



ROYAL  
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## ROYAL COLLEGE OF MIDWIVES

# Professor Marlene Sinclair — EBM editor 2003-2021

It is with a combination of both sadness and great respect that I announce the retirement of Professor Marlene Sinclair from her role as editor of Evidence Based Midwifery (EBM). Professor Sinclair is a pioneer of academic midwifery and will be sorely missed. Her commitment and passion to building evidence-based midwifery as a field, and her conception and development of EBM as a means for midwifery researchers to publish their work, is a great and unique achievement.

Professor Sinclair was the editor of EBM for over 20 years and, in that time, has written many thought-provoking editorials. When read chronologically, these editorials are both an archive and a fascinating ‘story’ of the birth and continued development of midwifery-led research. I am therefore very pleased to announce that all these editorials have been published in an **EBM Special Edition**. I urge you all to read them: they are an inspiration and motivation for all midwives to forge ahead with undertaking research — research that is a fundamental part of our role, whether we undertake it ourselves or support others.

Here at EBM, MIDIRS and the RCM we wish Professor Sinclair a happy, healthy and peaceful retirement. She is an inspiration to us all and her

legacy to the Evidence Based Midwifery journal and midwifery-led research will not be forgotten: on the contrary, it is a solid foundation on which we will continue to build.



## March 2022 issue of EBM

Pregnancy is complex and requires a myriad of interconnected, multi-disciplinary evidence to underpin the care we give. It is of paramount importance that midwives lead this vital information ‘gathering’. I am therefore delighted that, in this issue of EBM, we have four papers covering a range of topics demonstrating midwives’ passion to confront changes and challenges in service provision and find solutions.

I am very proud that the authors of these papers, and all other midwives engaged and undertaking research,

have continued to do so when the arena in which they clinically practise has endured extra pressures from the COVID-19 pandemic.

I will never fill Professor Sinclair’s shoes but I endeavour to continue her movement to place midwife-led research at the forefront, providing high-level evidence and underpinning maternity clinical practice.

Dr Sara Webb

Acting Editor, EBM

# Exploring the role of the digital midwife as leaders in the implementation and adoption of an electronic health record: protocol for a scoping review of evidence

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### ABSTRACT

**Background:** Electronic health records (EHRs) are quickly becoming an integral part of UK maternity services. There is a growing evidence base to support the necessity of accurate and timely reporting of a woman's pregnancy journey. This reporting ensures that information is easily accessible, that care is delivered in a safer way and that efficient practice is supported (Payne et al 2015, NHS England 2018).

The Maternity Digital Maturity Assessment (DMA) report (NHS England 2018) launched a plan to develop and recruit digital midwives as multi-skilled leaders. This team of leaders would understand both clinical and digital issues relating to implementing EHRs in their departments (NHS England 2018). There are many challenges facing digital midwives when planning implementation strategies, as the entire workforce needs to be prepared for the disruption that change brings. Unfortunately, the evidence base to support the development of digital maternity leadership roles and, by default, their influence on the implementation and adoption of EHRs, appears to be to be somewhat lacking (Wachter 2016, Topol 2019).

**Research aim:** This protocol outlines the plan to conduct a dual-purpose scoping review. First, it will offer the plan for an exploration of the current research landscape in relation to the role of the digital midwife. Second, it will explore the digital midwife in relation to leadership effectiveness in the implementation of, adoption of, or transition to EHRs, specifically within UK maternity services.

**Search methods:** This scoping review protocol was developed using the Arksey & O'Malley (2005) review framework. It was then enhanced by Levac et al (2010) to include more rigorous methods and will follow six steps: identify the research question; identify relevant studies; study selection; extract the collected data; report the results and, finally, consultation with stakeholders. A search of specific keywords will be carried out in the Embase, CINAHL, MEDLINE and Scopus academic databases, and grey literature will also be searched. Relevant studies will be selected, then subjected to mixed-methods narrative analysis to identify key themes for discussion.

**Discussion:** The narrative of this scoping review hopes to strengthen the case for research into multi-skilled, digitally prepared maternity leaders. Exploring the role of digital midwives is necessary to support them as leaders in the implementation of digitally capable services. Enhancing the knowledge around effective clinical leaders as agents for change could provide key evidence in maternity services and support the realisation of an effective digital strategy.

**Keywords:** adoption, champion, digital, electronic health record, leader, implementation, informatics, midwife: digital midwife, Evidence Based Midwifery

## Background

### A digital NHS: the big picture

The Department for Health and Social Care (2018) set the scene for current practice with its vision for an effective digital strategy in UK health services which identified four priorities. First, to develop infrastructure that enables both national and local purchasers to invest in the most current technology to support the needs of the health care workforce. Second, to promote digital provision that relates to user need and provides scope for innovation. Third, to enable short contracts to facilitate change, where change is needed, at a time in keeping with trust funding capacity. The fourth priority defines and maps a vision of improved skill, and a culture of empowerment, that supports the needs of the current workforce. It is envisaged that this will level the playing field in terms of digital literacy for all and promote effective recruitment into digital leadership roles.

Despite this vision for an effective digital strategy, it seems that innovative systems are being designed and commissioned at a speed which 1.4 million NHS staff are unable to implement or adopt effectively (Donaldson 2019). The resulting friction brought about by interoperability issues, lack of support and poor change management can result in costly implementation failure (Fragidis & Chatzoglou 2018, Pereira et al 2020). The responsibility of leading the team through this implementation period often falls in the lap of maternity leaders with an aptitude for technology. Sadly, the literature surrounding this is lacking and a formal role and national job description was not defined until 2018 (Gudgeon 2018). NHS Digital (2020) suggests that more work to establish the importance of digital leaders with clinical experience in the field of maternity is vital to creating a digitally mature service.

### The digital midwife

To tackle this issue, findings from national reviews of maternity services across England and Scotland have been adopted as the catalyst for change in maternity digital maturity.

The workstreams for harnessing digital technology as part of the maternity transformation programme (MTP) (NHS England 2021) are driving considerable change in maternity services across England. This includes the continuous rollout of EHRs and the goal of appointing a digital midwife in every trust.

NHS Digital (2020) describes the digital midwife as '*instrumental to the successful delivery of digital projects within maternity*' (NHS Digital 2020:39). Conversely, the same report acknowledges that digital midwives often feel 'isolated' and that part of their role is to act as a change agent in inspiring the workforce throughout EHR implementation. On a more strategic level, digital midwives aim to ensure

that issues around digital transformation in maternity are given consideration at every level of the organisation (Royal College of Midwives (RCM) 2021).

### The digital midwife as an implementation strategy

In 2018, NHS England published the Maternity DMA report (NHS England 2018) and argued that, if the maternity workforce is to stay abreast of the ever-evolving digital landscape, it is imperative that there are capable leaders championing this process. These leaders should have knowledge of both the maternity and health informatics arenas, such as digital midwives, and also be skilled at managing change and empowering the maternity workforce.

Alongside this, the National Maternity Review (2016) suggests that, in order to forge a trusting relationship between a woman, her baby and the midwife responsible for her care, there needs to be a culture of trust and personal responsibility. Enabling this will contribute to the development of meaningful relationships between all the systems involved in the care of a woman and her baby, including the adoption of digital technology. This ethos assumes an overall goal that encompasses not only the midwife–woman relationship but also managing the intersection between health care professionals and how their digital tools can support the therapeutic relationship. Despite a lack of evidence to corroborate this, it seems that the emerging role of the digital midwife could provide the conduit between each of these complex relationships.

### Maternity services and electronic health records

The NHS maternity workforce considers itself privileged to be part of a woman's childbirth experience (National Maternity Review 2016). The shared vision is that every pregnancy journey is personalised by a workforce that delivers a quality service that is safe, effective and provides a positive experience for women. This means that maternity service leaders, including digital midwives, have a responsibility to ensure that staff are working effectively, and with the most effective digital tools available (NHS England 2018).

Affordable, maternity EHR technologies have been around for three decades (Evans 2016) and reporting on the impact of transitioning between one EHR system to another will become more common as technology advances and systems improve (Saleem & Herout 2018).

The introduction of digital methods in dynamic environments, such as maternity services where women have historically been in control of their own paper medical record, has been fraught with challenges (Takian et al 2012). These challenges are often left unreported, resulting in individual staff members feeling forced to develop 'workarounds'

to support their day-to-day working practices (Wachter 2016).

The challenges linked to accurate reporting facing maternity services became all too apparent during the Morecambe Bay investigation (Kirkup 2015). Patient records were initially used as an investigative tool to make clinical decisions or identify potential learning opportunities. During the review they became evidence of grave negligence within the maternity services at a trust in the north-west of England. Worryingly, the Kirkup review brought to light the potential dangers of failing to embrace modernisation by transitioning between legacy, paper, documentation to safer, and more efficient, practices that are evidence based.

The evidence base that demonstrates the benefits and barriers to transitioning from paper-based patient health records to a new EHR system is well documented (Akhu-Zaheya et al 2018). What appears to be less commonly researched is the impact that effective digital leadership can have on the transition between paper health records and EHRs or from one EHR system to another (Saleem & Herout 2018). The literature exploring workflow redesign in terms of influencing clinical processes is also plentiful (Deokar & Sarnikar 2016). This contrasts with very little literature exploring how these changes affect the workforce from multiple perspectives within UK maternity services or how digital midwives are championing change in their departments.

Preliminary searches of the Cochrane Database of Systematic Reviews (CDSR), The Joanna Briggs Institute-Evidence Synthesis database and the PROSPERO review database were carried out. There were no current or ongoing scoping reviews on the topic of the digital midwife. No scoping reviews exploring implementation of, adoption of, or transition between EHR systems, specifically within maternity departments, were identified at the time of writing this protocol. As the evidence justifying the role of the digital midwife is also sparse a broader search is needed, therefore justifying this scoping review of evidence.

### Scoping review aim

This protocol outlines the plan to conduct a dual-purpose scoping review. First, it will offer a plan for an exploration of the current research landscape in relation to the role of the digital midwife. Second, it will explore the digital midwife in relation to leadership effectiveness in the implementation and adoption of EHRs, specifically within UK maternity services.

### Objectives

1. To identify what evidence exists concerning the role of digital midwife (or equivalent) in UK maternity services.

2. To explore the role of digital midwife (or equivalent) in relation to the implementation and adoption of a new EHR system, or the transition between legacy systems (including paper) and a new system.
3. To identify current practices in relation to the implementation of EHRs from the perspective of digital and/or clinical leaders.
4. To identify key gaps in the existing evidence base and establish the most urgent question(s) in relation to digital maternity leadership for future research.

### Methods

This scoping review protocol was developed using a framework designed by Arksey & O'Malley (2005) then enhanced by Levac et al (2010) to include consultation with stakeholders. The following steps will support the development and dissemination of this scoping review:

1. Identify the research question
2. Identify relevant studies
3. Study selection
4. Chart the data
5. Report the results
6. (Optional) consultation with stakeholders.

#### Step one: identify the research question

This scoping review is being carried out to explore the current literature landscape relating to the experiences of maternity staff in relation to effective leadership and the implementation of a new EHR system. It is intended that this review will inform the design of a primary research project based on these two questions:

1. What is currently known about digital midwifery in both hospital and community settings?
2. What is currently known about leadership roles in relation to implementation and adoption strategies, or transitions between legacy and new systems, in UK maternity services?

#### Step two: identify relevant studies

##### Eligibility criteria

Constructing eligibility criteria for the inclusion of papers in this review has been challenging, partly due to the complexity surrounding the dual purpose of the review and partly due to lack of evidence about the role of the digital midwife in academic literature.

Inclusion and exclusion criteria are 'informed by the review process' (Sucharew & Macaluso 2019:417) and only loosely defined at the beginning of the search strategy. Table 3 (see Supplementary

information) demonstrates the *a priori* criteria used at the beginning of the search, but it is worth noting that full inclusion and exclusion criteria will only become apparent once the scoping review process is complete.

Table 1 illustrates the initial exclusion criteria to be used when reading titles and abstracts of search results.

**Table 1. Initial exclusion criteria**

Exclusion criteria	
1	Does not address the role of digital midwife (or equivalent clinical/digital leader) in the implementation of, adoption of, or transition between EHR systems in maternity
2	Does not focus on leadership responsibilities directly responsible for the implementation of, adoption of, or transition between EHR systems in maternity
3	Does not address the perspectives of the health care workforce (regardless of grade) in relation to their interaction with the change associated with the implementation of, adoption of, or transition between EHR systems
4	Is not an English-language paper
5	Addresses the implementation of, adoption of, or transition between EHR systems from the perspective of participants outside the health care arena

All primary and secondary research that adopts qualitative, quantitative, or mixed-method approaches, together with grey literature, will be included in this scoping review. The decision to broaden the search in such a way lends itself to the desired outcome of a scoping review in that a representative picture of the research landscape is more likely with a less restrictive search (Levac et al 2010).

Preliminary searches of ‘digital AND midwi\*’ were conducted across CINAHL, MEDLINE and Scopus academic databases, and revealed no studies pertaining specifically to this role at the time of writing this protocol (February 2021). With this in mind, this literature review will be extended to include similar roles within the NHS. It will include ‘IT midwife’, and ‘digital lead midwife’ from the field of midwifery, and ‘informatics nurse\*’ or ‘digital champion\*’ from the wider health care community. This list is not exhaustive, and similar roles will be added to the scoping review search as they emerge.

Alongside an exploration of the role of digital midwife, this scoping review is concerned with implementation science as the intervention and overarching theory utilised in the introduction of a new patient record in maternity services. The search strategy will include keywords or phrases that include ‘implementation’; ‘adoption’; ‘framework’ and ‘transition’ and, after discussion with PhD supervisors, any of the four most popular implementation science theories as defined by Wensing (National Institute of Mental Health 2018).

