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Perceptions and experiences of the prevention, identification and management of postpartum haemorrhage: a qualitative evidence synthesis (Protocol)

Akter S, Lorencatto F, Forbes G, Miller S, Althabe F, Coomarasamy A, Gallos ID, Oladapo OT, Vogel JP, Thomas E, Bohren MA

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[Qualitative Protocol]

Perceptions and experiences of the prevention, identification and management of postpartum haemorrhage: a qualitative evidence synthesis

Shahinoor Akter[1], Fabiana Lorencatto[2], Gillian Forbes[2], Suellen Miller[3], Fernando Althabe[4,5], Arri Coomarasamy[6], Ioannis D Gallos[6], Olufemi T Oladapo[5], Joshua P Vogel[7], Eleanor Thomas[8], Meghan A Bohren[1]

[1]Gender and Women's Health Unit, Centre for Health Equity, School of Population and Global Health, University of Melbourne, Carlton, Australia. [2]Centre for Behaviour Change, University College London, London, UK. [3]Department of Obstetrics, Gynecology and Reproductive Sciences, School of Medicine, and Safe Motherhood Program, Bixby Center for Global Reproductive Health and Policy, University of California, San Francisco, California, USA. [4]Department of Mother and Child Health Research, Institute for Clinical Effectiveness and Health Policy (IECS-CONICET), Buenos Aires, Argentina. [5]UNDP/UNFPA/UNICEF/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction (HRP), Department of Sexual and Reproductive Health and Research, World Health Organization, Geneva, Switzerland. [6]Tommy's National Centre for Miscarriage Research, Institute of Metabolism and Systems Research (IMSR), WHO Collaborating Centre for Global Women's Health Research, University of Birmingham, Birmingham, UK. [7]Maternal and Child Health, Burnet Institute, Melbourne, Australia. [8]Institute of Metabolism and Systems Research, School of Medical and Dental Sciences, University of Birmingham, Birmingham, UK

Contact address: Meghan A Bohren, meghan.bohren@unimelb.edu.au.

A B S T R A C T

Objectives

This is a protocol for a Cochrane Review (qualitative). The objectives are as follows:

The overall aim of this qualitative evidence synthesis is to describe and explore the perceptions and experiences of women, community members, lay health workers, and skilled healthcare providers who have experience with postpartum haemorrhage (PPH) or with preventing, identifying and managing PPH, in both community and health facility settings. The review has the following specific objectives.

1. To synthesise qualitative studies exploring women's, community members', lay health workers', healthcare providers' and other key stakeholders' understanding about PPH and their perceptions regarding the causes and consequences of PPH
2. To develop a conceptual understanding of a woman's journey of surviving a PPH, including her experiences, values, and challenges
3. To identify how lay health workers prevent, identify and manage PPH at home or in community settings, or during transfer or referral to health facilities
4. To synthesise the factors affecting the implementation of different PPH prevention, identification and management strategies in health facility settings, including perceptions, experiences, values, acceptability, and feasibility

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BACKGROUND

Postpartum haemorrhage (PPH) is the leading cause of maternal mortality globally. In 2017, PPH led to approximately 127,000 maternal deaths worldwide (UNICEF 2019), almost all of which occurred in low- and middle-income countries (LMICs). PPH is defined as blood loss of more than 500 mL following childbirth (World Health Organization 2012). PPH is a medical emergency that requires immediate interventions to save a woman's life (World Health Organization 2012); it can be prevented effectively by timely and appropriate identification (World Health Organization 2018).

In 2012, the World Health Organization (WHO) published recommendations on the prevention and treatment of PPH; and in 2018, it updated the recommendations on the use of uterotonics for PPH prevention (World Health Organization 2012; World Health Organization 2018). Challenges remain about how to ensure timely identification and effective management of PPH, particularly in LMICs (Sheldon 2014). Women in LMICs may be at highest risk of PPH complications due to inequalities in accessing quality care, unavailability of skilled birth attendants, limited access to effective uterotonic drugs, lack of co-ordination among healthcare providers during treatment procedures, and delays in implementing PPH identification and management strategies (Finlayson 2019; Rath 2012; Sheldon 2014). Although women in high-income countries may have better access to quality childbirth care, including PPH prevention and treatment, they and their families may still face challenges around accessing information about PPH prevention and treatment due to communication gaps with their healthcare providers or accessibility of communication materials (Snowdon 2012).

Since the release of the 2012 WHO guidelines, a number of systematic reviews have been conducted on how to improve PPH prevention strategies (World Health Organization 2012), noting that PPH prevention is effective in preventing approximately half of PPH cases. While there is increased attention on PPH prevention, there is less clarity about how the perceptions and experiences of key stakeholders (such as women, family and community members, and healthcare providers) affect PPH identification and management in different settings. Qualitative research can contribute to this understanding and help inform policy and practice, including the development of relevant, acceptable, feasible and effective implementation strategies for interventions to promote timely and appropriate identification and management of PPH. Furthermore, even where PPH prevention interventions are well-implemented, some women will still experience PPH and this requires early detection and effective management. Nearly half of all births (46%) worldwide take place outside of a health facility setting and are attended by a traditional birth attendant, relative, or nobody (Prata 2013); however, identification and management of PPH involves multiple actions (i.e. behaviours) performed by different stakeholders (including women, community members and healthcare providers). These actions are likely influenced by a complex set of interacting factors, including individual (i.e. knowledge, motivation, perceived consequences), socio-cultural (i.e. social norms, identity, culture) and environmental (e.g. available resources, accessibility, infrastructure) (French 2012; Steinmo 2015). Identifying the factors that currently affect the prevention, detection and management of PPH would provide valuable evidence to inform the design of new strategies. New, evidence-based approaches will improve the implementation of existing PPH strategies, or refine and optimise existing strategies that are already in practice but not leading to sustained change.

