, P., Sandall, J., Speciale, A.M. & Bartlett, L., 2014. The projected effect of scaling up midwifery. *The Lancet* 384 (9948), 1164-1157.

King, A., Hoppe, R.B., 2013. "Best Practice" for patient-centered communication: A narrative review. *Journal of Graduate Medical Education* 5(3): 385–393.

Kumbani, L., Bjune, G., Chirwa, E., Malata, A., Odland, J., 2013. Why some women fail to give birth at health facilities: a qualitative study of women's perceptions of perinatal care from rural Southern

Malawi. *Reproductive Health* 10:9. doi: 10.1186/1742-4755-10-9.

Mackintosh, N.J., Berridge, E-J., Freeth, D.S., 2009. Supporting structures for team situation awareness and decision making: insights from four delivery suites. *Journal of Evaluation in Clinical Practice* 15(1): 46-54.

Mannava, P., Durrant, K., Fisher, J., Chersich, M., Luchters, S., 2015. Attitudes and behaviours of maternal health care providers in interactions with clients: a systematic review. *Globalization and Health*, 11:36. <http://doi.org/10.1186/s12992-015-0117-9>.

Maternity Center Association, 2002. Listening to mothers: Report of the first national U.S. survey of women's childbearing experiences executive summary and recommendations issued by the Maternity Center Association. Maternity Center Association, New York.

Meakin R., Weinman J., 2002. The Medical Interview Satisfaction Scale (MISS-21) adapted for British general practice. *Family Practice* 19(3):257-63.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G., The PRISMA Group, 2009. Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Medicine* 6(6): e1000097. doi:10.1371/journal.pmed1000097.

Moyer, C.A, Adongo, P.B., Aborigo, R.A., Hodgson, A., Engmann, C.M., 2014. 'They treat you like you are not a human being': maltreatment during labour and delivery in rural northern Ghana. *Midwifery* 30(2):262-268.

National Institute for Health and Care Excellence (NICE), 2017. Intrapartum care for healthy women and babies. CG 190. NICE, London.

National Maternity Review, 2016. Better Births: Improving outcomes of maternity services in England. A five year forward view for maternity care. <https://www.england.nhs.uk/wp-content/uploads/2016/02/national-maternity-review-report.pdf>

Nicholls, L., Skirton, H., Webb, C., 2011. Establishing perceptions of a good midwife: a Delphi study. *British Journal of Midwifery* 19(4): 230-236.

Nicholls, L., Webb, C., 2006. What makes a good midwife? An integrative review of methodologically-diverse research. *Journal of Advanced Nursing* 56(4): 414-29.

Nieuwenhuijze, M.J. dA., Korstjens, I., Bude, L., Lagro-Janssen, T.L.M., 2013. Influence on birthing positions affects women's sense of control in second stage of labour. *Midwifery* 29(11): e107-e114. <http://dx.doi.org/10.1016/j.midw.2012.12.007>

Nursing and Midwifery Council, 2015. The Code. Professional standards of practice and behaviour for nurses and midwives. NMC, London.

O'Brien, D., Butler, M.M., Casey, M., 2017. A participatory action research study exploring women's understandings of the concept of informed choice during pregnancy and childbirth in Ireland. *Midwifery* 46:1-7.

Rance, S., McCourt, C., Rayment, J., Mackintosh, N., Carter, W., Watson, K., Sandall, J., 2013. Women's safety alerts in maternity care: is speaking up enough? *BMJ Quality and Safety* 22(4): 348-355.

Renfrew, M.J., McFadden, A., Bastos, M.H., Campbell, J., Channon, A.A., Cheung, N.F., Silva, D.R.A.D., Downe, S., Kennedy, H.P., Malata, A., McCormick, F., Wick, L., Declercq, E., 2014. Midwifery and quality care: findings from a new evidence-informed framework for maternal and newborn care. *Lancet* 384 (9948): 1129–45.

Rowe, R. E., Garcia, J., Macfarlane, A. J., Davidson, L. L. (2002). Improving communication between health professionals and women in maternity care: a structured review. *Health Expectations* 5(1): 63–83.