These are: the Diffusion of Innovations Theory (Rogers 2003); the Theoretical Domains Framework (Atkins et al 2017); the Organizational Readiness Framework (Weiner 2009) and the Normalization Process Theory (May & Finch 2009) and will be added to the search terms.

This scoping review is also concerned with paper and electronic health records. Terms to be included are electronic health records, electronic patient records, patient records, maternity records, summary care record, and medical records. In order to potentially capture transitions between paper records and electronic records, or partial transitions, the keywords ‘paper’ and ‘legacy’ will be added to the search terms as commonly used phrases.

Only studies written in English in the first instance will be included due to the increased risk of bias, misinterpretation of meaning or loss of conceptual similarity during the translation process (Kirkpatrick & van Teijlingen 2009). Studies will not be limited on their date or geographical location as, at this stage, the specific practices or technological advancements are not being scrutinised.

#### Search strategy

The search strategy for this scoping review has been developed with the advice of two PhD supervisors and consultation with an experienced research librarian. Pre-defined keywords suggested above and demonstrated in Table 3 (see Supplementary information) will be applied to relevant electronic databases. CINAHL, MEDLINE, Scopus and Embase will be used to capture all health, health informatics and social science citations. Finally, CDSR and Prospero literature review databases will be scrutinised to capture any literature reviews, published or ongoing, that are related to the topic of digital midwifery, implementation science and EHRs.

The search will include all studies regardless of their study design and will not be limited to peer-reviewed literature. Grey literature will be searched using Google, Google Scholar and the OpenGrey database to capture policy documents, conference proceedings, official publications and anecdotal writing pertaining to digital midwifery, as suggested by Higgins & Green (2011).

The last stage of literature searching will include a comprehensive hand search of the reference lists of all included studies to ensure that as much of the available, relevant literature in relation to leadership roles involved in implementing EHRs is captured.

Scoping reviews are an iterative process (Tricco et al 2018). Although search terms are pre-defined, it is possible that further keywords relevant to the study will present themselves during the selection process (Levac et al 2010). These terms will be added to the search strategy, and the search re-run to capture as many relevant studies as possible. The full search strategy will be tabulated and presented in the final scoping review.

### Step three: study selection

Once the searches are complete, all identified studies will be uploaded into the Endnote X9 (desktop) reference management system and duplicates will be removed. Titles and abstracts will be screened by a lone researcher (as per the remit of a PhD study) and two independent peer researchers will review a sample (10 per cent of all round one included studies) to verify the screening process.

Any studies not relating directly to the people involved in the implementation, adoption, or transition between EHRs will be excluded; any disagreements between peer decisions will be discussed until consensus is reached.

The search and study inclusion/exclusion process results will be reported in full in accordance with the PRISMA-ScR statement as suggested by Tricco et al (2018) and the EQUATOR Network (2019).

### Step four: charting the data

The reviewer intends to identify evidence associated with digital midwives as leaders and their role in the implementation of, adoption of, or transition between EHR systems. Key information to inform a descriptive-analytical method of the evidence, as suggested by Arksey & O'Malley (2005), recommends charting the data as an exercise to identify potential comparisons between studies.

The preliminary form shown in Table 2 aims to ensure that all data charted is consistent and in keeping with the review questions. The final data collection form will be refined via consultation with PhD supervisors, peer research colleagues and selected members of the digital midwife community. This is to ensure that the form is of suitable quality and applicability (Daudt et al 2013) and is in keeping with the Joanna Briggs Institute (JBI) scoping review framework (Tricco et al 2018).

### Step five: report the results

Levac et al (2010), supported by Tricco et al (2018), suggest reporting the results in three stages to foster a more systematic and rigorous approach to the review. This scoping review will adopt the suggested method and draw its conclusions from the narrative.

#### Stage 1: analysis

All included studies, together with any conference proceedings or non-academic articles, will be uploaded into the NVivo data analysis software (QSR International Pty Ltd 2020) for qualitative content analysis and generation of themes. Quantitative data will also be analysed this way as the scoping review only aims to report on summaries of key findings and is not a critical appraisal of the literature. Despite its benefits, no quality assessment will be carried out as this does not align with the purpose of a scoping review in exploring a potentially large volume of literature.

**Table 2. Preliminary data charting elements**

Elements and sub-elements	Reviewer question
<b>Publication details</b>	
Author(s)	Who wrote the paper or article?
Paper type	E.g. empirical research, opinion piece, editorial, conference proceedings?
Year	What year was it conducted and/or published?
Geographical location	Which country, region or population type is the paper's focus?
<b>Study/paper characteristics</b>	
Study design	What methods were used to collect information?
Aims	What are the main goals of the paper?
Population	Is there a population being considered? What is it?
Study/paper focus	What is the main focus? Implementation science, maternity leadership or something else relevant to the review questions?
Study/paper setting	Describe the context to which the text is referring
Study/paper perspective	Is the focus on implementation of EHR, on leadership in maternity or both?
<b>Content</b>	
(Electronic) health records	Is the main focus on electronic (or paper) health records in maternity? Please explain
Leadership	Is the main focus on leadership in maternity? Please explain
EHRs and leadership	Does the paper have a dual focus discussing EHRs and leadership in maternity? Please explain
Implementation science	Does the paper include implementation science as a theoretical underpinning in relation to the implementation, adoption or transition between health record systems? Please identify which
Other important features	Please include any keywords not previously included here

## Stage 2: reporting

Narrative analysis across all included papers will summarise the breadth of existing literature and identify potential gaps in the evidence base. These findings will be discussed, and a summary of all included study findings will be presented in a data table.

A numerical descriptive analysis relating to study characteristics, such as study design, types of intervention in relation to EHR implementation, population characteristics that relate to the job role being investigated and research environment (primary or secondary care, UK or abroad) will be carried out and reported pictorially within the scoping review report. The final data categories will be developed afterwards to allow for novel findings.

## Stage 3: apply meaning

Themes generated in this scoping review will be used to inform doctoral research design which aims to adopt a qualitative methodology to, first, investigate the role of the digital midwife and, second, to explore their impact on the implementation of, adoption of, or transition between legacy (electronic or paper) and EHR technologies as an area of research that is necessary, novel, and current.

Digital strategies in the UK appear to be evolving at a rate where the influence that digital midwives can have on policy and practice is essential to implementation success. This scoping review could potentially support the development of the role in accordance with the suggestion of NHS Digital (2020) and their entire digital maternity strategy.

## Step six (optional): consultation

Levac et al (2010) describe consultation activities when conducting a scoping review but suggest a lack of clarity of purpose. Further investigation via the JBI (Peters et al 2020) suggests that consultation with peers and key stakeholders should be written into the scoping review from the outset. Preliminary consultation activity was carried out by volunteers from the digital midwife community who were asked to volunteer suggested search terms for inclusion. The same expert reference group will be approached to discuss the findings of this scoping review and aid in the development of a meaningful research question.

## Dissemination plan

It is anticipated that two products will be generated by this scoping review. First, the advancement of

knowledge surrounding the most urgent research questions, especially with respect to the role of the digital midwife. This new knowledge will inform the design of a full research project which explores the role of the digital midwife in relation to EHR implementation. Second, the scoping review findings will be disseminated via academic journals specific to maternity research communities and on academic and social media platforms.

## Ethical considerations

This scoping review aims to investigate the breadth of existing, primary research regarding EHRs and the digital midwife and, as a secondary analysis of primary data is being carried out, does not require ethical approval. An ethics checklist provided by the supporting university has been completed and is available to view on request.

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## Commercial affiliations

The author is not aware of any commercial affiliation that could impact the publication of this paper.

## Conflicts of interest

The author is not aware of any conflicts of interest.

## Author

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*Emma-Jane Eyers is a doctoral researcher at the University of Bradford and has completed this scoping review protocol as part of her PhD project. This has been carried out under the expert supervision of Prof. Rebecca Randell and Dr Fiona Meddings. Twitter: @EmmaJaneEyers. Linked in: Emma Jane Eyers*

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## Supplementary information

**Table 3. Search terms/strategy**

Search term(s)
#1 "digital midwi*" OR "digital lead midwi*" OR "informatic* nurse" OR "digital (champion*)" OR "EHR friend"
#2 Implementation OR adoption OR transition OR framework OR "diffusion of innovation*" OR "theoretical domain* framework" OR "organi*ational readiness framework" OR "normali*ation process theory"
#3 "electronic health record" OR "electronic patient record*" OR "patient record*" OR "maternity record*" OR "summary care record*" OR "medical record*" OR "paper record*" OR "legacy system"
#4 #1 AND #2 AND #3
#5 English
#6 Duplicate removal

# Examining the psychological impact of expectant management of early pregnancy loss on women's wellbeing: a systematic review

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## ABSTRACT

**Background:** Early pregnancy loss can be a distressing time when women may encounter negative psychological experiences. Expectant management of early pregnancy loss can lead to negative psychological outcomes which require treatment.

**Research question:** What are the psychological impacts of expectant management for women experiencing early pregnancy loss and the approaches to support maternal wellbeing?

**Search methods:** A systematic review of the literature was conducted in December 2020 to assess the psychological impact of expectant management of early pregnancy loss and approaches that support maternal wellbeing. A search of CINAHL, PsycInfo, ASSIA, PubMed and MEDLINE returned 12,360 studies; 36 studies were eligible for full-text screening after duplicate removal and title and abstract screening. Five eligible studies for review were included (two randomised controlled trials (RCTs) and three qualitative studies) and are reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement.

**Results:** A total of 326 participants, aged 18–45 years, who received treatment for early pregnancy loss were sampled across all included studies. Findings are presented under three themes: the impact of expectant management on psychological wellbeing; the provision of care and the provision of information. Expectant management is associated with a longer duration of bleeding and delayed return to daily activities. Women who undergo expectant management for early pregnancy loss can experience higher rates of anxiety and depression. The provision of quality information to those undergoing expectant management may help to reduce fears and anxieties about treatment.

**Conclusion:** Women who opt for expectant management may encounter negative psychological impacts during and after intervention. Without support and essential follow up, the mental wellbeing of this population may be at risk of deterioration. Health care professionals caring for women experiencing early pregnancy loss should ensure comprehensive enquiry is made about the mental wellbeing of women who have undergone expectant management and offer follow-up appointments to monitor for deterioration.

**Keywords:** expectant management, miscarriage, early pregnancy loss, psychological, depression, anxiety, Evidence Based Midwifery

## Introduction

Early pregnancy loss (EPL) is defined as the loss of an intrauterine pregnancy within the first trimester (American College of Obstetricians and Gynecologists (ACOG) 2015) and can be a traumatic experience for women and their families. Between 10 per cent and 25 per cent of clinically recognised pregnancies will end in miscarriage; one in five if women who realised/

reported the miscarriage are included (ACOG 2015, National Institute for Health and Care Excellence (NICE) 2019).

EPL occurs for many reasons, most often due to fetal chromosomal abnormalities (ACOG 2015). Many women experience a variety of psychological distress following EPL, including grief, shock, anxiety, depression and guilt (Farren et al 2016). As many

as 15 per cent of women experiencing EPL meet the criteria for depression and 30 per cent to 50 per cent for anxiety (Farren et al 2016, 2020).

One in three women will develop post-traumatic stress disorder (PTSD) after EPL (Farren et al 2016, 2020). PTSD symptoms may include reliving the traumatic event through flashbacks or nightmares, insomnia, isolation and feeling emotionally numb. Farren et al (2016) found that 45 per cent of women who experienced EPL reported PTSD symptoms compared to 18 per cent of women who experienced an ectopic pregnancy. One of the strengths of the Farren et al (2020) study is it followed women after pregnancy loss for a longer period than previous studies. At nine months, almost one in five (18%) of women who experienced EPL had PTSD, one in six (17%) had anxiety and one in twenty (6%) had depression (Farren et al 2020). This study demonstrates that PTSD, anxiety and depression declined over time, but remain common at nine months.

While EPL is not uncommon, there is a dearth of research regarding the psychological impact of miscarriage management options as the management of EPL has been a largely understudied part of maternal health care (Williams et al 2020). The provision of care in the context of EPL varies but most women receive no formal psychological support and often rely on patient support groups for information and guidance (Barat et al 2020, Williams et al 2020).

Health care professionals (HCPs) often focus on the physical aspects of care (Farren et al 2020) as the priority is to prevent physical deterioration due to bleeding, pain and infection, while little is done for women's psychological wellbeing (Barat et al 2020, Williams et al 2020). However, depression, anxiety and other psychological morbidities may pose a threat to women's mental wellbeing if not treated in an appropriate and timely manner (Farren et al 2016).

In the context of grief, women experiencing EPL may encounter disenfranchised grief, defined as the loss of a loved one not publicly mourned or acknowledged due to a lack of social recognition (Doka 1989, Barat et al 2020). Women who experience EPL are left without publicly grieving their loss (Kersting & Wagner 2012). This lack of acknowledgement may contribute to complicated grief, a pathological form of grief where usual grief symptoms become intrusive, disruptive and longer-lasting (Kersting & Wagner 2012, Barat et al 2020) and compound the psychological impacts of EPL.

Studies have been conducted on the efficacy and safety of EPL management options in the context of physical wellbeing (Sahin et al 2001) while research on the psychological aspects of EPL management is sparse. Women should be offered medical or surgical

management if they are identified high risk for haemorrhage, have evidence of infection, or have had a previous traumatic pregnancy experience (NICE 2019) but, traditionally, surgical management was the preferred method for managing EPL. However, NICE (2019) recommends expectant management is used as the first-line treatment for women with a diagnosed EPL.

Expectant management is when a lost pregnancy is left to pass naturally without medical intervention. It may involve bedrest and analgesia and women's psychological wellbeing should be taken into consideration when deciding on this course of treatment (Nanda et al 2012). Many women leave hospital after diagnosis with little more than information on what to expect regarding the physical symptoms of miscarriage (Barat et al 2020). The information is often generalised, leaving women unprepared for varying severity of pain, bleeding or passing retained products of conception (RPOC) (Barat et al 2020).