Description of the topic

The phenomena of interest in this review are the perceptions and experiences of PPH — including PPH prevention, identification and management — from the perspective of women, community members and healthcare providers. PPH is a critical moment for both the woman and healthcare provider, as a woman's condition can deteriorate dramatically during childbirth and within 24 hours following the birth (Rath 2012; Tunçalp 2015). The WHO framework for quality of care for women and newborns highlights the importance of both the provision and experience of care (Tunçalp 2015). To improve maternal health outcomes related to PPH, importance should be given to evidence-based practices for PPH prevention, identification and management; functional referral systems where higher-level care is required; competent and motivated healthcare providers to respond to complications; and availability of essential physical resources (Tunçalp 2015). This care should be centred on the needs of the woman, ensuring effective communication, respect, and emotional support, even when complications arise (Koblinsky 2016; Tunçalp 2015).

Most cases of PPH occur in LMICs, where many women give birth at home or in the community, in the absence of skilled healthcare providers (World Health Organization 2019). Understanding women's, families' and communities' perspectives on PPH — particularly its prevention, identification and management — is critical, as many women in LMICs only consider attending a healthcare facility if complications arise (Bohren 2014; Tunçalp 2015). If a woman experiences PPH while giving birth at home, family members, traditional birth attendants and community members may be the first responders to identify and manage PPH. Early detection of PPH will give traditional birth attendants and family members time to respond accordingly and prepare themselves to transport the woman to a facility. However, limitations in the availability of functional referral systems from the community to healthcare facilities (with regards to transportation, road quality, adequate funds, and communication with facility staff) can worsen the situation and delay life-saving care (Bohren 2014; Hussein 2012; Tunçalp 2015).

In settings where women give birth in health facilities, healthcare providers are primarily responsible for the prevention, detection and management of PPH. However, poor communication between healthcare providers and women and their family members can hinder the transparency in decision-making. The practice and organisation of PPH prevention, identification and management by healthcare providers can be impacted by capability, opportunity and motivation (known as COM-B) (Michie 2011). This may include standards of care co-ordination, availability of physical resources and essential medical supplies, and knowledge of and training in best practices (Alwy Al-beity 2020; Finlayson 2019; Gephart 2011; Snowdon 2012). In settings with staff shortages, limited numbers of staff on the maternity ward may lead to avoidable delays in identifying women with PPH. Furthermore, the absence of or limitations in functional referral systems adds another challenge for healthcare providers in treating women with PPH (Alwy Al-beity 2020), particularly when higher levels of care are needed. These situations may be complicated by broader organisational and systems factors, such as facility admissions during the night,

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poor co-ordination among staff or restricted access to essential resources (Alwy Al-beity 2020; Natarajan 2015).

The 2012 WHO recommendations on PPH prevention and treatment are based on the findings of randomised controlled trials (World Health Organization 2012; World Health Organization 2018); qualitative evidence on PPH was not incorporated. Given the persisting high rates of PPH, conducting a qualitative evidence synthesis may provide more nuanced understandings of the factors affecting successful implementation of prevention, identification and management strategies, as well as the acceptability and feasibility of different interventions. A qualitative evidence synthesis may also aid understanding of the relative importance to women of health and well-being outcomes related to PPH, and PPH prevention and treatment (such as potential drawbacks from different treatments) across different contexts, which provides important information for the 'values' domain of Evidence-to-Decision frameworks (Alonso-Coello 2016).

How this review might inform what is already known in this area

Postpartum haemorrhage prevention

In the closely-related field of PPH prevention, a recent qualitative evidence synthesis was conducted by Finlayson and colleagues (Finlayson 2019) to summarise women's and healthcare providers' perspectives and experiences about interventions for the prevention of PPH. This qualitative evidence synthesis found that community members, including pregnant women, conceived blood loss with or following childbirth as normal and considered this blood to be impure (Finlayson 2019). At the facility level, implementation of PPH prevention interventions were often disrupted due to lack of essential resources and appropriate co-ordination between senior and junior staff (Finlayson 2019). Despite being a cost-effective solution for resource-poor settings, healthcare providers were concerned about task-shifting the administration of essential PPH prevention drugs to frontline workers, or decentralisation of health services (Finlayson 2019). Underpinning these findings was the importance of a women-centred care approach and shared decision-making process between healthcare providers and women prior to the initiation of PPH prevention. Finlayson and colleagues focused on PPH prevention and not how PPH was detected and managed. In our proposed qualitative evidence synthesis, we will focus on the perceptions and experiences of PPH, as well as the continuum of care related to PPH prevention, identification and management, which will complement the review on PPH prevention (Finlayson 2019).

Postpartum haemorrhage detection and management

Postpartum haemorrhage occurs in all settings and all geographic regions around the world; however, the prevalence is highest in LMICs (UNICEF 2019). Delays in PPH identification and referral to a health facility for management are key contributors to maternal deaths due to PPH (Sotunsa 2019). Across LMIC settings, most women with PPH do not receive essential life-saving treatment (Widmer 2018): analysis from Nigerian, Tanzanian and Kenyan hospitals show that the real-world PPH detection rates are low (2.2% in Nigeria, 2.5% in Tanzania and 1.8% in Kenya) (Alwy Al-beity 2019; Sotunsa 2019). In addition to challenges with PPH identification in health facility settings, blood loss following childbirth may be perceived as normal or even beneficial by many women and community members across LMICs (Finlayson 2019). When giving birth outside of a health facility, traditional birth attendants and community members may try to manage PPH by seeking help from village doctors or lay health workers (such as herbalists, religious healers and practitioners), in the belief that PPH occurs due to evil spirits (Kalim 2009; Sibley 2009; Sikder 2015). The decision to take a woman to a facility for treatment may be delayed by a "wait-and-see" approach until the woman becomes unconscious, weak and stops responding (Lama 2017; Sibley 2009).