Shakibazadeh, E., Namadian, M., Bohren, M.A., Vogel, J.P., Rashidian, A., Pileggi, V.N., Madeira, S., Leathersich, S., Tunçalp, Ö, Oladapo, O.T., Souza, J.P. and Gülmezoglu, A.M., 2017. Respectful care during childbirth in health facilities globally: a qualitative evidence synthesis. *BJOG*. doi:10.1111/1471-0528.15015.

Sholkamy, H., Khalil, K., Cherine, M., Elnoury, A., Breebaart, M., Khalil, K., 2003. An observation checklist for facility-based normal labour and delivery practices: the Galaa Study. *Monographs in reproductive health* 5. Cairo: The Population Council, Cairo.

Srivastava, A., Bilal, I., Avan, B.I., Rajbangshi, P., Bhattacharyya, S., 2015. Determinants of women's satisfaction with maternal health care: a review of literature from developing countries. *BMC Pregnancy and Child birth*, 15:97. doi: 10.1186/s12884-015-0525-0.

Tunçalp, Ö., Were, W.M., MacLennan, C., Oladapo, O.T., Gülmezoglu, A.M., Bahl, R., Daelmans, B., Mathai, M., Say, L., Kristensen, F., Temmerman, M., Bustreo, F., 2015. Quality of care for pregnant women and newborns-the WHO vision. *BJOG* 122(8):1045-1049.

Vogel, J., Bohren, M., Tunçalp, Ö, Oladapo, O., Gülmezoglu, A., 2016. Promoting respect and preventing mistreatment during childbirth. *BJOG* 123(5), 671–674.

White Ribbon Alliance, 2012. Respectful maternity care: The universal rights of childbearing women. Available from: http://whiteribbonalliance.org/wp-content/uploads/2013/10/Final_RMC_Charter.pdf2013/10/Final_RMC_Charter.pdf.

World Health Organization (WHO), 2016. Standards for Improving Quality of Maternal and Newborn Care in Healthcare Facilities. World Health Organization, Geneva.

World Health Organization (WHO), in press. WHO recommendations on intrapartum care for a positive childbirth experience. World Health Organization, Geneva.

Box 1 Outcomes of interest

Primary outcomes of interest:

- Mode of birth (spontaneous vaginal birth, emergency caesarean section, instrumental vaginal birth)
- Mobility in labour
- Perineal/vaginal trauma (1st-4th degree tears, episiotomy)
- Perinatal asphyxia, low Apgar score (<7) at 5 minutes, cord blood acidosis, need for major resuscitation (respiratory support, intubation at birth), hypoxic ischaemic encephalopathy
- Skin to skin care, latching of baby on breast within first hour of birth
- Initiation of breastfeeding
- Women's experiences of labour and birth, perspectives of their autonomy and satisfaction with care offered, perspectives on their health and well-being

Secondary outcomes of interest:

- Length of labour (duration of 1st or 2nd stage or as defined by study authors)
- Perception of labour pain, use of pain relief methods (during labour and the immediate postpartum period, non-pharmacological, regional analgesia, epidural)
- Birth position for second stage of labour
- Access to or intake of fluids during labour
- Onset of maternal mental health disorders (PTSD, anxiety, depression) within first 8 weeks of birth
- Use of medical interventions during labour (including amniotomy and oxytocin augmentation)
- Healthcare resource use
- Women's/family members' and maternity staff perceptions and experiences of communication interventions including information about what women value from the intervention offered and women's preferences for different aspects of communication.

Box 2 Suggestions for future research

- What are the characteristics of an effective communication in labour, birth and immediate postnatal period as defined from the perspectives of women and their families?
- What outcomes of an effective communication intervention in labour, birth and immediate postnatal period do women and their families consider to be of high priority?
- When and how should clinical and other outcomes be assessed following an intervention to enhance effective communication during labour, birth and immediate postnatal period?
- What additional resources are needed in birth settings to prepare, monitor and sustain implementation of effective communication interventions by maternity care staff to women during labour, birth and the immediate postnatal period?