Women report fears about seeing the fetus or products of conception at home when undergoing expectant management (Barat et al 2020). This emphasises the need for recognising the negative psychological impacts of expectant miscarriage management and the identification of at-risk women in order to provide more support. Given the reported prevalence of PTSD, depression and anxiety in women following EPL, there is a need for sensitive care towards the psychological implications so that delays in accessing specialist care and treatment can be reduced.

Therefore, the aims of this review are to identify the psychological impacts of expectant management of EPL and to identify what current practices are in place to support the psychological wellbeing of women undergoing expectant management.

## Methods

This review is reported in accordance with the PRISMA statement (Page et al 2021). It was registered on the international prospective register of systematic reviews (PROSPERO: CRD42021234452). A population, exposure, outcome (PEO) analysis was undertaken to inform the choice of keywords in the search strategy to formulate the following review question: 'What are the psychological impacts of expectant management for women experiencing early pregnancy loss and what approaches support maternal mental wellbeing?'

## Search strategy

A preliminary search of the Cochrane Library, PROSPERO and grey literature using Google Scholar and the OpenGrey database was conducted to ensure no other systematic reviews had been carried out on the research question. The following five

electronic databases were searched in December 2020 for studies published between 2012 and 2020: Cumulative Index of Nursing and Allied Health Literature (CINAHL), PsycInfo, MEDLINE, PubMed and Applied Social Sciences Index and Abstracts (ASSIA).

The search was limited to peer-reviewed articles published between January 2012 and December 2020. NICE guidelines for management of miscarriage were updated in 2012, superseding previous guidelines, therefore 2012 was initially chosen as an appropriate search date. However, due to a poor yield of studies and to ensure the return of research pertaining to current practices and procedures, the search was modified to expand the date to 2005. A set of search terms using Medical Subject Headings (MeSH), thesaurus and associated free-text terms was created and combined using Boolean operators (see PROSPERO: CRD42021234452 for full search strategy). Forward citation tracking of retrieved articles was conducted by hand-searching reference lists.

### **Inclusion criteria**

Studies were included if they reported qualitative or quantitative data pertaining to the psychological impact of the expectant management of EPL. Any valid outcome measures reporting the psychological effects, such as depression, anxiety, psychosocial wellbeing or emotional wellbeing were included. Studies that examined women of childbearing age were included if they examined expectant, medical or surgical management for EPL. Studies were excluded if they did not report on women undergoing expectant management for EPL or if they did not examine the psychological impact of treatment. Non-peer-reviewed papers including unpublished literature, conferences and unpublished theses were excluded.

### **Study selection**

Search results were input to Zotero reference management software and, after duplications were deleted, the remaining articles were uploaded to the online programme Colandr (Cheng et al 2018) for title/abstract and full-text screening. Both authors (AD and AB) independently assessed titles and abstracts against eligibility criteria and articles were excluded by agreement with the other authors (AG and TT). Full text copies of all remaining articles that met eligibility criteria were uploaded to Colandr for full-text review and these were subsequently screened by two authors (AD and AB) against eligibility criteria. All full text articles were excluded by agreement, with any disagreement resolved by the other two authors (AG and TT).

### **Quality appraisal**

Quality appraisals were conducted by two independent reviewers (AD and AB) using the

Joanna Briggs Institute (JBI) checklists for RCTs and qualitative studies (Tufanaru et al 2020). These checklists assess the methodological quality and trustworthiness of the included studies. The Cochrane risk-of-bias tool (Higgins & Thomas 2021) was also used for the RCTs which were assessed independently by two reviewers (AD and AB). Any disagreements were resolved through discussion with AG and TT. The quality of evidence was also assessed using GRADE as this is a transparent framework for developing and presenting summaries of evidence and provides a systematic approach for making clinical practice recommendations (Guyatt et al 2008, Schünemann et al 2011). These quality weightings were considered when reporting and discussing the results.

### **Data extraction**

An Excel data extraction form was used to capture and table methodological details from each study including author, year, country, study aim, miscarriage intervention (expectant, medical or surgical management), sample characteristics, research design (including control group, random allocation), outcome tools and key findings. This Excel data extraction form was developed by all authors and piloted by (AD and AG) to capture key details from each study. Two reviewers (AD and AG) developed the coding instructions and guidelines independently to reduce the subjectivity of decisions made and coding decision conflicts were resolved by consensus between all authors. Two reviewers (AD and AB) independently extracted data from the included studies and all disagreements occurring during study selection and data extraction were resolved through discussion.

### **Data analysis and synthesis**

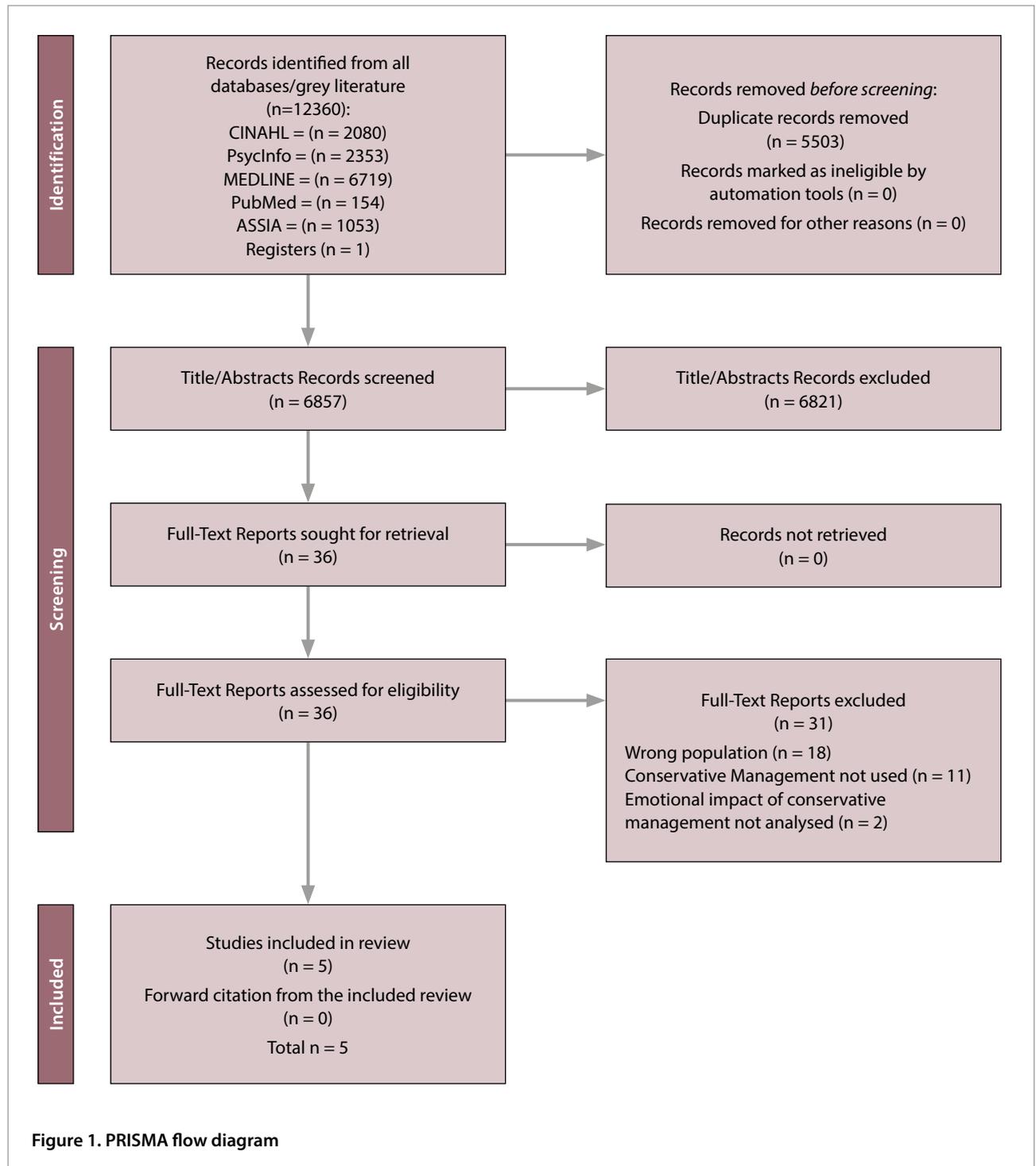
The primary outcome assessed was the use of expectant management of EPL. The secondary outcome assessed was psychological impact following treatment measured by interview or screening tools. Meta-analysis was not possible due to the small number of studies and the absence of statistical heterogeneity. Instead, a narrative synthesis was performed using Popay et al's (2006) four-stage framework for narrative synthesis to increase the transparency and trustworthiness of the narrative synthesis (for example, description of studies, groupings, tabulation, synthesis of evidence on the effectiveness of interventions). Articles were read and re-read by AD and AB and data from the findings section of each paper which were identified as relevant to the question were extracted and coded inductively. Codes were developed, assigned to extracted information and subsequently modified, refined and then collated into themes describing manifest content.

## Results

### Search outcomes

The literature search returned 12,360 studies from the five databases and grey literature. After the

removal of duplicates (n=5503) and title and abstract screening (n=6857), 36 studies were included for full-text screening of which five met the eligibility criteria for this review. The PRISMA flow diagram, Figure 1, provides an overview of this process (Page et al 2021).



### Study characteristics

Table 1 presents the characteristics of the included studies. The five included studies collectively sampled 326 participants; individual sample sizes ranged from 10 to 180. One study was conducted in Sri Lanka (Wijesinghe et al 2012), one in the United States of

America (USA) (Baird et al 2018), one in China (Kong et al 2013) one in Australia (Shelley et al 2005) and one in the United Kingdom (Smith et al 2006). Study designs included two RCTs (Shelley et al 2005, Kong et al 2013) and three qualitative studies (Smith et al 2006, Wijesinghe et al 2012, Baird et al 2018).

**Table 1. Study characteristics**

Authors, year, country	Aim	Design	Sample: intervention (I) and control groups (C)	Intervention characteristics	Key findings
Baird et al (2018) USA	To understand the reasons why women present to the Emergency Room (ER) for Early Pregnancy Loss (EPL)-related care, how they perceive care and counselling there, and their overall experience during and after their visit	Qualitative study using semi-structured interviews	I: N=10 Mean age=32.5yrs	Expectant management Women were discharged from hospital after diagnosis of EPL and given information about symptoms and emergency contact details Follow up interviews were conducted 1-3 weeks post diagnosis	Four key points were identified including 'feelings about EPL', 'reasons for going to the ER', 'experience in the ER' and 'experience after the ER' Many of the women reported feelings of chaos, lack of support, lack of information or lack of emotional support while some felt supported and well-informed Patient education, emotional support and clear care plans for outpatient follow up are essential for a better standard of care
Kong et al (2013) China	To examine the clinical and psychological impact after surgical, medical, or expectant management of first trimester miscarriage Client Satisfaction Questionnaire-8 General Health Questionnaire-12, Beck Depression Inventory, Spielberger's State Anxiety Inventory, Chinese Version of Impact of Events Scale	RCT	I: N=180 Mean age=32.5yrs No control group identified in the study	Expectant management compared to surgical and medical management Women in the expectant management group were discharged from hospital without intervention and were to record symptoms on a log sheet Women in the surgical intervention group had suction evacuation under general anaesthetic (GA) Women in the medical intervention group were given 600mg of misoprostol vaginally and discharged after 6 hours if stable All participants were seen at follow-up appointments on days 7,14 and 28 after treatment	Women who had surgical evacuation had significantly higher (98.1%) complete miscarriage rate in comparison to those who had medical management (70%) and expectant management (79.3%) Women with surgical evacuation had a shorter duration of bleeding but a higher incidence of infection and women with medical management experienced more gastrointestinal issues No significant differences were identified between the three groups of women for psychological wellbeing depression scores, anxiety levels or fatigue as measured using the General Health Questionnaire-12, Beck Depression Inventory, Spielberger's State Anxiety Inventory and Chinese version of Impact of Events Scale and fatigue scale at the time of treatment and four weeks after treatment
Wijesinghe et al (2012) Sri Lanka	To examine women's perceptions of miscarriage in relation to treatment, future fertility wishes, and the care received during treatment	Qualitative study using interviews	I: N=25 Mean age=30	Expectant management of miscarriage Interviews were carried out at the end of a two-week follow up period after commencement of their treatment	Information given to women on expectant management would improve women's perceptions of what to expect from the symptoms and process of expectant management and reduce feelings of being left alone More information should be given to partners and families of the women experiencing expectant management to support the women while at home during the process Improved education, counselling and symptomatic relief are all important aspects for improving overall quality of care