Although most PPH occurs in LMIC settings, we will include both LMIC and high-income settings in our qualitative evidence synthesis in order to share learnings from different types of environments. Additionally, we recognise that PPH occur at home, community settings or health facilities, as well as during emergency referrals from the community to health facility or a higher-level health facility. We consider all potential pathways leading to PPH prevention, identification and management to be of interest in this qualitative evidence synthesis, as understanding how PPH is prevented, identified and managed in community settings will provide a more holistic perspective to the factors affecting PPH prevention, identification and management.

How can postpartum haemorrhage be prevented, identified and managed?

The WHO recommends that all women giving birth should be offered uterotonics during the third stage of labour to prevent PPH (World Health Organization 2012; World Health Organization 2018). Intramuscular (IM) or intravenous (IV) oxytocin (10 international units (IU)) is the recommended uterotonic; and where oxytocin is unavailable or quality cannot be assured, the use of other injectable uterotonics (carbetocin or, if appropriate, ergometrine/methylergometrine, or oxytocin and ergometrine fixed-dose combination) or oral misoprostol is recommended (World Health Organization 2018).

Although early detection and management of PPH can save women's lives, the majority of women with PPH do not have any identifiable risk factors (Hancock 2015; Vogel 2019); therefore, careful monitoring of cumulative blood loss throughout labour and the early postpartum period is crucial for early detection of PPH (Evensen 2017; Sheldon 2014). The most common practice for identifying blood loss during and after birth is visual estimation of blood loss by the birth attendants (Hancock 2015). Other methods for identifying blood loss involve direct blood collection during the third stage of labour using a calibrated drape or funnelling the blood into a collection bag or bin (Diaz 2018), or by weighing blood-soaked pads, mats, sponges, and clots (Evensen 2017; Sheldon 2014). A Cochrane Review of methods for estimating blood loss after vaginal birth found insufficient evidence to support the use of one method over another (Diaz 2018).

Effective PPH management strategies focus on administration of uterotonics (oxytocin or misoprostol); early administration of tranexamic acid; intravenous fluids; controlled cord traction; and uterine massage after delivery of the placenta (Althabe 2020; World Health Organization 2012). Despite effective methods to detect and manage PPH, implementation of these measures is variable, particularly in LMICs.

In this qualitative evidence synthesis, we will explore what factors affect the implementation of effective measures to improve PPH

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prevention, identification and management. We will synthesise available evidence using frameworks from the implementation and behavioural sciences, specifically the Theoretical Domains Framework (TDF) (Atkins 2017; Cane 2012). TDF is an integrative and a validated theory-informed framework for understanding implementation of evidence-based practice and factors influencing behaviour change across 14 domains representing individual, socio-cultural and environmental barriers and enablers to behaviour change and implementation (e.g. knowledge, perceived capability, consequences, goals, intentions, social identity and influences, environmental context and resources) (Atkins 2017; Cane 2012). The TDF has been used in a number of primary qualitative and survey studies to explore barriers and enablers to a range of clinical practice behaviours (Francis 2012), and more recently to aid evidence synthesis (Graham-Rowe 2018), including in maternal health (Heslehurst 2014). We will use the TDF as a way to understand, structure and interpret factors affecting the prevention, identification and management of PPH.

How the health condition might affect women

Common symptoms that women with PPH may experience include heavy vaginal bleeding, fast heart rate (tachycardia), low blood pressure, blurred vision, chills, and feeling faint. When left untreated, PPH can quickly lead to shock, organ dysfunction and even death (World Health Organization 2018).

In this qualitative evidence synthesis, we will use "three-delays model" (Thaddeus 1994) to conceptualise a woman's journey related to PPH, based on the assumption that women will be either giving birth in a home or community setting, or in a health facility. The three-delays model proposes that there are three main delays in women receiving appropriate care during childbirth: 1) deciding to seek care, 2) identifying and reaching a health facility, and 3) receiving adequate and appropriate quality care (Thaddeus 1994). Across these levels of delays, women's socioeconomic status, knowledge of complications, cultural values around health and mortality, geographical proximity, transportation options, and health systems factors (supplies, personnel, training, organisation) influence the woman's journey. We will explore how factors across each of these domains influence women's perceptions and experiences of PPH and care during PPH.

Within the three-delays model, we will use the common sense self-regulation model (CS-SRM) (Leventhal 1998) to specifically classify women's and community-members' perceptions and experiences of PPH (Philips 2012). The CS-SRM model is a cognitive representation of an individual regarding a health condition or illness, such as PPH. Specifically, the CS-SRM models the factors involved in an individual's processing of information regarding their illness or health condition (such as PPH) based on five domains: identity (symptoms and label); timeline (duration of the illness); consequences (side-effects such as morbidity, mortality); causes (factors); and control (management of the health condition) (Leventhal 1998; Philips 2012).

Why is it important to do this review?