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Figure 1: Electronic search strategy (Medline)

1 Labor, Obstetric/ or Delivery, Obstetric/
 2 childbirth*.mp.
 3 birth*.mp.
 4 intranatal.mp.
 5 Perinatal Care/
 6 Parturition/
 7 Labor Stage, Second/ or Labor Stage, Third/ or Labor Stage, First/
 8 (intrapartum or intra-partum).mp.
 9 Postnatal Care/
 10 Postpartum Period/
 11 Labor Onset/
 12 Communication/
 13 communicat*.mp.
 14 Hospital-Patient Relations/
 15 Informed Consent/
 16 Interpersonal Relations/
 17 Decision Making/
 18 Counseling/
 19 (inform* or advis* or instruct* or educat* or teach*).mp.
 20 Midwifery/
 21 Hospitals, Maternity/
 22 maternity.mp.
 23 Maternal Health Services/
 24 Medical Staff/
 25 Anesthetists/
 26 Pediatricians/ or Physicians/
 27 obstetric*.mp.
 28 ("midwifery student*" or "nursing student*" or "medical student*").mp.
 29 Nurse Practitioners/ or Family Nurse Practitioners/ or Nurse Clinicians/ or nurse*.mp.
 30 ("healthcare assistant*" or "health care assistant*" or "health assistant*" or HCA or "auxiliary
 nurse*" or
 "maternity care worker*" or "maternity care assistant*").mp.
 31 ("Health care staff" or "healthcare staff" or "health staff" or "maternity staff").mp. (3461)
 32 Women/
 33 Mothers/
 34 (midwife or midwives).mp.
 35 doctor*.mp.
 36 birth attendant*.mp.
 37 General Practitioners/
 38 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11
 39 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19
 40 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36
 or 37
 41 38 and 39 and 40
 42 limit 41 to (humans and yr="1996 -Current")