<p>Smith et al (2006) United Kingdom</p>	<p>To assess the social and personal impact of different management methods (expectant, medical and surgical) on women's experience of first trimester miscarriage</p>	<p>Qualitative purposive cohort study</p>	<p>I: N=72 Mean age=32</p>	<p>Expectant, medical and surgical management. Women in expectant management waited for the spontaneous emptying of the uterus Women in surgical management had a procedure under GA to empty the uterus Women in medical management took medication to expedite emptying of the uterus (dose or medication not reported) All participants were followed up 6-12 months post treatment for interview. Some participated in focus groups (n=47) and feedback sessions (n=20)</p>	<p>Five themes emerged from the data including: intervention; pain and bleeding; experience of caring; finality; and the 'baby' Future research could address a number of outstanding issues with respect to miscarriage management. These include: Whether providing women with better information prior to intervention (if any) improves from their perspective the quality of the care that they receive Whether hospitals have the capacity to offer various management options If formal follow-up of women after miscarriage is of benefit If, given the choice, some women would prefer to avoid medical involvement in this physiological process</p>																
<p>Shelley et al (2005) United Kingdom</p>	<p>To compare the effectiveness and safety of medical, and expectant management with surgical management for first trimester incomplete or inevitable miscarriage Screening tools used included the Hospital Anxiety and Depression Scale, Brief Pain Inventory, and the SF-36</p>	<p>RCT</p>	<p>I: N=39 Mean age: not reported C: surgical management group</p>	<p>Expectant, medical and surgical management of miscarriage. Women were randomised to expectant, medical or surgical management groups. Medical management was administered with 400mg vaginal misoprostol. Surgical management involved uterine evacuation under GA Follow up was carried out at days 10-14 post-treatment and week 8 post-treatment</p>	<p>Two weeks post-recruitment 100% of the surgical group had a successful evacuation of the uterus compared with 80% and 85.7% of the medical and expectant groups respectively Infection rates were highest among women in the medical group which is concurrent with previous research Anxiety and depression scores were comparable between the three groups at two weeks' follow up however women in the expectant group reported higher feelings of anxiety (20% to 35.7%) and depression (6.7% to 21.4%) at 8 weeks follow up The SF-36 showed that women's mental health status declined from two weeks post-treatment to 8 weeks for women in the expectant group (37.1% to 42.5%) Bleeding following randomisation:</p> <table border="1" data-bbox="1391 991 1888 1133"> <thead> <tr> <th></th> <th>Expectant</th> <th>Medical</th> <th>Surgical</th> </tr> </thead> <tbody> <tr> <td>&lt;3 days</td> <td>0%</td> <td>25%</td> <td>54.6%</td> </tr> <tr> <td>4-8 days</td> <td>50%</td> <td>37.5%</td> <td>9.1%</td> </tr> <tr> <td>&gt;9 days</td> <td>50%</td> <td>37.5%</td> <td>36.4%</td> </tr> </tbody> </table>		Expectant	Medical	Surgical	<3 days	0%	25%	54.6%	4-8 days	50%	37.5%	9.1%	>9 days	50%	37.5%	36.4%
	Expectant	Medical	Surgical																		
<3 days	0%	25%	54.6%																		
4-8 days	50%	37.5%	9.1%																		
>9 days	50%	37.5%	36.4%																		

The majority of studies (n=3) recruited participants from a hospital outpatient setting after diagnosis of EPL (Shelley et al 2005, Kong et al 2013, Baird et al 2018). Wijesinghe et al (2012) and Smith et al (2006) recruited women who had previously been involved in miscarriage management studies. Most of the included studies focused on the clinical and psychological outcomes of three miscarriage management types (Smith et al 2006, Wijesinghe et al 2012, Kong et al 2013). Baird et al (2018) examined women's experience of EPL in the emergency room (ER) in the context of care received. Shelley et al (2005) reported on the effectiveness and safety of expectant and medical management of EPL compared to surgical management. All included studies reported on the psychological impact of expectant, medical or surgical management of EPL.

### Characteristics of pregnancy loss management

The RCTs (Shelley et al 2005, Kong et al 2013) recruited 219 women experiencing EPL and randomised them into three different EPL management groups including expectant, medical and surgical management. Kong et al (2013) reported that women in surgical management (98.1%) had significantly higher successful treatment in comparison with expectant (79.3%) and medical (70%) management.

Women in the surgical group had a higher rate of infection but a shorter duration of bleeding (n=10.73 days) compared to medical (n=15.38 days) and expectant management (n=12.95 days). There was no significant difference in satisfaction rates among the three groups with 95 per cent (n=171) of participants completing the Client Satisfaction Questionnaire-8 (CSQ-8) (Larsen et al 1979) on day 14 post-treatment with an average score of 25.89.

Shelley et al (2005) reported surgical management (n=12) had a 100 per cent success rate at eight-week follow up while medical (n=12) and expectant management (n=15) had success rates of 80 per cent and 78.6 per cent respectively. Women in the expectant management group had a longer duration of bleeding with 50 per cent of women (n=7) bleeding for nine days or longer. The majority of women in the surgical group experienced less bleeding, with 54.6 per cent of women (n=6) bleeding for four days, or less, and encountered shorter duration of pain (n=2 days). Women in the medical group experienced higher rates of infection at two weeks and eight weeks post-treatment (n=4). Surgical management is seen in both studies to have higher success rates on the outcome of complete miscarriage.

Three studies (Shelley et al 2005, Smith et al 2006, Kong et al 2013) qualitatively explored the impact of expectant, medical and surgical management. These studies examined the efficacy of treatment and the psychological impact of management type on

the participants (n=326). They compared expectant management for safety, efficacy, psychological impact and social and personal impact against medical and surgical management.

The studies by Kong et al (2013) and Shelley et al (2005) used validated screening tools, including the Beck Depression Inventory (BDI) (Beck et al 1961), General Health Questionnaire-12 (GHQ-12) (Goldberg 1972), CSQ-8, Spielberger's State Anxiety Inventory (SSAI) (Spielberger 1980), Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith 1983), Impact of Event Scale-Revised (CIES-R) (Chan 1985), Short Form 36 (SF-36) (Jenkinson et al 1993), Fatigue Scale (Chalder et al 1993) and Brief Pain Inventory (BPI) (Cleeland & Ryan 1994) to measure the psychological impact of expectant management and compare the efficacy of medical and surgical management.

Three studies (Smith et al 2006, Wijesinghe et al 2012, Baird et al 2018) used qualitative methods to conceptualise (n=107) women's experiences and perceptions of the psychological impact of miscarriage and the different management methods. Smith et al (2006) explored (n=72) women's experiences of expectant management including psychological distress. Wijesinghe et al (2012) investigated (n=25) women's perceptions of miscarriage in relation to treatment, hopes for future pregnancies and care received during treatment. This study captured women's experiences of expectant management of EPL which explored bleeding and pain, fertility wishes and treatment preferences. Baird et al (2018) examined (n=10) women's experiences of EPL when presenting to the ER and explored reasons for ER presentation, satisfaction with care and perceptions of engagement in the decision-making process.

### Quality of studies

Table 2 presents the quality of the five included studies using the JBI checklist for RCTs and qualitative studies (Tufanaru et al 2020). The five included studies were all considered to be of good quality.

The aim was clearly stated in all studies (Shelley et al 2005, Smith et al 2006, Wijesinghe et al 2012, Kong et al 2013, Baird et al 2018) but some failed to report methodological criteria such as response rate, risk of bias, proposed sample size and provided minimal participant demographics.

For instance, Wijesinghe et al (2012) reported participants of the study had previously been allocated to the expectant arm of another study and no response rate or intended sample size was reported. As women preferred to have a choice of treatment and did not agree to randomisation, Kong et al (2013) reported a response rate of just 21.6 per cent of potentially eligible participants. Shelley et al (2005) reported a response rate of 22 per cent of

**Table 2. Quality appraisal and risk of bias**

<b>Joanna Briggs Institute: randomised controlled trial checklist</b>		<b>Kong et al (2013)</b>	<b>Shelley et al (2005)</b>	
Was true randomisation used for assignment of participants to treatment groups?		Yes	Yes	
Was allocation to treatment groups concealed?		Yes	Yes	
Were treatment groups similar at the baseline?		Yes	Yes	
Were participants blind to treatment assignment?		No	No	
Were those delivering treatment blind to treatment assignment?		No	No	
Were outcomes assessors blind to treatment assignment?		No	Unclear	
Were treatment groups treated identically other than the intervention of interest?		No	Yes	
Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analysed?		Yes	Yes	
Were participants analysed in the groups to which they were randomised?		Yes	Yes	
Were outcomes measured in the same way for treatment groups?		Yes	Yes	
Were outcomes measured in a reliable way?		Yes	Yes	
Was appropriate statistical analysis used?		Yes	Yes	
Was the trial design appropriate, and any deviations from the standard RCT design (individual randomisation, parallel groups) accounted for in the conduct and analysis of the trial?		Yes	Yes	
<b>Joanna Briggs Institute: qualitative research checklist</b>		<b>Baird et al (2018)</b>	<b>Smith et al (2006)</b>	<b>Wijesinghe et al (2012)</b>
Is there congruity between the stated philosophical perspective and the research methodology?		Yes	Yes	Yes
Is there congruity between the research methodology and the research question or objectives?		Yes	Yes	Yes
Is there congruity between the research methodology and the methods used to collect data?		Yes	Yes	Yes
Is there congruity between the research methodology and the representation and analysis of data?		Yes	Yes	Yes
Is there congruity between the research methodology and the interpretation of results?		Yes	Yes	Yes
Is there a statement locating the researcher culturally or theoretically?		Yes	Yes	Yes
Is the influence of the researcher on the research, and vice-versa, addressed?		Yes	Yes	Yes
Are participants, and their voices, adequately represented?		Yes	Yes	Yes
Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?		Yes	Yes	Yes
Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?		Yes	Yes	Yes

		Risk of bias							
		D1	D2	D3	D4	D5	D6	D7	Overall
Study	Kong et al 2013	+	-	-	+	+	+	+	+
	Shelley et al 2005	+	-	+	-	+	+	+	+

D1: Random sequence generation D2: Allocation concealment D3: Blinding of participants and personnel D4: Blinding of outcome assessment  
D5: Incomplete outcome data D6: Selective reporting D7: Other sources of bias

Judgement - Unclear + Low

potentially eligible participants. The planned sample size was 831, however 39 women were randomised and analysed as part of the study.

The Cochrane risk-of-bias tool results (Higgins & Thomas 2021) are also presented in Table 2 and the RCTs (Shelley et al 2005, Kong et al 2013) were considered to have fair quality as they rated on two criteria listed as unclear. Allocation to treatment group was not clear in both RCTs. It was unclear whether participants were blinded to the treatment allocation in the RCT by Shelley et al (2005) and Kong et al (2013) failed to report whether the outcome assessors were blind to the outcome assessment.

### **The impact of expectant management on psychological wellbeing**

Shelley et al (2005) reported that depression and anxiety were higher for women who underwent expectant management (n=15). They found depression increased from 6.7% to 21.4% at eight-week follow up and anxiety also increased at eight-week follow up from 20% to 35.7%. Measurements of psychological wellbeing on the SF-36 was also increased in the expectant management group. Poor mental health increased from 37.1% at two-week follow up to 42.7% at eight-week follow up.

Women in the expectant management arm also experienced a longer duration of bleeding in comparison to women in the surgical and medical management group. Bleeding occurred for 50% (n=7) of women in the expectant group for 9 days or longer as opposed to the 36.4% (n=4) in the surgical group and 37.5% (n=3) in the medical group. Shelley et al (2005) reported that 57.1% (n=8) of women in the expectant group returned to daily activity levels at day 7 post-treatment in comparison to 81.8% of women in the surgical group.

Kong et al (2013) examined the clinical and psychological impact after surgical, medical and expectant management of first trimester miscarriage. This study found no significant differences between the three groups for psychological wellbeing depression scores, anxiety levels or fatigue measured using the GHQ-12, BDI, SSAI, CIES-R and fatigue scale at the time of treatment and four-week follow up.

Results from the GHQ-12 at time of treatment were 4.88, 4.50 and 4.63 for surgical, medical and expectant management respectively. At day 28 results of the GHQ-12 decreased to 2.04, 2.52 and 2.19 for surgical, medical and expectant management. The results of the BDI were 10.58 (surgical), 10.02 (expectant) 11.63 (medical). At day 28 the results of the BDI were 5.3 (surgical), 7.93 (expectant) and 8.75 (medical). Successful treatment was reported for 98.1% (n=52) of women who had surgical management compared to 79.3% (n=46) of women in the expectant group and 70% (n=70) of women

in the medical group. The CIES-R scale reported women in medical and surgical groups were impacted most by their treatment initially: 46.87 (surgical) and 44.28 (medical) while women in the expectant group scored 38.58. At day 28 the results for all groups improved: 34.55 (surgical), 33.62 (expectant) and 38.41 (medical).

Treatment for EPL is shown to have an effect on women's psychological wellbeing either at time of treatment or in the following weeks and months. Women who opt for expectant management experience more psychological morbidities, such as depression and anxiety. Increased duration and severity of physical symptoms experienced by women in the expectant management groups may lead to poorer psychological outcomes.

### **The provision of care**

Participants in three studies (Smith et al 2006, Wijesinghe et al 2012, Baird et al 2018) highlighted the need for improving the quality of care received from HCPs as this would help to positively impact the psychological outcomes of EPL management. Participants (n=72) in Smith et al (2006) found staff were 'cold' and 'insensitive' towards them and were perceived as not sympathetic to their situation. This was apparent in some of the participant responses reported in the study:

*'... you know, nobody came and showed us any care, apart from when they came to take the commode away, but nobody came in to see us'* (Participant, Smith et al 2006:202).

*'... and I hated it! The whole thing was cold! It was so insensitive, it was horrible! I will never forget how insensitive, and cold it felt'* (Participant, Smith et al 2006:202).

Baird et al (2018) reported women who were dissatisfied with their care experienced negative attitudes from staff, including how staff failed to provide them with sufficient information about their treatment and placed inadequate focus on their emotional wellbeing in follow-up care. Baird et al (2018) reported some participants were discharged without follow-up information and were provided no opportunity to discuss future fertility and pregnancies which caused distress:

*'I didn't like the fact that they just ... discharged me and I'm just like, "So what's next? What should I do? Should I lay down? Should I stay laying down or is there something I could do?" I didn't know anything'* (Participant 67, Baird et al 2018:116).

However, follow up care was highlighted as both beneficial and valuable to women (n=107) post-treatment in the qualitative studies (Smith et al 2006, Wijesinghe et al 2012, Baird et al 2018). These studies found follow-up care was vital for women to feel continually supported throughout their experience.