While there are effective strategies to identify and manage PPH, these strategies may not be well implemented, particularly in lower-resource settings. Women's personal preferences and values influence their decision to access facility-based childbirth services (Downe 2018; World Health Organization 2018). Therefore, it is important to understand women's perceptions and experiences of PPH, in order to assess how factors at the individual and community level may influence the prevention, identification and management of PPH. Furthermore, healthcare providers are the key players for preventing, identifying and managing PPH and are likely to offer valuable insight into what challenges they are facing or factors influencing them in the complex process of PPH prevention, identification and management. Our qualitative evidence synthesis will explore factors affecting PPH prevention, identification and management, which could in turn help researchers, programmers, and policy makers identify critical gaps hindering the implementation of PPH recommendations in different contexts. Integrating three frameworks of implementation and behavioural sciences (Francis 2012), maternal health (Thaddeus 1994) and health conditions (Leventhal 1998) into the design and analysis of this qualitative evidence synthesis is a key strength. This integration will contribute valuable insights into understanding factors affecting the acceptability and feasibility of PPH prevention and treatment, and the relative importance of PPH-related outcomes to both women and healthcare providers. The findings of this QES can support decision-making within PPH programmes regarding effective strategies to increase and sustain individual- and community-level uptake of taking necessary measures for PPH prevention and management. This qualitative evidence synthesis will inform future updates of the WHO recommendations on PPH prevention and treatment, and will be conducted in collaboration with the guideline team to ensure relevance and usability to priority topics.

OBJECTIVES

The overall aim of this qualitative evidence synthesis is to describe and explore the perceptions and experiences of women, community members, lay health workers, and skilled healthcare providers who have experience with postpartum haemorrhage (PPH) or with preventing, identifying and managing PPH, in both community and health facility settings. The review has the following specific objectives.

1. To synthesise qualitative studies exploring women's, community members', lay health workers', healthcare providers' and other key stakeholders' understanding about PPH and their perceptions regarding the causes and consequences of PPH
2. To develop a conceptual understanding of a woman's journey of surviving a PPH, including her experiences, values, and challenges
3. To identify how lay health workers prevent, identify and manage PPH at home or in community settings, or during transfer or referral to health facilities
4. To synthesise the factors affecting the implementation of different PPH prevention, identification and management strategies in health facility settings, including perceptions, experiences, values, acceptability, and feasibility

METHODS

Criteria for considering studies for this review

Types of studies

We will include primary studies that use a qualitative study design (e.g. ethnography, phenomenology, case study, grounded theory study, and qualitative process evaluations). We will include

studies that have used qualitative methods for data collection (e.g. interviews, focus group discussions, group discussions, key informant interviews, and observations) and data analysis (e.g. thematic analysis, grounded theory, framework analysis). We will exclude studies that used qualitative methods for data collection but did not perform a qualitative analysis (e.g. open-ended survey questions where responses are analysed using descriptive statistics only). We will include mixed methods studies where extraction of qualitative findings resulting from qualitative methods is possible. We will include both published and unpublished studies, and studies published in any language. We will include studies regardless of whether or not they were conducted alongside studies of the effectiveness of PPH prevention, identification or management (Hofmeyr 2013a; Hofmeyr 2013b; Mousa 2014; Novikova 2015; Oladapo 2012; Salati 2019; Soltani 2011; Tunçalp 2012; Yaju 2013). We will not exclude studies based on our assessment of methodological limitations. We will use this information about methodological limitations to assess our confidence in the review findings. We will exclude any conference abstracts without a corresponding full paper, as they are unlikely to provide sufficiently rich qualitative data.

Topic of interest

We will include both a phenomenon of interest (PPH) and interventions (PPH prevention, identification and management), as follows.

1. Women's perceptions and experiences of PPH, or community members' or traditional birth attendants' experiences of supporting women with PPH
2. Healthcare providers' perceptions and experiences of caring for women with PPH
3. All methods of PPH prevention, identification and management, as well as prevention, identification and management as summary principles (e.g. to understand systems factors related to prevention, identification and management in general). Specifically, we will include the following strategies (Althabe 2020).
   a. **Prevention methods**: oxytocic or other uterotonic drugs
   b. **Identification methods**: calibrated drape, non-calibrated blood collectors, Kelly's pad with basin, standardised cloth mat, Q-Mat (International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b), Microlife CRADLE VSA, modified early obstetric warning system (MEOWS), and visual estimation
   c. **Management methods**: uterine tonus assessment, uterine massage, bimanual uterine compression, oxytocic or other uterotonic drugs, tranexamic acid, IV fluids, examination of the genital tract, manual removal of placenta, external aortic compression, non-pneumatic anti-shock garment (NASG), intrauterine balloon tamponade, referral to higher-level care (higher-level facility or high-dependency care), blood transfusion, definitive surgical treatment (laparotomy for hysterectomy, B-Lynch sutures; or artery ligation)

Types of participants

We will include studies that focus on perceptions and experiences of PPH, as well as PPH prevention, identification and management. We will include participants from the following groups.

1. Women who have had an experience of PPH

2. Partners of women or other community members who have supported a woman with PPH
3. Lay health workers or other community-level traditional carers (e.g. religious leaders, traditional birth attendants) who support women during childbirth in the home or community setting, or during a referral to a health facility
4. All cadres of skilled healthcare providers in both community and facility settings (e.g. doctors, nurses, midwives) who are involved in providing maternity services

Settings

We will include studies conducted in any country and in any setting, including home, community-level, and higher-level health facilities (hospitals, health clinics, health centres with maternity services, community clinics).

Search methods for the identification of studies

Electronic searches

We will search Epistemonikos (www.epistemonikos.org) for related reviews to identify eligible studies for inclusion, as well as MEDLINE, CINAHL and Scopus. We will develop search strategies for each database. We will not apply any limits on language or publication date. We will search all databases from inception to the date of search. We will include a methodological filter for qualitative studies. See Appendix 1 for the search strategies.

Searching other resources

In addition to database searching, we will review the reference lists of all included studies and other key references, e.g. references identified in Finlayson 2019. We will also conduct a forward citation search for all included studies on Google Scholar. We will contact the authors of included studies to clarify published information and to seek unpublished data. We will contact researchers with expertise relevant to the review topic to request studies that might meet our inclusion criteria.