Figure 2: Flow chart of stages of searching

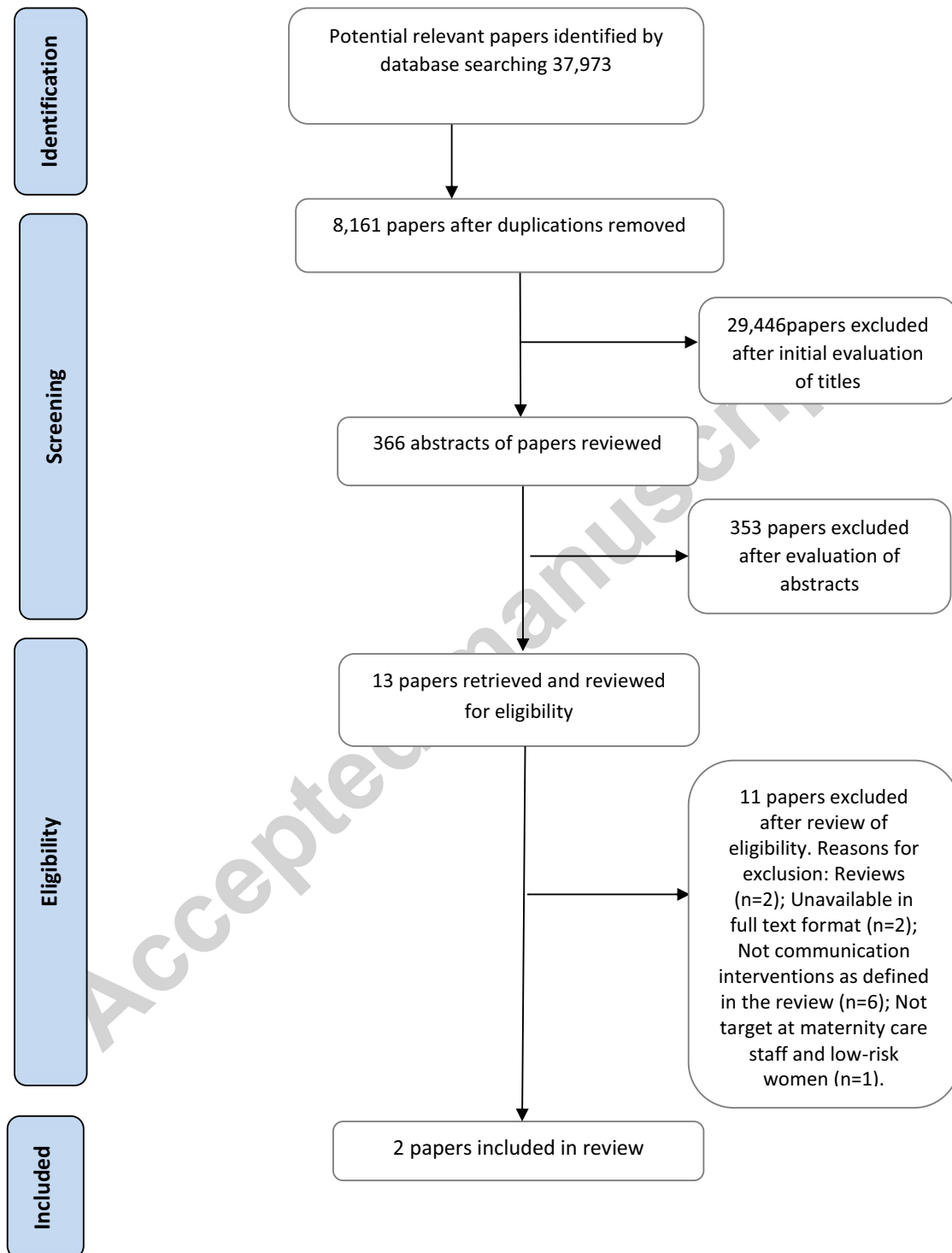


Table 1: Characteristics of included studies

Study	Aims of study	Intervention type	Participants	Methodology	Outcome measures	Important results
Bashour et al. 2013 (Syria)	To measure effects of training doctors in interpersonal and communication skills on women's satisfaction with doctor-women relationship in labour and delivery rooms.	A specially designed training package in communication skills provided to all resident doctors.	Four hospitals (cluster). The intervention was delivered to 137 doctors. A total of 2,000 women participated in the study.	Stepped-wedge cluster randomised trial.	Women's satisfaction with interpersonal and communication skills of doctors during labour and birth using a Modified Medical Interview Satisfaction Scale (MMISS-21).	The individual level mean satisfaction score was 3.23 (SD 0.72) in the control group and 3.42 (0.73) in the intervention group (a possible score ranged from 1 to 5, with higher values indicating that women were satisfied with the services provided to them). No differences were detected in means for average satisfaction scores of women following use of generalised linear mixed models (95% CI -0.08 to 0.15).
Crofts et al. 2008 (UK)	To measure effects of training on patient-actor perceptions of care (communication, respect and safety) from doctors and midwives during simulated obstetric emergencies.	Four obstetric emergency training: (a) 1 day course at local hospitals; (b) 1 day course at simulation centre; (c) 2 day course with teamwork training at local hospitals; and (d) 2 day course with teamwork training at local simulation centre.	140 midwives and doctors from six hospitals were randomized to one of four obstetric emergency training interventions.	Randomised control trial	Patient-actors' (experienced midwives) perceptions of care in relation to communication, safety and respect, were measured using a Likert scale on the 3 simulated emergency scenarios (eclampsia, post-partum haemorrhage, shoulder dystocia).	All patient-actor perception scores in all three emergency scenarios showed statistical significant improvement post-training ($p = 0.017$ to < 0.001). In terms of perception of communication scores in the three emergency scenarios, statistical significant improvement post-training was only shown during the post-partum haemorrhage scenario ($p = 0.035$). There were no statistical significant differences of patient-actor perception scores for participants who received additional teamwork training and those who did not ($p = 0.147$ to 0.899)

Table 2 Risk of bias

Study	Sequence generation	Allocation concealment	Blinding	Incomplete outcome	Selective outcome reporting	Other sources of bias
Crofts et al 2008	✓	✓	x	✓	?	x
Bashour et al 2013	?	✓	x	?	?	x