## The provision of information

Most of the studies (n=4) highlighted the need for more information to be provided to women when diagnosed with EPL (Shelley et al 2005, Smith et al 2006, Wijesinghe et al 2012, Baird et al 2018). Smith et al (2006) reported that a lack of information about the severity of pain or bleeding that may be experienced by women at home during expectant management had a negative impact on their psychological wellbeing:

*'I didn't actually feel I was prepared for what was coming, because, come the Saturday, when I started miscarrying even more, em, I had like contraction pains, which I would say were as bad as childbirth'* (Participant, Smith et al 2006:201).

Smith et al (2006) also found that heavy bleeding was a symptom many women were not advised about appropriately or prepared for prior to discharge from hospital. Women found this distressing especially in the expectant group who managed treatment at home:

*'... very heavy bleeding, which was manageable because of where I was ... but would have been absolutely impossible, if I'd, kind of, gone to work, or anything like that'* (Participant, Smith et al 2006:201).

The provision of information also influenced the women's choice of treatment. Kong et al (2013) reported a response rate of only 21.6 per cent of eligible participants due to women not consenting to randomisation as they preferred to have a choice in their management options. Having choice and feeling respected and supported in their choice enhanced women's emotional and psychological wellbeing. Smith et al (2006:200) reported women who opted for expectant management felt they were *'allowed to miscarry as it was more natural.'*

## Discussion

The aims of this systematic review were to identify the psychological impacts of the expectant management of EPL and to identify what current practices are in place to support the psychological wellbeing of women undergoing expectant management.

Expectant management is a treatment modality that should be offered to all women if suitable (NICE 2019) and women's psychological wellbeing should be taken into consideration when deciding the course of treatment (Nanda et al 2012). The included studies highlighted that those women undergoing expectant management experience anxiety, depression and poorer mental wellbeing (Shelley et al 2005, Kong et al 2013). Women encounter psychological morbidities due to poor provision of information about treatment, not making an informed choice about their treatment and poor provision of information regarding treatment duration, symptoms and

outcomes (Smith et al 2006, Wijesinghe et al 2012, Baird et al 2018).

Although the experiences of the study participants were unique, similarities were observed in the context of the impact of expectant management on psychological wellbeing and perceptions related to improvements to care. It is necessary to address these issues to enhance women's satisfaction with care and engagement with HCPs to negate the negative psychological impacts of EPL.

The care received by women experiencing EPL is paramount for positive psychological outcomes (Smith et al 2006, Wijesinghe et al 2012). Women should be screened for underlying risk factors that may predispose them to psychological morbidities. Risk factors include history of mental illness, no previous children, poor social support and previous pregnancy loss (Farren et al 2016, Williams et al 2020). HCPs should conduct a comprehensive clinical interview as part of the initial assessment to discuss past or present mental health issues. If necessary, clinicians should then use a screening tool, such as the Edinburgh Postnatal Depression Scale (Cox et al 1987), to determine if any anxiety or depressive symptoms are being experienced. The use of this screening tool may reduce the number of women missed and by screening, identifying and treating at-risk women, rates of depression and anxiety may be lowered and more appropriate care may be received (Farren et al 2016, 2020).

The provision of quality information to those undergoing expectant management improves women's perceptions of what to expect from treatment and can reduce anxiety or fears they may have about their treatment (Smith et al 2006, Wijesinghe et al 2012, Kong et al 2013, Baird et al 2018). Provision of information should involve a comprehensive discussion that should take place between the woman and the HCP when deciding treatment. All options should be discussed outlining the risks and benefits including the expected symptoms, severity and duration of symptoms and impact on day-to-day living. This is considered imperative in the context of pain management, vaginal bleeding duration and severity as these factors were highlighted as having a negative impact on women's psychological wellbeing. Discussions should take place in a private setting to allow enough time for the woman to ask questions. This facilitates the woman to consent to and make an informed choice regarding treatment (Health Service Executive (HSE) 2016, NICE 2019). HCPs delivering this information to women should remain unbiased about treatment options and not influence decisions made by women regarding treatment.

There is a lack of research on the psychological impact of expectant management. Much of the existing literature focuses on the impact of medical or surgical management for EPL but little is reported on

the effects of expectant management (Wijesinghe et al 2012, Kong et al 2013). The psychological impact of expectant management was not a primary outcome in any of the included studies. Most studies focused on the complete miscarriage rate as the primary outcome and as the only measurement used to deem the EPL management to be successful. Effective screening measures of psychological morbidity have not been established for women experiencing EPL in comparison to psychological wellbeing for women in the postpartum period (Farren et al 2016, 2020).

The apparent lack of significance of psychological outcomes in terms of successful treatment of women is linked to clinical practice. The priority treatment is based on the physical wellbeing of women and is measured solely on completion of miscarriage (Kong et al 2013). No emphasis is put on the emotional wellbeing of women during and after treatment of EPL (Barat et al 2020, Williams et al 2020). As reflected in the included studies the lack of follow-up care from health care services also highlights the perceived insignificance of women's psychological wellbeing (Smith et al 2006, Baird et al 2018).

### Implications for future research and practice

Research on EPL has been largely quantitative with little qualitative data capturing the experiences of women who have undergone expectant management for EPL and the psychological impact it has had. These data are crucial to inform clinical practice and may well inform changes in the way HCPs support and care for women. This information may also ensure adequate services are available to meet the needs of this population and help to improve both physical and psychological outcomes.

Despite national bereavement standards (HSE 2016, NICE 2019) outlining that careful consideration should be given to the psychological impact of EPL, this review identified key areas of clinical practice that require improvement. Follow-up care may be beneficial and valued (Smith et al 2006) for women to feel supported throughout their experience (Baird et

al 2018). Women should be given sufficient time and information to make an informed choice about their treatment. Women should be assessed for risk factors that predispose them to psychological morbidities during and after treatment for EPL and HCPs should be attentive to the effect of EPL management on women's psychological wellbeing. Future research is required to assess the benefits of follow-up appointments to reduce the incidence of anxiety and depression following treatment for EPL.

### Conclusion

This systematic review examined the psychological impact of expectant management of EPL and found there is a paucity of research around women's psychological wellbeing after expectant management for EPL. Anxiety, depression and poorer mental wellbeing may increase in frequency following EPL. Interventions that may reduce these morbidities include the provision of comprehensive information about treatment options including duration, symptoms and side effects and offering follow up services and supports after miscarriage treatment. A better standard of care may reduce negative psychological outcomes and more emphasis needs to be placed on the importance of monitoring psychological wellbeing.

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# Factors that enable midwives to stay in the profession: why do midwives stay in midwifery?

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## ABSTRACT

**Background:** There is a global awareness regarding the challenges facing midwives to remain in the profession.

**Aim:** The aim of this study was to understand why Western Australian (WA) midwives chose to remain in the profession.

**Methods:** This study was undertaken using grounded theory (GT) methodology. Semi-structured interviews were conducted with 14 midwives working in the clinical area. Participants were interviewed about why and how they remain in the midwifery profession. Data were collected from December 2017 to November 2018 and were generated through open-ended semi-structured interviews, together with memos and field notes. The interviews were digitally recorded, transcribed verbatim and analysed and interpreted with the guidance of Glaser and Strauss' (1967) coding stages.

Ethical approval for this study was granted by the Human Research Ethics Committee at Edith Cowan University (record 18747) on 23 November 2017.

**Findings:** The core category derived from the data was labelled: 'I love being a midwife; it's who I am'. The contextual factors that underpin the core category are labelled: 'My rosters provide me with good work-life balance'; 'You never know what's going to happen [but] I can deal with the bad days because the good days outweigh them'; 'I like my practice environment'; 'It's a juggling act but the women's appreciation is worth it' and 'By looking after myself I'm a good midwife'.

Bronfenbrenner's (1997) theory was applied to the findings in the process of developing them into a middle-range theory of the phenomenon of interest.

**Conclusion:** The findings of this study provide new insights into workplace and personal factors that contribute to enabling midwives to remain in their profession. Although this study represents midwives in only one geographical context it will be of value to professional and health care leaders.

**Keywords:** workforce, attrition, retention, midwives, qualitative, grounded theory, Evidence Based Midwifery

## Introduction

There is a growing body of literature focusing on why midwives leave the profession. The challenges facing midwives in the workplace that lead to dissatisfaction and attrition are multifactorial. Harvie et al (2019) report the growing number of midwives who feel dissatisfied in their workplace due to the organisation they work for and the midwifery role itself. Similarly, Geraghty et al (2018) describe the work-related stressors midwives are exposed to, leading to burnout.

Given the present global and national shortage of midwives (Australian Government 2019) it is imperative to determine what policy makers and health care providers can do, and how, to increase midwives' job satisfaction and intention to stay in the profession. In order to provide a sustainable midwifery workforce, the reasons underlying midwives' choices to remain in the midwifery sector must be understood to ensure sustainable means exist for midwives to remain in the profession.

A recent review undertaken by Bloxsome et al (2019) highlights the paucity of literature focusing on why midwives stay in the profession. It cannot be assumed that the reason midwives stay mirrors why they leave. Understanding this phenomenon will assist in the development of workforce policy and practices, and in turn will help retain midwives in the profession.

This paper reports one aspect of a study to understand why and how Western Australian (WA) midwives remain in the profession. The personal and workplace factors that enable midwives to stay in midwifery are described and explained.

### Aim

The aim of this study was to understand why midwives across Western Australia choose to remain in the profession; it was conducted for the purpose of understanding the factors leading to midwives remaining in their jobs in midwifery practice.

### Methods

#### Study design

Grounded theory (GT) methodology was used to undertake this study. Grounded theory has become widely employed by midwifery researchers: Roberts (2008) defines GT as '*seeking to identify and explain what is happening in a social setting*' (Roberts 2008:679). Grounded theory uses a process of constant comparative analysis, theoretical sampling, and theoretical coding (Glaser & Strauss 1967). An inductive process is used to generate substantive codes, later developing a theory from the discovery of emerging patterns of data (Schneider et al 2013).

Grounded theory was chosen as the methodology for this research as it facilitates the quantification and concentration of social data to derive a theory about a phenomenon of interest.

#### Study setting

The setting for this study was public and private metropolitan, rural and community midwifery practice sites within WA.

#### Participants

Participants were recruited through advertisement via a social media bulletin. The social media bulletin was posted on the Facebook page of the authors' employing organisation and was available for public view and to be shared in the midwifery community. Further participants were recruited through snowball technique and the final participants were recruited using a process known as theoretical sampling. Theoretical sampling was used to 'thicken' the data categories and generate a substantive theory of the factors that contribute to why WA midwives stay in the profession.

Prospective participants made contact with the primary author. A total of 23 midwives were provided with a study information sheet at their request: 16 consented to participate and 14 were interviewed on one occasion each. No participants withdrew from the study once they had consented to take part. The participants are described in Table 1.

**Table 1. Demographic profile of the participants**

Demographic variable	Category	Frequency
Years as a midwife	1–5	3
	10–20	8
	20–40+	3
Education	Masters of Midwifery Practice	2
	Post-graduate Diploma of Midwifery	5
	Bachelor degree	3
	Hospital-based midwifery program	4
Health service type – rural	Public hospital	4
	Private hospital	1
	Midwifery group practice	3
Health service type – metropolitan	Public hospital	3
	Private hospital	2
	Midwifery group practice	1
Gender	Female	14
	Male	0

#### Data collection

Semi-structured open-ended interviews were used; interviews varied from 60 to 120 minutes in duration (average length 60 minutes). Interviews were undertaken from December 2017–November 2018, with a total of 18.5 hours of interview data obtained. Interviews were conducted face to face, via Skype or over the phone depending on the participant's geographical location and/or choice.

The open-ended guiding questions asked to participants were:

- Can you please tell me how long you have been a midwife?
- Can you please tell me what service you work in?
- Can you please tell me what training you undertook to become a midwife?
- Can you please now tell me why you stay in midwifery?

All interviews were audio-recorded and transcribed verbatim by the primary author. All identifying information was removed to ensure participant confidentiality; all participants were given a code, for example, MW1 (which denotes the first participant midwife to be interviewed).

## Data analysis

Analysis of the data was carried out adhering to the tenets of GT. This involved three levels of coding: open coding, selective coding and theoretical coding (Glaser & Strauss 1967).

Data were transcribed within one week of the interview by the primary author, manually coded using Microsoft Word and categorised using a constant comparative process. Line-by-line coding was applied: each incident was coded with a key word or phrase, these were then compared with one another as an iterative process involving all authors. Alike codes were then grouped together and given tentative names until no new information was heard (after six interviews); at this point theoretical saturation was reached (Strauss & Corbin 1990).

To ensure heterogeneity and to ‘thicken’ the emergent theory, theoretical sampling was employed; this was achieved after 14 interviews after which no new information was forthcoming.

## Data management

All raw data were stored in password-protected computer files, along with transcribed interview data. Memos were stored in a locked filing cabinet. The research and data produced was managed in accordance with Human Research Ethics Committee guidelines and in accordance with National Health and Medical Research Council (NHMRC) requirements (NHMRC 2020).

## Trustworthiness

A number of measures were employed to ensure the trustworthiness of the findings. This study was overseen by an experienced grounded theorist who was involved in every step of the research to ensure rigour of the process. A bracketing exercise was undertaken, prior to the commencement of the study, to ensure the primary author remained open-minded (Husserl & Boyce 1931). Memos and field notes were recorded during and after each interview in keeping with GT methodology (Glaser & Strauss 1967). Participants were involved in the clarification of findings to ensure accuracy (Creswell et al 2007), and a formal member checking group was undertaken involving the research team and three midwives in WA who had made contact and expressed interest in

participating in the study. The group confirmed the interpretation of the findings and then agreed the theoretical stance.

## Ethical considerations

Ethical approval for this study was granted by the Human Research Ethics Committee at Edith Cowan University (record no. 18747) on 23 November 2017.