Grey literature

We will conduct a grey literature search in the following sources to identify studies not indexed in the databases listed above.

1. OpenGrey (www.opengrey.eu)
2. Grey Literature Report (www.greylit.org)
3. BASE (www.base-search.net/Search/Advanced)
4. Eldis (www.eldis.org)

Selection of studies

We will collate all titles and abstracts identified from different database searches into one reference database and will remove duplicates. Two review authors will independently assess each record for its potential inclusion eligibility, based on predefined criteria, using Covidence (www.covidence.org). We will exclude references that do not meet the eligibility criteria. Thereafter, we will retrieve the full text of all the studies identified as potentially relevant after the title and abstract screening. Each full text will be assessed by two independent review authors for its eligibility in relation to the predefined inclusion criteria. We will resolve any disagreements between the two authors through discussion. If the two review authors cannot reach consensus, we will refer to a third

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author for a final decision. If required, we will contact the study authors for further information to determine study eligibility.

We will include a table listing the studies excluded from our synthesis at the full-text stage and the main reasons for exclusion. Where the same study, using the same sample and methods, is presented in different reports, we will collate these reports so that each study, rather than each report, is the unit of interest in our review. A PRISMA flow diagram illustrating our search results and the process of screening and selecting studies for inclusion will be included as well.

Language translation

For titles and abstract of studies that are published in languages that none of the review team are fluent in (i.e. languages other than Bangla, English, French, Portuguese, Spanish, Italian and Greek), we will carry out an initial translation through open source software (Google Translate). If the translation indicates agreement with the inclusion criteria, or it is not possible to make a decision based on the translation, we will ask members of Cochrane networks and other associated networks of the review to assist us assessing the full text for inclusion. If this cannot be done, we will categorise the study as 'awaiting classification' to ensure transparency in the review process.

Sampling of studies

This qualitative evidence synthesis aims for both variation in concepts and depth of understanding of emergent themes, rather than an exhaustive sample. The quality of the analysis can be compromised by large amounts of study data. Once we have identified all studies that are eligible for inclusion, we will assess whether the number of studies or data richness is likely to represent a problem for the analysis and will consider selecting a sample of studies. We may use maximum variation purposive sampling to allow for the broadest possible variation with the included studies. Key areas of variation may include study design, the aim of the study (women's experience of PPH or PPH prevention, identification and management), type of participant, geographical setting, country income level, and level of richness of data. If sampling is used, we will develop a sampling frame upon determining all variables, and all eligible studies will be arranged within the frame. We will then review the studies in each frame, including their number and level of detail, and make decisions about which studies we will include in the review.

Data extraction

We will use a form designed for this review to extract data. This specific form will consist of information regarding study setting, sample characteristics, objectives, guiding framework, study design, data collection and analysis methods, qualitative themes, qualitative findings, supporting quotations, conclusions, and any relevant tables, figures or images.

Assessing the methodological limitations of included studies

Two independent review authors will critically appraise the quality of included studies using an adapted version of the Critical Appraisal Skills Programme (CASP) tool (www.casp-ul.net). The following domains will be included in the appraisal tool: aims, methodology, design, participants' enrolment, data collection,

data analysis, reflexivity, ethical considerations, results, and research contribution. Any disagreement between authors will be resolved through discussion or by involving a third review author where necessary. We will report our assessments in a 'methodological limitations' table.

Data management, analysis and synthesis

We will undertake a thematic analysis, as described by Thomas and Harden (Thomas 2008), to synthesise the qualitative evidence. Thematic analysis is a useful approach for analysing qualitative evidence to investigate people's perspectives and experiences, acceptability, feasibility and factors influencing implementation (Thomas 2008). This is a rigorous analysis method that we will carry out following multiple readings in order to become familiar with and achieve immersion of data, and we will conduct the synthesis using the following three steps: 1) free line-by-line coding of the key findings of primary studies; 2) development of descriptive themes; and 3) generation of analytical themes and interpretations to generate further ideas, explanations and hypotheses (Thomas 2008).

The themes we generate will then be mapped onto the three frameworks we will use to guide the analysis: common-sense self-regulation model (CS-SRM), three delays, and Theoretical Domains Framework. We will use the CS-SRM to understand when women and families become aware of the threat of PPH, how they navigate responses to the threat of PPH, how they formulate responses to the threat of PPH, and how action plans are created and changed to address the threat of PPH (Leventhal 1998). We will use the three-delays model to elaborate on where delays may arise during a woman's journey of PPH related to: 1) deciding to seek care; 2) reaching an appropriate health facility; and 3) receiving adequate care when a facility is reached (Thaddeus 1994). Finally, we will use the Theoretical Domains Framework to identify factors influencing the prevention, identification and management of PPH (Cane 2012). This framework organises the factors influencing implementation into 14 categories: knowledge, skills, social/professional role and identity, beliefs about capabilities, optimism, beliefs about consequences, reinforcement, intentions, goals, memory/attention/decision processes, environmental context and resources, social influences, emotion, and behavioural regulation (Cane 2012).

The first review author will identify a highly relevant article to the review question and use this article as the basis of generating a free code list. To develop a comprehensive codebook, we will test whether and how well the codes can be translated from one study to another by testing with another three relevant studies, and will identify and include new codes as necessary. Two review authors will independently read all articles, then will review those extracted to find similarities and differences between codes and will adjust any new codes that might emerge during the analysis process. Finally, two review authors will work as a team to develop analytical themes of this review. Descriptive and draft analytical themes will be presented to and discussed with all authors in developing and finalising the analytical construct.

We will consider conducting subgroup analyses, for example by country-income level. We will use NVivo 12 (QSR International) for coding and analysis. The review team will consider the best approach for developing a final output, which may include a logic model, line-of-argument synthesis or other conceptual model.