✓ Low risk of bias; x High risk of bias; ? Unclear risk of bias

Table 3 A GRADE profile for each quantitative outcome

Population: Healthcare professionals Setting: Hospitals (UK, Syria) Data source: All data are from self-report										
Outcome	Quality assessment							Effect	Quality/Certainty*	
	Study design (no. of studies)	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Intervention			Control
Training doctors in communication skills (I) compared with no training (C)										
Birth experience: Satisfaction	Stepped wedge cluster RCT (1)	very serious (-2) ^a	n/a ^b	not serious	serious (-1) _c	none	1000	1000	Difference in the average satisfaction scores between the intervention and the control groups = 0.03 (95%CI: - 0.08 to 0.15)	⊕⊖⊖⊖ VERY LOW

Population: Healthcare professionals Setting: Hospitals (UK, Syria) Data source: All data are from self-report										
Outcome	Quality assessment							Effect	Quality/Certainty*	
	Study design (no. of studies)	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of participants			
							Intervention	Control		
Any obstetric emergency training: before intervention compared with after intervention										
Birth experience: Perception of respect	RCT (1)	serious (-1) ^d	n/a ^b	very serious (-2) ^e	serious (-1) ^c	none	Post-training: • 24 for PPH/eclampsia • 132 for shoulder dystocia	Pre-training: • 23 for PPH/eclampsia • 139 for shoulder dystocia	The mean patient-actor perceptions scores in post-training was 0.5 higher than pre-training for both PPH scenario (p=0.007) and eclampsia scenario (p=0.017), and 0.6 higher for shoulder dystocia (p<0.001) (95%CI: not reported)	⊕⊕⊕⊖ VERY LOW

Population: Healthcare professionals Setting: Hospitals (UK, Syria) Data source: All data are from self-report										
Outcome	Quality assessment							Effect	Quality/Certainty*	
	Study design (no. of studies)	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of participants			
	Intervention	Control								
Birth experience: Perception of safety	RCT (1)	serious (-1) ^d	n/a ^b	very serious (-2) ^e	serious (-1) ^c	none	Post-training: • 24 for PPH/eclampsia • 132 for shoulder dystocia	Pre-training: • 23 for PPH/eclampsia • 139 for shoulder dystocia	The mean patient-actor perceptions scores in post-training was 0.8 higher than pre-training for both PPH and shoulder dystocia scenarios (p<0.001) and 1.0 higher for eclampsia (p<0.001) (95%CI: not reported)	⊕⊖⊖⊖ VERY LOW

Population: Healthcare professionals Setting: Hospitals (UK, Syria) Data source: All data are from self-report										
Outcome	Quality assessment							Effect	Quality/Certainty*	
	Study design (no. of studies)	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of participants			
							Intervention	Control		
Perception of communication	RCT (1)	serious (-1) ^d	n/a ^b	very serious (-2) ^e	serious (-1) ^c	none	Post-training: • 24 for PPH/eclampsia • 132 for shoulder dystocia	Pre-training: • 23 for PPH/eclampsia • 139 for shoulder dystocia	The mean patient-actor perceptions scores in post-training was 0.7 higher than pre-training for both PPH and eclampsia scenarios (p=0.005), and 0.5 higher for shoulder dystocia (p<0.001) (95%CI: not reported)	⊕⊖⊖⊖ VERY LOW

Population: Healthcare professionals Setting: Hospitals (UK, Syria) Data source: All data are from self-report										
Outcome	Quality assessment									
	Study design (no. of studies)	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of participants		Effect	Quality/Certainty*
							Intervention	Control		
Obstetric emergency training at the local hospital (I) compared with obstetric emergency training at central simulation centre (C)										
Birth experience: Perception of respect	RCT (1)	n/a ^b	n/a ^b	very serious (-2) ^e	serious (-1) _c	none	<ul style="list-style-type: none"> 12 for PPH/eclampsia shoulder dystocia 64 for PPH/eclampsia shoulder dystocia 	<ul style="list-style-type: none"> 12 for PPH/eclampsia shoulder dystocia 68 for PPH/eclampsia shoulder dystocia 	PPH: P = 0.077 eclampsia: P = 0.14 shoulder dystocia: P = 0.719 (mean difference, 95%CI: not reported)	⊕⊕⊕⊕ VERY LOW
Birth experience: Perception of safety	RCT (1)	Not serious	n/a ^b	very serious (-2) ^e	serious (-1) _c	none	<ul style="list-style-type: none"> 12 for PPH/eclampsia shoulder dystocia 64 for PPH/eclampsia shoulder dystocia 	<ul style="list-style-type: none"> 12 for PPH/eclampsia shoulder dystocia 68 for PPH/eclampsia shoulder dystocia 	PPH: P = 0.048 eclampsia: P = 0.214 shoulder dystocia: P = 0.532 (mean difference, 95%CI: not reported)	⊕⊕⊕⊕ VERY LOW