## Findings

Fourteen midwives who met the inclusion criteria took part in this study. The theory developed from their data, that describe why midwives stay in midwifery, was labelled ‘I love being a midwife; it’s who I am’ and comprises three major categories. Contextual factors that explain how midwives stay in midwifery were also discovered and are reported below. A full description of participants and the report of the theory is available elsewhere (Bloxsome et al 2020).

Five factors were identified that enable midwives to stay in the profession. These were labelled:

- My rosters provide me with good work–life balance
- You never know what’s going to happen [but] I can deal with the bad days because the good days outweigh them
- I like my practice environment
- It’s a juggling act but the women’s appreciation is worth it
- By looking after myself I’m a good midwife’.

One major category is three-dimensional, see Table 2.

### My rosters provide me with good work–life balance

Participants unanimously agreed that one of the factors that enabled them to remain in the profession was their roster, for example, MW4 reported:

*‘I stay because I can work Monday to Friday 9–5.’*

Similarly, MW2 stated:

*‘I stay [in midwifery] because we have permanent night staff so I don’t have to do night shift.’*

MW9 said that, because of the rosters, she was able to achieve a good work–life balance:

**Table 2. Contextual factors that enable midwives to stay in midwifery**

My rosters provide me with good work-life balance	You never know what’s going to happen [but] I can deal with the bad days because the good days outweigh them	I like my practice environment			It’s a juggling act but the women’s appreciation is worth it	By looking after myself I’m a good midwife
		<b>Dimension 1</b> Feeling part of a community is important to me – I have a sense of belonging	<b>Dimension 2</b> I can work within a culture I feel comfortable in with like-minded midwives	<b>Dimension 3</b> Being an autonomous midwife is important to me		

*'I have good work/life balance I do my shift, and at the moment it works, I can pick and choose what on calls I want and what suits my family. It's really good I have a great work/life balance where I work at the moment.'*

MW10 reiterates:

*'I definitely feel I have a good work life balance where I work. They work around me and my children and the family and the community. It has to work for the family not just the individual.'*

Managers of the participant midwives were also reported to support this work–life balance: they were very accommodating and provided flexible work arrangements. For example, MW3 stated:

*'I'm doing my PhD ... this is why my requests are like this ... she [the manager] was really, really good and said ok you need 12hr shifts on these days so we'll give them to you and she was really accommodating.'*

MW4 similarly reported:

*'[My] manager is particularly good with giving me the extra day depending on what shifts my husband is working. Sometimes I'll come in for one full day, sometimes it'll be 2 x 4hr shifts.'*

Another participant (MW11) reported working part time as helping her remain in the profession:

*'One of the big reasons why I keep going is because I can work part time.'*

MW13 described what balance meant for her: *'It's a balancing act for me ... I work part-time.'*

### **You never know what's going to happen [but] I can deal with the bad days because the good days outweigh them**

No two days in midwifery are the same, and participants reported enjoying this about the job and the variety and challenge this created.

MW3 said she felt *'one of the draws of labour ward is you never know what's going to happen'*. MW8 also liked the unpredictability of midwifery:

*'I like the fact that with midwifery, your days are very unpredictable and in a funny way it makes your day interesting and keeps you alert.'*

Similarly, MW12 said that because she worked in a rural hospital, she had a lot of variety:

*'Rural is up and down and the quieter periods balance out the crazy. I like the variety I have here. No two births are ever the same.'*

MW3 said she really liked the *'complexity of women'*. Variety in the backgrounds and identities of the women they cared for was also stimulating. MW7, as an example, spoke about how she enjoyed working with contrasting cultures:

*'Midwifery can be a wonderful job, it's very challenging, particularly when you have that contrast between indigenous and non-indigenous women.'*

Unanimously, participants also spoke about the 'bad' days, telling stories about difficult events, such as perinatal loss and not being able to locate the fetal heart, but these days were in a minority. MW14 said: *'It's 99% happy, we have well women'*. For MW2 this was also the case:

*'Most of the time it's great, it's only that small amount of the time where it's not great'*.

Likewise, MW9 said *'Things do go wrong, but the joyful times are more than the sad times'*.

### **I like my practice environment**

Midwife participants came from private and public maternity hospitals, community midwifery teams, midwifery group practices and rural settings. However, despite their different contexts, all participants thoroughly enjoyed their practice environment.

One participant reported that she felt like part of the furniture: *'I've been at my hospital for 13 years, I know my surroundings, I'm comfortable, yes I feel part of the furniture'* (MW14). MW11 said her practice environment was like a second home to her, referring to her workplace as:

*'The mothership': 'It's like my second home and the people that I work with, everybody that works in the labour ward and they've left and come back, they call it the 'mothership' and that is what it's like, it's like the mothership.'*

Distance to travel to their place of work was another reported factor that enabled midwives to remain in the profession. Participants enjoyed being able to walk or take only a short drive to work.

One midwife, for example, said: *'The hospital is only 15 minutes away from my house which suits my family'* (MW2). Another said:

*'I stay here because I know that from my bed to labour ward it's 20 minutes. So logistically it's a great way to work where I currently live'* (MW7).

Another offered: *'I really enjoy where I work, I can walk to my work'* (MW10).

Participants reported enjoying their job, their workplace and the people they worked with, whether it be the model they worked in — *'I stay in midwifery because I work in a Midwifery Group Practice'* (MW5) — or because where they worked was just a really nice place — *'It's a really lovely place to work'* (MW2).

### Dimension 1: Feeling part of a community is important to me – I have a sense of belonging

Feeling part of their wider community and having a sense of belonging was an important factor that was specific to participants working in a rural setting. These participants reported wanting to be part of a community because, for them, that's what being a midwife meant:

*'When I say it's authentic, for me that's what I wanted, to be part of a community, to make a difference. It's that sense of community, that's what midwifery is, and that's the pleasure and the joy seeing those babies that have birthed here and you see them out and about, that's what I thought midwifery was meant to be, it's not only working with women, it's about working with women as midwives as a team and it's about being in the community'* (MW5).

Safety for the women served by the rurally located midwives was another factor that these participants discussed. They felt that midwives were needed in rural towns so that women didn't need to travel hundreds of kilometres for midwifery care. MW9 reported feeling a duty to women:

*'If you don't go to work, you don't do overtime, or on call, then the lady has to move out of her community and birth in [a regional centre many kilometres away]. I do it for a bit of a duty I guess.'*

MW9 went on to say:

*'It's my job, it's what I'm good at, it's what I like doing and you need midwives in the town ... for better care, for women-centred care to stop that travelling 100kms for a birth. It's for safety.'*

MW13 echoed MW9's sentiments: *'I stay in it because of safety; it's all about safety of the women in our community.'*

### Dimension 2: I can work within a culture I feel comfortable in with like-minded midwives

A further emerging factor that enabled participants to stay in the profession was a workplace where they felt comfortable with like-minded colleagues. As previously mentioned, in the sub-category labelled 'I like my practice environment', participants' geographical location varied greatly, as did the model they were working in. However, regardless of their chosen model, participants described feeling at ease and able to be the kind of midwife they had always aspired to be in their work environment.

A participant who worked in a continuity of care model reported: *'I became a midwife to provide continuity of care. That's why I stay, because that's intrinsic to who I am as a midwife'* (MW1). Another midwife participant who worked in a private maternity facility stated:

*'I can be the kind of midwife I want to be in the private system, I'm more than happy in the private model I see myself there for the rest of my life, I like being with the women without the stress added to it. We all work in different places that suit us and that suits me for where I am in my life and where my midwifery philosophy lies'* (MW2).

Being able to stay true to oneself and one's philosophy was an important factor that emerged from the findings. For participants to be the midwife they wanted to be, they had to work in a place that matched their philosophy, with colleagues that felt the same and practised the same way. This is illustrated by MW5:

*'I stay in midwifery because I work in a Midwifery Group Practice, we are all a little bit different, but all have the same philosophy. I can actually practice as myself; I don't actually have to conform to the system in which I work in. I actually can be genuinely myself and practice midwifery as I want to practice midwifery, that matches my philosophy, that I feel is actually woman centred; it just matches me, I feel at ease, I feel comfortable, I don't feel stressed, I don't cry after shifts, I don't get to bed worrying what the 'f\*\*k' have I done to woman today, what have I done to that woman'* (MW5).

Another participant reported that she moved to a very rural location to enable her to be the midwife she wanted to be:

*'My enjoyment level improved greatly when I moved to the country because I could work in my full scope of practice'* (MW9).

The same is echoed by a second midwife:

*'I went to [remote town] because I could actually work as a midwife, [and] that was far more congruent with the way I was taught to work'* (MW7).

### Dimension 3: Being an autonomous midwife is important to me

Autonomous practice refers to the ability to provide up-to-date high-quality, evidence-based care to women throughout their pregnancy and their transition to parenthood (International Confederation of Midwives (ICM) 2017).

The value of 'autonomy' was held in high regard by participants and frequented the data set. Participants reported being competent and capable of making clinical decisions and knowing when to transfer or call a doctor. For example:

*'I am competent, [and] capable of making clinical decisions. We actually know what we are doing and we know when woman need to be transferred, we know when woman need to be transferred antenatally, we know when it's outside our scope and when we need that obstetric input'* (MW5).

MW9 also spoke about how fulfilling it was to be able to practise autonomously: *'I do like being autonomous we are very independent'*, as did MW4: *'It's a nice level of autonomy and being able to make those decisions and plan that care.'*

Other participants who had practised both in the city and beyond felt they could only be autonomous if they practised as midwives outside the metropolitan area. MW12 said: *'I like being more autonomous, that is the one thing I like about the country'* and the same view was voiced by MW7: *'It gave me more autonomy working rurally'*.

### **It's a juggling act but the women's appreciation is worth it**

Participants reported that being a midwife in the 'system' was a juggling act. MW1, like others, described having *'so many balls in the air'*.

Participants identified these as, for instance, *'the problems in the system'*; *'constantly needing to negotiate and bend rules'*; *'learning what battles to pick'* and *'learning to cater to the consultant's ego.'*

MW3 stated that she felt *'it was the 'culture vs the policies vs everyone's philosophy'*, and went on to say:

*'It's finding that middle ground to keep them [consultants] happy, the woman gets what she wants, and I can provide the midwifery care I want to.'*

Similarly, MW8 reported:

*'It's hard to run that smooth balance in the whole room and not be upsetting the apple cart. So you're not showing up the doctor or dismissing him in front of the woman, not making the woman fearful of what might happen as well.'*

Although participants reported finding it difficult to maintain that balance, many reported that they keep going by thinking back to all the thoughtful cards women had given them and reminding themselves why they are midwives. For example:

*'When I've had the shittiest day ... I think back to those cards we get, the women that go to the trouble of writing you a personal thank you card, I just think it's so amazing. Women that really want you to support them'* (MW14).

### **By looking after myself I'm a good midwife**

Participants recognised the need to look after themselves to enable sustainable long-term midwifery practice. As MW1 said, *'[I] allow myself on a couple days to put my own self and my own needs first for my own self-care; I am getting much better at doing that'*. MW7 supported this notion:

*'You really have to get that balance right. Yes, you do and you have to live with the decision you make and not feel guilty. In order for me to be sustainable in my profession I needed to take a lot of self-care'* (MW7).

Similarly, MW10 reports that *'we [midwives] need to learn to let others nurture us as we are such self-nurturers. I don't think we are very good at it sometimes'*. She goes on to discuss the importance of friends and family and how their support is crucial to remaining in the profession:

*'I think we need to be more supportive and supporting people; having your friends around for lunch or morning tea is so important'* (MW10).

Family, friends, neighbours, pets, colleagues, sleep, prayer, exercise, gardening, reading, crying, music and meditation were all reported as tools that participants used to look after themselves.

Finally, MW13 exemplified the responses of all the participants in relation to self-care in the following interview excerpt. She spoke of how she looks after herself and the importance of keeping a routine for this:

*'Midwifery asks more out of your soul than any other job. I only work part time, so I can have my days off to recover. I do an exercise routine almost daily. We (my husband and I) go out together, we walk and we have just a couple of friends that I talk to and de-brief with, I also de-brief with the only other midwife. I pray and it takes a long time sometimes to get over the really bad experiences. It takes a lot of prayer and a lot of soul searching and a lot of insomnia. But I'm very strict, I keep getting up in the morning, I keep getting dressed, I keep doing my exercise, I keep praying and I can get through the really bad stuff'* (MW13).

## **Discussion**

The findings reported above represent how WA midwives are able to remain in the profession and highlight myriad contributing personal and environmental factors. The findings loosely resonate with earlier work (Papoutsis et al 2014) in which the determinants enabling midwives to remain in the profession were related to Herzberg's Motivator-Hygiene Theory (Herzberg 1968). However, the wider community component and its influence on the individual, which we would argue is extremely important to consider, is not referenced in the work by Papoutsis and team.

Skinner et al (2014) do, however, recognise the value to some of embedding the practice of one's profession in a broader community service context. Skinner and colleagues investigated work-life interaction in one industry in the health care sector and determined that individuals largely operate on life beyond work; they further assert that focusing solely on the individual, rather than the individual within the larger community, in terms of what underpins job satisfaction is incorrect.

Given this, Bronfenbrenner's Ecological Systems Theory (Bronfenbrenner 1977), which focuses on

the interrelatedness of the microsystem, mesosystem, exosystem and macrosystem and their influence on humans (Bronfenbrenner 1999), provides a more helpful framework against which to explain our findings.

Bronfenbrenner's theory has been used as a theoretical framework in a number of published workforce studies; for example, Eriksson et al (2018) investigated the different uses of Bronfenbrenner's theory in the area of mental health research. They concluded that using the theory to demonstrate the interaction between people and the ecological system is a valuable tool for guiding public mental health policy and practice.

Bronfenbrenner's theory was also employed to develop a work-life fit model for workers in construction organisations in Melbourne, Australia (Turner 2013). In addition, Greenfield (2012) used it to conceptualise a range of aging-in-place (keeping people in their home) initiatives to guide research, practice, and policy.