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Assessing our confidence in the review findings

To assess our confidence in the findings from the included studies, we will use CERQual (Confidence in the Evidence from Reviews of Qualitative Research). The CERQual has become the standard GRADE tool for assessing confidence in the findings from qualitative evidence synthesis (Lewin 2018a). CERQual enables reviewers to transparently assess and describe the extent to which the review finding is a reasonable representation of the phenomena of the interest. The CERQual method includes the following four components to assess overall confidence of qualitative findings of the included studies.

1. Methodological limitations: the extent to which there are concerns regarding the design or conduct of the primary studies supporting a review finding (Munthe-Kaas 2018)
2. Relevance: to what extent the evidence from the primary studies supporting a review finding is applicable to the context specified in the review question (Noyes 2018)
3. Coherence: how clear and cogent the fit is between the data from the primary studies and the review finding (Colvin 2018)
4. Adequacy of data: degree of richness and quantity of data supporting a review finding (Glenton 2018)

Finally, we will make an overall assessment of the confidence in each review finding (high, moderate, low, or very low) (Lewin 2018b).

'Summary of qualitative findings' tables and evidence profiles

We will present summaries of the findings and our assessments of confidence in these findings in the 'Summary of qualitative findings' table(s). We will present detailed descriptions of our confidence assessment in an evidence profile.

Integrating the review findings with the Cochrane Reviews

This qualitative evidence synthesis will be conducted as a single, independent review. We will explore how to link this qualitative evidence synthesis with related Cochrane Reviews of quantitative evidence on PPH prevention, identification and management (Abedi 2016; Gallos 2018; Hofmeyr 2013a; Hofmeyr 2013b; Oladapo 2012; Salati 2019; Soltani 2011; Tunçalp 2012; Yaju 2013). The key findings from these intervention reviews are listed in Appendix 2. The findings from this qualitative evidence synthesis can be used to explain and contextualise the findings from the intervention reviews and may help to identify hypotheses for future subgroup analyses. The review team will test the appropriateness of developing a logic model (Glenton 2013) to link qualitative findings on the prevention, identification and management of PPH described in the intervention reviews.

Review authors' reflexivity

We will maintain a reflexive attitude throughout the stages of the review process, from study selection to data synthesis. The author team represents diverse, international academic and professional backgrounds (medical anthropology, social and behavioural sciences, midwifery, nursing and medicine) with a range of research focus areas and expertise. We anticipate that the perspectives of the review authors might influence our data collection, analyses and interpretation process, for example regarding our subject expertise, professional backgrounds, knowledge about PPH identification and management, and other associated factors. As a team, we will remain mindful of our biases and support each other to minimise the risk of these skewing our analysis or the interpretation of our findings. We believe that the diversity in our review author team will help us to critique and challenge our biases, and to develop review findings that are inclusive of and responsive to clinical practice and implementation research. Therefore, progress will be discussed regularly among the team and decisions made will be explored critically, based on our collective and individual experiences as clinicians, academics and researchers.

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Cochrane Database of Systematic Reviews

Glenton 2013

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A P P E N D I C E S

Appendix 1. Search strategies

Medline, Ovid

#	Searches
1	Postpartum Hemorrhage/
2	Delivery, Obstetric/
3	exp Parturition/
4	Postpartum Period/
5	or/2-4
6	Hemorrhage/
7	Uterine Hemorrhage/
8	Blood Loss, Surgical/
9	Postoperative Hemorrhage/
10	or/6-9
11	5 and 10

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(Continued)

12	(postpartum h?emorrhage? or post partum h?emorrhage? or postnatal h?emorrhage? or post natal h?emorrhage?).ti,ab,kf.
13	((h?emorrhage? or PPH) and (birth? or childbirth? or labor or labour or delivery or deliveries or obstetric* or puerperium or maternal or maternity or woman or women)).ti.
14	((h?emorrhage? or PPH) adj3 (birth? or childbirth? or labor or labour or delivery or deliveries or obstetric* or puerperium or maternal or maternity or woman or women)).ab,kf.
15	(PPH and (complicat* or identif* or detect* or manage* or monitor* or care or treat* or prevent*)).ti.
16	(PPH adj3 (complicat* or identif* or detect* or manage* or monitor* or care or treat* or prevent*)).ab,kf.
17	((blood loss or bleeding) and (birth? or childbirth? or labor or labour or delivery or deliveries or obstetric* or puerperium or postpartum or post partum or postnatal or post natal)).ti.
18	((blood loss or bleeding) adj3 (birth? or childbirth? or labor or labour or delivery or deliveries or obstetric* or puerperium or postpartum or post partum or postnatal or post natal)).ab,kf.
19	or/12-18
20	1 or 11 or 19
21	limit 20 to "qualitative (best balance of sensitivity and specificity)"
22	qualitative research/
23	20 and 22
24	21 or 23

CINAHL, EbscoHost

#	Query
S14	S13 [Limiters - Exclude MEDLINE records]
S13	S10 OR S12
S12	S9 AND S11
S11	(MH "Qualitative Studies+")
S10	S9 [Limiters - Clinical Queries: Qualitative - Best Balance]
S9	S1 OR S4 OR S5 OR S6 OR S7 OR S8
S8	TI (("blood loss" or bleeding) and (birth* or childbirth* or labor or labour or delivery or deliveries or obstetric* or postpartum or "post partum" or postnatal or "post natal" or puerperium)) OR AB (("blood loss" or bleeding) and (birth* or childbirth* or labor or labour or delivery or deliveries or obstetric* or postpartum or "post partum" or postnatal or "post natal" or puerperium))

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(Continued)