Population: Healthcare professionals Setting: Hospitals (UK, Syria) Data source: All data are from self-report										
Outcome	Quality assessment									Quality/Certainty*
	Study design (no. of studies)	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of participants		Effect	
Birth experience: Perception of communication	RCT (1)	Not serious	n/a ^b	very serious (-2) ^e	serious (-1) ^c	none	<ul style="list-style-type: none"> 12 for PPH/eclampsia 64 for shoulder dystocia 	<ul style="list-style-type: none"> 12 for PPH/eclampsia 68 for shoulder dystocia 	PPH: P = 0.035 eclampsia: P = 0.071 shoulder dystocia: P = 0.502 (mean difference, 95%CI: not reported)	⊕⊖⊖⊖ VERY LOW
Clinical training plus teamwork training (I) compared with clinical training only (C)										
Birth experience: Perception of respect	RCT (1)	Not serious	n/a ^b	very serious (-2) ^e	serious (-1) ^c	none	<ul style="list-style-type: none"> 12 for PPH/eclampsia 66 for shoulder dystocia 	<ul style="list-style-type: none"> 12 for PPH/eclampsia 66 for shoulder dystocia 	PPH: P = 0.899 eclampsia: P = 0.521 shoulder dystocia: P = 0.82 (mean difference, 95%CI: not reported)	⊕⊖⊖⊖ VERY LOW

Population: Healthcare professionals Setting: Hospitals (UK, Syria) Data source: All data are from self-report										
Outcome	Quality assessment									Quality/Certainty*
	Study design (no. of studies)	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of participants		Effect	
Birth experience: Perception of safety	RCT (1)	Not serious	n/a ^b	very serious (-2) ^e	serious (-1) ^c	none	<ul style="list-style-type: none"> 12 for PPH/eclampsia 66 for shoulder dystocia 	<ul style="list-style-type: none"> 12 for PPH/eclampsia 66 for shoulder dystocia 	PPH: P = 0.147 eclampsia: P = 0.849 shoulder dystocia: P = 0.68 (mean difference, 95%CI: not reported)	⊕⊖⊖⊖ VERY LOW
Birth experience: Perception of communication	RCT (1)	Not serious	n/a ^b	very serious (-2) ^e	serious (-1) ^c	none	<ul style="list-style-type: none"> 12 for PPH/eclampsia 66 for shoulder dystocia 	<ul style="list-style-type: none"> 12 for PPH/eclampsia 66 for shoulder dystocia 	PPH: P = 0.686 eclampsia: P = 0.626 shoulder dystocia: P = 0.345 (mean difference, 95%CI: not reported)	⊕⊖⊖⊖ VERY LOW

***Very low:** Any estimate of effect is very uncertain

MMISS: Modified Medical Interview Satisfaction Scale, PPH: postpartum haemorrhage, CI: confidence interval

- a. downgraded by two level to 'serious' because information is from single study (-1) with high risk of bias (-1)
- b. n/a because only one study contributed to this outcome
- c. downgraded by one level to 'serious' – only one study contributed to this outcome
- d. downgraded by one level to 'serious' – although the study design is RCT, for this outcome, the study authors conducted before-after comparison within a group.
- e. downgraded by two level to 'very serious' – measured using patient-actors (an experienced midwife) which may not reflect the real women's perspectives (-1). Also, outcomes were measured using one statement "I felt well informed due to good communication", which is not a validated measurement and differences in scores before and after the intervention may not reflect clinically significant change accurately (-1).

Highlights:

- The review found only two studies on interventions for effective communication.
- Neither study considered clinical outcomes of interventions.
- Satisfaction with care was considered in both studies.
- Neither study presented qualitative data on women's and clinicians' experiences.
- Current evidence is inadequate to inform content of training or practice.