In relation to the findings reported above, the microsystem relates to the midwife in her or his immediate environment — the workplace, including hospitals, birthing centres, community centres or women's homes.

The mesosystem comprises the interrelations and connections of the microsystem, which is the workplace setting and the people within this — women and colleagues. The focus at this level is on the relationships the individual has with these people in this setting.

The exosystem includes social structures, settings, or events; these can be formal or informal and involve the link between the social setting and the immediate context. The individual does not actively participate in these things but they do have an effect on them. In this study the participants referred to collegial support, social networks and, more formally, the model in which they work.

The macrosystem represents the 'blueprints' (Bronfenbrenner 1977:515) within which one works, for example, the overarching practice environment, health care policy that governs midwifery and maternity care and the professional rules and regulations to which midwives' must adhere.

To date, the principles of Bronfenbrenner's social-ecological model have not been applied in the context of midwifery. Due to the ageing midwifery workforce and the gradual annual decline in the number of midwives employed in the profession, it is imperative to enhance employee motivation within the workplace and improve job satisfaction and wellbeing.

The findings in this study have provided valuable insights into why and how WA midwives stay in midwifery practice. Participant midwives interviewed stay in midwifery because they love being a midwife and feel they make a difference to women in their care. The contextual factors that enabled participants to remain in the profession were factors relating to self-care and work-life balance.

### Limitations

The data represent one geographical location and therefore are not generalisable. Additionally, the views of male midwives, new graduate midwives, or Aboriginal or Torres Strait Islander midwives are not represented. These limitations notwithstanding, the findings provide new insights into what drives retention in this professional group.

### Conclusions

The findings of this study provide new insights into the workplace and personal factors that enable midwives to remain in their profession. The application of Bronfenbrenner's theory has been used to demonstrate the empirical work on midwives and their work environment and has assisted in the development of a middle-range theory of the phenomenon of interest.

The factors that enable midwives to stay in the profession are individualised and multifactorial. Applying a whole systems approach to the issue of workforce retention would allow organisations and institutions to meet the diverse workplace needs of midwives. Further research is required to develop effective strategies to implement these findings in policy and practice.

The findings of this study provide new insights into workplace and personal factors that contribute to enabling midwives to remain in their profession. Although this study represents midwives in only one geographical context it will be of value to professional and health care leaders.

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# What are the most effective behavioural interventions to improve clinicians' compliance with infection prevention measures during ward-based or outpatient invasive procedures? An overview of systematic reviews protocol

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## ABSTRACT

**Background:** This overview of systematic reviews (which may also be referred to as meta or umbrella review) protocol forms preparation for a research project to develop and implement a behavioural intervention to improve clinicians' aseptic technique during perineal suturing in birthing rooms after vaginal birth. As there is minimal evidence in this field, the review question was broadened to behavioural interventions for clinician compliance with infection prevention measures. However, there are many systematic reviews of this type, so an overview of reviews is planned. The aim is to identify effective behavioural interventions for clinician compliance with infection prevention measures. The findings will provide support for a behavioural intervention for improving compliance with aseptic technique during perineal suturing at ward level.

**Research question:** What are the most effective behavioural interventions to improve clinicians' compliance with infection prevention measures during ward-based or outpatient invasive procedures?

**Methodology:** Cochrane Database of Systematic Reviews (CDSR) and Joanna Briggs Institute (JBI) methodology will be used with PRISMA P systematic review guidance. MEDLINE, CINAHL, Embase, PDQ, Health Systems Evidence, PubMed CDSR and Google Scholar will be searched from January 2010 to March 2021 for English-language systematic reviews (SRs) or meta-analyses of behavioural interventions of clinicians' compliance with behavioural interventions. Each SR must include at least one study from a high-income country. Systematic reviews relating to theatre or community settings will not be included.

Abstracts of identified SRs will be screened using a tested checklist for inclusion in the overview. Data will be extracted from the selected SRs by two reviewers using a tool designed and tested for this overview. SRs will be tested for quality using AMSTAR 2. A 20 per cent subset of data will be checked for 80 per cent agreement in data extraction which, if not met, will trigger a further 20 per cent subset with 80 per cent agreement. If this is not met the data extraction tool will be reviewed by three team members and data extraction will begin again. Analysis will be a narrative summarisation of behavioural intervention outcomes, recommendations and conclusions in the included SRs. Findings will be the narrative summary from the analysis, details of included SRs, quality reporting, details of overlap of studies within the selected SRs and tables of beneficence and effectiveness for qualitative and quantitative SRs respectively.

**Limitations:** The overview may include necessary amendments to this protocol. Due to unavoidable time and funding limits only English-language systematic reviews will be included. New primary studies and systematic reviews being updated will not be included. A comparison of effective behavioural techniques will be reported but there will not be any

further statistical data analysis. Systematic reviews using the same primary studies will be included. Authors of systematic reviews will only be contacted if the full article cannot be accessed. Only published systematic reviews will be reviewed, not those 'in press' or being currently updated.

**Impact:** This overview will provide evidence for effective (and ineffective) behavioural interventions for clinician compliance with infection prevention measures.

**Keywords:** overview of reviews, systematic review, infection prevention intervention, Evidence Based Midwifery

## Introduction

Overviews of reviews (referred to as 'overview' from now on) are defined by Cochrane as an explicit and systematic method to search for multiple systematic reviews on related research questions in the same topic (Pollock et al 2020). This is a protocol for an overview being conducted to support the development of a behavioural intervention to improve midwives' and obstetricians' aseptic technique during perineal suturing in birthing rooms after vaginal birth with the aim of reducing postnatal infection.

Infection is a significant worldwide problem for health services as it increases the length of patient stay and may contribute to significant patient morbidity (Huis et al 2012, Sands et al 2020). Infection can be treated with antibiotics but avoidable treatment with antibiotics is contributing to the global problem of antimicrobial resistance (Childs et al 2020). Reducing the burden of infection is part of the UK government's plan to manage antimicrobial resistance (Department of Health & Social Care 2019).

Health care associated infection (HAI) is a significant risk to patients using health care services (National Institute for Health and Care Excellence (NICE) 2011, Umscheid et al 2011, Huis et al 2012). It develops from health treatment and or being admitted to a health care facility (NICE 2011). Infection prevention measures (IPM) exist to reduce HAI. They include hand hygiene, creation of sterile fields and use of sterile instruments during invasive procedures. These measures reduce the number of pathogenic micro-organisms that could cause infection by avoiding their introduction into the patient by the clinician or equipment being used and thus help to avoid infection (Gillespie & Fenwick 2009, Rowley et al 2010).

There is overwhelming evidence for the positive impact of IPM to reduce infection at the point of clinical care in ward-based or outpatient procedures, such as device insertion and wound management, (Tharpe 2008, Royal College of Nursing (RCN) 2017, Sands et al 2020). However, clinicians need to be compliant with IPM for them to be effective (Sonoiki et al 2020, Anderson et al 2021). There is evidence that despite being a simple infection prevention measure clinician hand hygiene is recorded at less than 50 per cent (Squires et al 2013) and care bundles

to reduce infection associated with catheter insertion have not had the desired impact (Atkins et al 2020).

Infection rates associated with perineal suturing are reported as between 0.1 per cent and 23.6 per cent (Jones et al 2019) for all births and up to 19 per cent for instrumental deliveries if intravenous antibiotics are not administered (Knight et al 2019). Severe infection or sepsis can lead to significant morbidity and mortality for women (Knight et al 2017, Childs et al 2020) including wound breakdown and readmission to hospital.

Effective behavioural interventions to impact on clinician compliance are key to making a positive change to HAI. Behavioural interventions are psychology-based systematic approaches to changing the behaviour of people (Eccles et al 2005). They can include altering the environment to change access to equipment, role modelling, action planning, encouraging personal monitoring of behaviour, feedback and care bundles (Aboelela et al 2007, Blot et al 2014, Atkins et al 2020). Studies of behavioural interventions to improve compliance have been conducted to improve compliance with IPM (Gould et al 2008, Andreessen et al 2012).

There is minimal evidence of behavioural interventions for improving compliance with aseptic technique in the narrow field of perineal suturing so the systematic review question was broadened to include reviews related to other outpatient or ward-level procedures such as suturing, wound management, insertion of urinary catheters, central lines and other invasive devices. However, there are many systematic reviews in this area so an overview (Pollock et al 2020) or umbrella review (Aromataris et al 2015) is planned. This will provide support for effective behavioural intervention techniques which can then be used in an implementation project for improving compliance with aseptic technique during perineal suturing at ward level. As the overview question has been broadened from suturing to wound management or insertion of invasive devices so the focus has been broadened from aseptic technique to IPM.

There have been many studies of behavioural interventions and many systematic reviews of these studies. This overview plans to summarise the findings of previous relevant systematic reviews

to identify effective behavioural interventions. According to the Cochrane Effective Practice and Organisation of Care (EPOC) list (Cochrane 2015), behavioural interventions are centred on care delivery arrangements as they relate to how health care is delivered. It comes under the quality and safety systems category, relating to essential standards and decreasing poor outcomes in healthcare. It is not involved with changing who delivers the care, or the location of the care.

This overview of reviews will follow CDSR (Pollock et al 2020) and JBI methodology (Aromataris et al 2015) and it follows PRISMA-P guidance for systematic review protocols (Moher et al 2015). It meets the criteria of overview because it aims to identify the effectiveness of diverse behavioural interventions that may be used with clinicians; it will include only systematic reviews and meta-analyses and will follow a clearly defined method for bias assessment; it will collect set data from systematic reviews and will report the details of these in final overview write up (Pollock et al 2020). The overarching tenet of this overview is that behavioural interventions for clinicians can improve compliance with IPM, such as hand hygiene and other aseptic techniques.

Systematic reviews will need to include studies from high- and upper high-income countries (as defined by the Organisation for Economic Cooperation and Development) as low- to middle-income countries are less likely to have a comparable health service. However, to exclude all systematic reviews with low-income countries may discard valuable data from high-income countries, therefore each systematic review will need to include at least one study from a high- or upper high-income country. This overview will focus on ward-based or outpatient IPM as the theatre environment has a raised level of invasiveness. IPM used in theatre are also more stringent including scrub technique, sterile packs, dedicated theatre personnel and ventilation systems.

It is anticipated that the results of the overview will be through comparison of effectiveness rather than being presented as the combined outcome of the included systematic reviews. It is not the intention of this overview to demonstrate a combined effect size of behavioural interventions or indirect comparison but to show how behavioural interventions can be effectively used to improve compliance and or reduce infection rates.

## Methods

The PICO-D (population, intervention, comparator, outcome design) (Eriksen & Frandsen 2018) was used to develop the overview question, provide the parameters of the overview and contributed to the development of the search terms.

This overview may have quantitative or qualitative research studies included in the systematic reviews. This is to ensure that the evidence identified is representative of all reviews that meet the inclusion criteria. Therefore, the PICO-D includes both quantitative and qualitative elements.

**Table 1. PICO-D for developing the overview question**

Population	Health care clinicians conducting invasive procedures, e.g. suturing, wound management, device insertion and other related
Setting	In hospital – ward or outpatient. Non-theatre based. High- or upper high-income countries
Intervention/phenomena of interest	Behavioural techniques to improve clinicians' compliance with infection prevention measures
Comparison/context	Behavioural intervention vs no intervention if applicable
Outcome	Compliance with infection prevention measures improved or reduced infection rates
Design	Systematic reviews or meta-analyses

## Inclusion and exclusion criteria

Systematic reviews more than 10 years old may include interventions that have been implemented as standard, such as provision of alcohol-based hand rub (Sands et al 2020) and therefore will not be included. The criteria for inclusion and exclusion of systematic reviews are presented in Table 2.

**Table 2. inclusion and exclusion criteria for studies**

<b>Inclusion</b>
2010 to present
Single or multiple behavioural interventions for improving compliance with infection prevention measures
Systematic review of research studies or meta-analysis or overview
Health care professionals
English language
Human
Includes at least one study from high- and upper high-income countries
<b>Exclusion</b>
Procedures in theatre
Protocols for infection prevention measures (e.g. actual handwashing technique)
Educational programmes
Publications based on opinion or theory
Protocols
Reports of systematic reviews
Only low- and middle-income countries included

## Team

The overview team consists of:

- Primary (protocol, abstract screen, abstract review, data extraction, write up): EJ
- Second abstract reviewer: RB
- Second data extractor: KP
- Tertiary reviewer: SaW
- Academic support: SuW
- Librarian (search): AL

Full details of overview team members are included in the Acknowledgments section.

The primary reviewer (EJ) will lead on the overview and is, therefore, included for every stage of the process.

The overview protocol will be listed on PROSPERO. It is anticipated that data collection will commence within one year of the publication of this protocol.

## Search strategy

MEDLINE, CINAHL and Embase databases and PDQ-Evidence, Health Systems Evidence, PubMed, CDSR, and Google Scholar will be searched from 2010 to present. The decision for databases to be included is based on what is accessible and relevant. The Maternity and Infant Care database will be searched for grey literature. Other grey literature databases will be searched if they can be identified. The date of searching will be included in the overview write up and, due to time constraints, databases will be searched as they are and enquiries for updated systematic reviews in progress will not be made.

The search terms which may be used are included in Table 3.

**Table 3. Search terms and MeSH terms**

Search terms	MeSH terms
Overview of reviews	Systematic review
Systematic review	Meta-analysis
Umbrella review	Infection control
Infection control	Cross-infection
Infection prevention	Antisepsis
ANTT (aseptic non-touch technique)	Asepsis
Aseptic technique	Sepsis
Behaviour intervention	Hand hygiene
Behavioural technique	Catheter-related infections
Behaviour change	Behaviour therapy
Behaviour modification	Behaviour change
Behavioural approach	Applied behaviour analysis
Attitude	Psychosocial intervention
Bundle	Patient care bundles
Quality improvement	Guideline adherence
Compliance	Quality improvement
Adherence	
Improvement	
Effect	

Searches will be presented on an Excel spreadsheet. The number of initial hits and selected abstracts will be recorded for the overview write up. Duplicates will then be removed and initial screening will be conducted to create an abstract list for abstract screening.