S7	TI (PPH and (complicat* or identif* or detect* or manage* or monitor* or care or treat* or prevent*)) OR AB (PPH and (complicat* or identif* or detect* or manage* or monitor* or care or treat* or prevent*))
S6	TI ((h#emorrhage* or PPH) and (birth* or childbirth* or labor or labour or delivery or deliveries or obstetric* or puerperium or maternal or maternity or woman or women)) OR AB ((h#emorrhage* or PPH) and (birth* or childbirth* or labor or labour or delivery or deliveries or obstetric* or puerperium or maternal or maternity or woman or women))
S5	TI ("postpartum h#emorrhage" or "postpartum h#emorrhages" or "post partum h#emorrhage" or "post partum h#emorrhages" or "postnatal h#emorrhage" or "postnatal h#emorrhages" or "post natal h#emorrhage" or "post natal h#emorrhages") OR AB ("postpartum h#emorrhage" or "postpartum h#emorrhages" or "post partum h#emorrhage" or "post partum h#emorrhages" or "postnatal h#emorrhage" or "postnatal h#emorrhages" or "post natal h#emorrhage" or "post natal h#emorrhages")
S4	S2 AND S3
S3	(MH "Uterine Hemorrhage") OR (MH "Blood Loss, Surgical") OR (MH "Hemorrhage") OR (MH "Postoperative Hemorrhage")
S2	(MH "Postnatal Period") OR (MH "Labor") OR (MH Childbirth+) OR (MH "Delivery, Obstetric") OR (MH "Puerperium")
S1	(MH "Postpartum Hemorrhage")

Scopus, Elsevier

((KEY("postpartum hemorrhage")) OR (TITLE-ABS("postpartum hemorrhage" OR "postpartum haemorrhage" OR "postpartum hemorrhages" OR "postpartum haemorrhages" OR "post partum hemorrhage" OR "post partum haemorrhage" OR "post partum hemorrhages" OR "post partum haemorrhages" OR "postnatal hemorrhage" OR "postnatal haemorrhage" OR "postnatal hemorrhages" OR "postnatal haemorrhages" OR "post natal hemorrhage" OR "post natal haemorrhage" OR "post natal hemorrhages" OR "post natal haemorrhages")) OR (TITLE-ABS((hemorrhage* OR haemorrhage* OR PPH) W/3 (birth* OR childbirth* OR labor OR labour OR delivery OR deliveries OR obstetric* OR puerperium OR maternal OR maternity OR woman OR women))) OR (TITLE-ABS((PPH) W/3 (complicat* OR identif* OR detect* OR manage* OR monitor* OR care OR treat* OR prevent*))) OR (TITLE-ABS(("blood loss" OR bleeding) W/3 (birth* OR childbirth* OR labor OR labour OR delivery OR deliveries OR obstetric* OR puerperium OR postpartum OR "post partum" OR postnatal OR "post natal")))) AND ((KEY("qualitative research" OR interview OR "semi structured interview" OR "thematic analysis" OR "qualitative analysis")) OR (TITLE-ABS(qualitative OR interview* OR "thematic analysis" OR themes OR "mixed method" OR "mixed methods"))) AND NOT INDEX(medline)

Grey literature

OpenGrey

"postpartum hemorrhage" OR "postpartum haemorrhage" OR "postpartum hemorrhages" OR "postpartum haemorrhages" OR "post partum hemorrhage" OR "post partum haemorrhage" OR "post partum hemorrhages" OR "post partum haemorrhages" OR "postnatal hemorrhage" OR "postnatal haemorrhage" OR "postnatal hemorrhages" OR "postnatal haemorrhages" OR "post natal hemorrhage" OR "post natal haemorrhage" OR "post natal hemorrhages" OR "post natal haemorrhages"

The Grey Literature Report

Eight individual search strings:

1. "postpartum hemorrhage"
2. "postpartum haemorrhage"
3. "post partum hemorrhage"
4. "post partum haemorrhage"
5. "postnatal hemorrhage"
6. "postnatal haemorrhage"

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7. "post natal hemorrhage"
8. "post natal haemorrhage"

BASE

Advanced search – in **Entire Document** – limited to **Document type**: *Report*, and **Document type**: *Doctoral and postdoctoral thesis*

(post-partum "post partum" postpartum post-natal "post natal" postnatal) AND (hemorrhage haemorrhage hemorrhages haemorrhages) AND (qualitative interview interviews themes "mixed method" "mixed methods")

Eldis

Advanced search – four individual search strings (word variations will be searched for using the below strings)

1. "postpartum hemorrhage"
2. "postpartum haemorrhage"
3. "postnatal hemorrhage"
4. "postnatal haemorrhage"

Appendix 2. Overview of relevant Cochrane Reviews

Ref #	PICO Question	Key results
Abedi 2016	**Patient or population:** nipple stimulation (suckling) for preventing postpartum haemorrhage in the third stage of labour **Intervention:** nipple stimulation (suckling). Early suckling encouraged as soon as the cord was cut on 4227 women who gave birth by traditional birth attendants. **Comparison:** no treatment **Outcomes:** 1. Severe PPH (measured or estimated blood loss of 1000 mL or more, or as defined by the trial authors) 2. Maternal death or severe morbidity	Of the four included trials, two studies contributed data to the review's analyses (number (n) = 4472). All four included studies assessed blood loss in the third stage of labour. Birth attendants estimated blood loss in two trials. The third trial assessed the hematocrit level on the second day postpartum to determine the effect of the bleeding. The fourth study measured PPH ≥ 500 mL.
Gallos 2018	**Patient or population:** women in the third stage of labour **Interventions:** carbetocin, misoprostol, injectable prostaglandins, ergometrine, ergometrine plus oxytocin (Syntometrine ®), misoprostol plus oxytocin **Comparison:** oxytocin **Outcome:** PPH ≥ 500 mL	All agents were generally effective for preventing PPH when compared with placebo or no treatment. Ergometrine plus oxytocin combination, carbetocin, and misoprostol plus oxytocin combination may have some additional desirable effects compared with the current standard oxytocin. The two combination regimens, however, are associated with significant side effects. Carbetocin may be more effective than oxytocin for some outcomes without an increase in side effects.
Hofmeyr 2013a	**Patient or population:** women who have given birth vaginally or by caesarean section **Intervention:** uterine massage commencing after birth of the baby, before or after delivery of the placenta, or both **Comparisons**: with no intervention or a 'dummy' procedure to mask allocation or with alternative methods or alternative forms of uterine massage, with or without other third stage co-interventions	The results of this review are inconclusive and should not be interpreted as a reason to change current practice. Due to the limitations of the included trials, more trials with sufficient numbers of women are needed in order to estimate the effects of sustained uterine massage.

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	Outcomes: Blood loss 500 mL or more after trial entry, or placenta delivered more than 30 minutes after birth	
Hofmeyr 2013b	**Patient or population:** pregnant women ≥ 24 weeks' gestation who received misoprostol during the third stage of labour or in the postpartum period, versus placebo/no treatment or other uterotonics for prevention or treatment of PPH **Intervention:** 1. Different doses and different routes (sublingual, oral, vaginal, rectal) of misoprostol used for prevention or treatment of PPH compared 2. Other uterotonics, other doses or routes, or placebo/no treatment. **Comparisons:** placebo/no treatment or other uterotonics for prevention or treatment of PPH **Outcomes:** maternal death	Misoprostol does not appear to increase or reduce severe morbidity when used to prevent or treat PPH. Misoprostol did not increase or decrease maternal mortality.
Oladapo 2012	**Patient or population:** women in the third stage of labour **Settings:** non-facility birth settings **Intervention:** advance misoprostol distribution/provision to pregnant women for postpartum self-administration **Comparison:** usual (or standard) care	Evidence from two trials reveals that advance misoprostol distribution to pregnant women for self-administration during non-facility birth does not increase the risk of severe maternal morbidity or death compared to usual (or standard) care. There were no reliable data on quantifiable blood loss.
Salati 2019	**Patient or population:** women in the third stage of labour **Setting:** hospital labour wards and home births in France, Germany, the Netherlands, Sweden, South Africa, Tunisia, and the UK **Intervention:** oxytocin **Comparison:** no uterotonics or placebo	Prophylactic oxytocin compared with no uterotonics may reduce blood loss and the need for additional uterotonics. The effect of oxytocin compared to ergot alkaloids is uncertain with regards to blood loss, need for additional uterotonics, and blood transfusion. Oxytocin may increase the risk of a prolonged third stage compared to ergot alkaloids, although whether this translates into increased risk of manual placental removal is uncertain.
Soltani 2011	**Patient or population:** all women who had a vaginal delivery **Intervention:** unclamping the previously clamped and divided umbilical cord and allowing the blood from the placenta to drain freely **Comparisons:** no cord drainage **Outcomes:** management of PPH	There was a small reduction in the length of the third stage of labour and also in the amount of blood loss when cord drainage was applied compared with no cord drainage. The clinical importance of such observed statistically significant reductions, is open to debate.
Tunçalp 2012	**Patient or population:** women after the birth of their baby **Intervention:** use of prostaglandins used as part of active management of the third stage of labour **Comparisons:** no uterotonics/placebo	Oral or sublingual misoprostol shows promising results when compared with placebo in reducing blood loss after delivery. The margin of benefit may be affected by whether other components of the management of the third stage of labour are used or not. As side-effects are dose-related, research should be directed towards establishing the lowest effective dose for routine use, and the optimal route of administration.

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(Continued)

	Outcomes: severe PPH (blood loss of 1000 mL) or more and the use of additional uterotonics in the third stage of labour	
Yaju 2013	**Patient or population:** women who have had a spontaneous vaginal delivery **Intervention:** ergometrine, methylergometrine, or other agents administered by any route or timing of administration for the prevention of PPH after delivery of the placenta **Comparisons:** placebo/no treatment **Outcomes:** 1. Severe PPH (blood loss of 1000 mL or more) 2, Maternal death or severe morbidity	There was insufficient evidence to support the use of prophylactic oral methylergometrine given after delivery of the placenta for the prevention of PPH.

HISTORY

Protocol first published: Issue 12, 2020

CONTRIBUTIONS OF AUTHORS

SA and MAB drafted the protocol, with input from all authors. All authors provided feedback, read and approved the final protocol.

DECLARATIONS OF INTEREST

OTO, JPV and FA were members of the steering group, and SM was a member of the Guideline Development Group, for the WHO recommendations on uterotonics for the prevention of PPH (World Health Organization 2018).

IDG, FA, JPV, OTO, and AC are co-authors of a related Cochrane Review, "Uterotonic agents for preventing postpartum haemorrhage: a network meta-analysis" (Gallos 2018).

MAB and JPV are Editors of Cochrane EPOC. JPV and OTO are Associate Editors of Cochrane PCG.

SOURCES OF SUPPORT

Internal sources

- University of Melbourne Dame Kate Campbell Fellowship, Australia

  MAB's time.
- World Health Organization, Switzerland

  FA and OTO's time.

External sources

- Bill and Melinda Gates Foundation, USA

  Early Detection of Postpartum Haemorrhage and Treatment Using the World Health Organisation MOTIVE 'First Response' Bundle: a Cluster Randomised Trial With Health Economic Analysis and Mixed-methods Evaluation (E-MOTIVE Trial)
- Australian Research Council, Australia

  MAB's time

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