## Screening

Systematic reviews, for the purpose of this overview, are defined as publications that systematically compare research evidence using a pre-specified methodological process and team of reviewers to provide an evidence summary (Lasserson et al 2020). They must also be declared as systematic reviews within the title or the body of the text.

Once the abstract list is complete the primary and second abstract reviewer will then separately review the abstracts of all identified systematic reviews to assess whether they meet the inclusion criteria using a pilot tested abstract screening checklist (see Supplementary information). This has been tested with five relevant systematic reviews and has had eight iterations. It was found to eliminate non-eligible articles at the correct points so that non-eligible studies were not listed for inclusion.

If it is not possible to assess whether the systematic review meets stated criteria from the abstract, then the full review will be accessed. If it is still unclear whether an article meets the criteria it will be passed to the tertiary reviewer for a decision. Each systematic review must have tested or explored a behavioural intervention rather than IPM. Once the abstract of a systematic review has passed the abstract screening checklist the reference lists will also be searched and assessed with the abstract screening checklist.

The identification process will be documented in the overview write up and will include percentage agreement between primary and secondary reviewers. Systematic reviews must be in the English language and within the specified time frame and accessible. Duplicates will be removed. The rationale for excluding studies will be included in the overview write up. Where possible, the overview write up will include a list of excluded systematic reviews.

## Inclusion

The final list will comprise systematic reviews that have been dual checked for inclusion criteria by at least two reviewers. The full systematic reviews will be obtained for every abstract that meets the criteria. If it is not possible to obtain the full systematic review, the authors will be contacted once to ask for the systematic review. Due to time constraints, no further time will be taken to access full systematic reviews.

For the purpose of this overview, systematic reviews that combine randomised and studies with a variable design will be included despite this not being

currently recommended (Pollock et al 2020). This is because the overview is seeking to identify effective behavioural interventions rather than exclude potentially valuable data.

Systematic reviews using the same primary studies will be included but these will be listed in the Findings using the Cochrane template (Pollock et al 2020) in an open and transparent way to give appropriate weight to findings. The purpose of the overview is representation of the existing body of knowledge of effective behavioural interventions. To this end, it is not intended that the outcomes of included systematic reviews will be statistically combined for this overview. Limiting the search database to CDSR would avoid selecting overlapping systematic reviews but could unnecessarily limit the evidence available. To avoid the methodological complexities of avoiding double-counting, all systematic reviews will be included.

### Quality and bias

Each systematic review for inclusion will be assessed using AMSTAR 2, a validated appraisal tool used for systematic reviews of randomised and non-randomised controlled trials of interventions in health care (Shea et al 2017).

Each review will be graded in terms of quality according to AMSTAR 2 by the primary reviewer. In the event of uncertainty the academic support will be asked to make the final decision. The AMSTAR 2 rating will also be used as the measure of bias. Systematic reviews that are of low and critically low quality will be identified via AMSTAR 2 and this will be recorded in the findings. Systematic reviews will not be excluded on the basis of quality. Authors of systematic reviews will not be contacted if AMSTAR 2 questions cannot be completed. This is because of time limitations and the published systematic review will be taken as the sum of the systematic review rather than a partial document. Confidence in the systematic review results will be expressed as high, moderate, low or critically low (Shea et al 2017) based on the presence or absence of critical aspects of systematic reviews.

### Data extraction

Data extraction will be completed by the primary reviewer and the secondary reviewer using a pilot-tested template based on Aromataris et al (2015). The data extraction form (see Supplementary information) has been through 13 iterations and has been tested with three relevant systematic reviews that passed the abstract screening checklist.

The primary and secondary reviewer will then compare a 20 per cent subset of the data extractions for differences to ensure that all required data have been included and there has been no misinterpretation of data. An agreement rate of 80 per cent or more in

the 20 per cent subset is satisfactory. If there is less than 80 per cent agreement a further 20 per cent subset will be compared. An agreement rate of 80 per cent or more in the second 20 per cent subset is satisfactory, if there is less than 80 per cent agreement in the second 20 per cent subset, the data extractors will re-assess the data extraction form with tertiary reviewer and data extraction will begin again.

Any other discrepancies or concerns will also be handed to the tertiary reviewer for resolution. Missing data will be documented as such, as will poorly reported data. No attempt will be made to extract data from primary studies included in individual systematic reviews due to time constraints. Results in the data extraction form will be entered into a spreadsheet. The author and year of each study in every systematic review will, where possible, be listed in an Excel spreadsheet to enable clarity around overlap.

The overview write up will, where possible, include percentage data extraction agreement between primary and secondary reviewers.

### Amendments

There may be amendments to this protocol as the overview proceeds. It is anticipated that these will be kept to a minimum, however, there may be unforeseen issues that arise which will need to be accounted for. Should this happen, there will be an appropriate rationale in the overview write up.

### Analysis

Analysis will take the format of summary data from included systematic reviews taken from the recommendations or conclusions of each systematic review. This is because this overview is a representation of evidence rather than a re-analysis of a new area using systematic review data. Analysis will include a narrative summary of the behavioural interventions and outcomes. Outcomes from comparable systematic reviews may be presented together if appropriate. It is likely that this will include grouping by effective, ineffective, inconclusive and potentially one or two more categories if this becomes evident during the overview.

### Findings

The following will be presented in the findings section of the overview:

- Flow chart of the abstract screening and selection process
- Summary description of systematic reviews identified with a table of included reviews
- Summary number of studies included with and without doubles
- Tabled presentation of systematic reviews with interventions, numbers of studies and results

- Graded quality of systematic reviews
- Table of effectiveness for quantitative systematic reviews
- Table of beneficence for qualitative systematic reviews

The information above will be presented, however, the format may change according to how the process unfolds once the overview is complete. Further information may be added after the overview is complete if deemed necessary.

Pollock et al (2020:V.4.1) advise that indirect comparisons should be carefully worded to ensure that the reader is clearly appraised of how the effectiveness of an intervention was measured and how this compares to other interventions. This guidance will be followed in the write up of the results of this overview and tables will be set up with cautionary guidance.

### Peer review

Peer review of this protocol identified lack of justification for not including IPM used in theatre. This was added into the overview protocol.

### Ethics

Not required as there is no requirement for NHS patients or staff to be participants in the study.

### Limitations

There are several limitations to this overview. As this overview is in preparation for an implementation project, there are stringent time limits. This means that new or emerging primary studies cannot be included. Similarly, systematic reviews currently being updated cannot be included. Due to the costs and difficulty of translation only English-language systematic reviews will be included.

There will be no combined effect size reported as it is not the purpose of the overview to provide new data but to identify effective behavioural interventions.

Systematic reviews using the same primary studies will be included. If a systematic review is not accessible it will not be pursued, meaning that some evidence may not be included. Systematic reviews will be reviewed in their published state and efforts will not be made to find missing data. This will be reported in the write up.

Individual authors will not be contacted to provide responses if the answers to AMSTAR 2 questions cannot be found within individual systematic reviews. This will reflect on the quality grading given to the review.

There may be amendments to this protocol as the overview proceeds. It is anticipated that these will be kept to a minimum, however, there may be unforeseen

issues that arise which will need to be accounted for. Should this happen, there will be an appropriate rationale in the overview write up.

It is intended that these limitations will be documented clearly in the write up of this overview.

### Dissemination

The overview will be submitted to two journals: a high-impact factor journal and a relevant clinical/professional journal where the content will be adapted to demonstrate its applicability to practice. The outcome of this overview will be used to prepare an implementation project of improving aseptic technique at the time of perineal suturing post-childbirth.

### Acknowledgments

Health Education England, a funding body for the professional development of NHS clinicians, provided transitional funding in October 2019 for the preparation of an application to the National Institute of Health Research Integrated Clinical Academic training programme. This overview is part of the preparation.

The overview team are Dr Elinor Jenkins, midwife; Dr Sara Webb, perineal specialist midwife; Mrs Kathy Parsons, perineal specialist midwife; Mrs Rosie Bridges, midwife; Mrs Anne Lancey, librarian and Dr Susan Way, professor of midwifery education.

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# Supplementary information

## Pilot tested abstract screening checklist

	First author:			
	Year of publication:			
	Title:			
	Database and journal:			
	DOI:			
	Reviewer:	Date:		
	CRITERIA 1 <sup>st</sup> review abstract			
1	Systematic review or meta-analysis or overview	Yes	No	Unclear
	Systematic comparison of research evidence			
	Use of a pre-specified methodological process			
	Team of reviewers			
	Evidence summary provided			
	Declared as systematic review within the title or the body of the text			
2	2010 or later	Yes	No	Unclear
3	English language	Yes	No	Unclear
4	Intervention is a behavioural intervention/quality improvement	Yes	No	Unclear
5	Outcome is compliance with IPM or BI or QI	Yes	No	Unclear
6	Focus is infection prevention	Yes	No	Unclear
7	Population is clinicians working in/for a hospital	Yes	No	Unclear
8	Not theatre	Yes	No	Unclear
9	Research studies only included (i.e. not theory or opinion)	Yes	No	Unclear
10	Includes at least one study from high- or upper high-income country	Yes	No	Unclear
11	Abstract sufficient to screen	Yes	No	Unclear
	Full SR accessed	Yes	Date:	No
	CRITERIA 2 <sup>nd</sup> review FULL SR			
1	Systematic review or meta analysis or overview	Yes	No	Unclear
2	2010 or later	Yes	No	Unclear
3	English language	Yes	No	Unclear
4	Intervention is a behavioural intervention/quality improvement	Yes	No	Unclear
5	Outcome is compliance with IPM or BI or QI	Yes	No	Unclear
6	Focus is infection prevention	Yes	No	Unclear
7	Population is clinicians working in a hospital	Yes	No	Unclear
8	Ward or outpatient based	Yes	No	Unclear
9	Research studies only included (i.e. not theory or opinion)	Yes	No	Unclear
10	Includes at least one study from high or upper high income country	Yes	No	Unclear
11	Single review satisfactory	Yes	No	Unclear
	Accept	Yes	No	
	2 <sup>nd</sup> opinion requested	Yes	Date:	No

**Piloted data extraction form for use with each selected SR for inclusion in the overview of reviews**

1	Reviewer				
2	Date of review				
3	Authors				
4	Year				
5	SR objectives				
6	Review type				
7	Infection prevention measure				
8	Participant details				
9	Setting/context				
10	Number of databases searched				
11	Search date range				
12	Publication date range of studies included for each outcome				
13	Number of studies				
14	Number of participants				
15	Appraisal instrument/s				
16	Risk of bias evaluation				
17	Methodological handling				
18	Missing data				
19	Heterogeneity				
20	Outcome measures				
21	Timeframe for follow up				
22	AMSTAR 2 rating	High	Moderate	Low	Critically Low
23	Country of origin	Study types			Number
24	UK/Europe				
25	Australia/New Zealand				
26	Africa				
27	USA/Canada				
28	Asia/Middle East				
29	South America				
30	Other				
31	Unknown				
32	Number of studies found in other SRs in this overview				
33	Limitations of studies in SR <i>Add rows as required</i>	1			
		2			
		3			
		4			
	Strengths of studies in SR <i>Add rows as required</i>	1			
		2			
		3			
		4			
34	Limitations of this SR (please state whether self-declared (S) or reviewer (R) identified) <i>Add rows as required</i>	1			
		2			
		3			
		4			
	Strengths of this SR (please state whether self declared (S) or reviewer (R) identified) <i>Add rows as required</i>	1			
		2			
		3			
		4			

35	Behavioural determinants or influences or other factors used in studies. Please provide detail if available Add rows as required	Awareness
		Knowledge
		Social influence
		Attitude
		Self-efficacy
		Intention
		Action control
		Maintenance
		Facilitation of behaviour
Other (please state)		
<b>Please use continuation page for behavioural interventions if required</b>		
36	1 BI or QI as discussed in SR	
	1 How it was done	
	1 Determinants or influences	
	1 Number of studies	
	1 Notes	
37	2 BI or QI as discussed in SR	
	2 How it was done	
	2 Determinants or influences	
	2 Number of studies	
	2 Notes	
38	3 BI or QI as discussed in SR	
	3 How it was done	
	3 Determinants or influences	
	3 Number of studies	
	3 Notes	
39	4 BI or QI as discussed in SR	
	4 How it was done	
	4 Determinants or influences	
	4 Number of studies	
	4 Notes	
40	5 BI or QI as discussed in SR	
	5 How it was done	
	5 Determinants or influences	
	5 Number of studies	
	5 Notes	
41	6 BI or QI as discussed in SR	
	6 How it was done	
	6 Determinants or influences	
	6 Number of studies	
	6 Notes	
42	7 BI or QI as discussed in SR	
	7 How it was done	
	7 Determinants or influences	
	7 Number of studies	
	7 Notes	
43	8 BI or QI as discussed in SR	
	8 How it was done	
	8 Determinants or influences	
	8 Number of studies	
	8 Notes	
44	9 BI or QI as discussed in SR	
	9 How it was done	
	9 Determinants or influences	
	9 Number of studies	
	9 Notes	

45	10 BI or QI as discussed in SR	
	10 How it was done	
	10 Determinants or influences	
	10 Number of studies	
	10 Notes	
46	Points from findings	
47	Points from discussion	
48	1 Recommendations from SR	
49	Notes about impacts on infection prevention measures	
50	Notes about interventions	
51	Notes about determinants	
52	Notes about recommendations	
53	Notes about SR	



ROYAL  
COLLEGE  
OF MIDWIVES