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Facilitators and barriers to the implementation of a physiological approach during labour and birth: A systematic review and thematic synthesis.

Introduction

The routine use of clinical (i.e. technological, medical, surgical) interventions in labour and birth is widespread and disparities exist within and between countries (Euro-Peristat 2018, Boerma et al., 2018). Disparities are also observed in different settings for birth, for example the use of clinical interventions are significantly higher in obstetric units (OUs) compared to midwifery-led units (MLUs) (Boerma et al., 2018, Brocklehurst et al., 2011, Scarf et al., 2018).

Most women in middle and high income countries use OUs, commonly referred to as labour wards or delivery suites, for labour and birth (Boerma et al., 2018). In these units, midwives and obstetricians work as a team caring for women with healthy and with complicated pregnancies. The level of professional responsibilities in OUs for these women may vary; in most countries the primary responsibility for women with complicated pregnancies, more likely to require clinical interventions, lies with obstetricians, while midwives generally have primary responsibility for women with healthy ('low risk') pregnancies (Rowe et al., 2011; WHO, 2018). As an alternative to OUs, women with healthy pregnancies may choose to give birth in a midwifery-led units (MLUs) or their homes, where such provision exists. Medical staff are not routinely involved in care on MLUs. MLUs are located either in a hospital or the community and care is provided in a home-like setting (Scarf et al., 2018).

Clinical interventions, for example medical interventions using drugs to begin (induce) or hasten (augment) labour or surgical procedures like caesarean sections (CS), may be life-saving when used appropriately but, when used routinely, they can cause harm (Miller et al., 2016). Increased maternal mortality may result from anaesthetic complications, bleeding, infections and thromboembolism, and morbidities both physical (e.g. urological complications) or mental (e.g. psychological trauma) are increased. Emerging evidence shows that babies born by CS have an altered physiology that potentially impacts on short and long-term health (Sandall et al., 2018). Respiratory problems in the newborn are also associated with iatrogenic preterm deliveries by caesarean section (Belizan et al., 2007).

A commonly reported measure of routine clinical intervention use is the CS rate. Population data from 196 countries, comprising 98.4% of world births, showed that 21.1% of all births in 2015 are estimated to have occurred by CS, compared to 12.1% of births in 2000 (Boerma et al., 2018). Rates in northern Europe were below 20%, rates in parts of south-eastern Europe, China, and South America have increased to 50% or above (Boerma et al., 2018). Increasing trends are also reported in the use of other clinical interventions like the induction of labour. For example, in England the induction rate increased from 20.4% in 2007 to 31.6% in 2018 (Hospital Episode Statistics, 2018).

To support the appropriate use of clinical intervention, local, national, and international guidelines, for example the World Health Organisation (WHO) guide: Intrapartum Care for a Positive Birth Experience (WHO, 2018) and in England, the NICE guidelines for intrapartum care for healthy women and their babies (NICE,

2017), recommend a physiological approach to care during labour and birth. For the purpose of this review, a physiological approach is defined as care that advocates a ‘watch and wait’ approach where clinical interventions are used judiciously while a range of physiological care practices (PCPs) comprising of physical and emotional support are employed to aid labour progress and birth (Miller et al., 2016 WHO, 2018a).

Studying facilitators and barriers to a physiological approach is identified as an important area for research to understand wide disparities in routine clinical intervention use (McFarlane et al., 2015; Brownlee et al., 2017). These facilitators and barriers may be explored at various levels including system: (e.g. healthcare resourcing), organisation: (e.g. leadership or guidelines to promote PCPs), professional groups: (e.g. adherence to PCPs) and the individual: (e.g. women’s involvement in decision-making) (Elshaug et al., 2017). Facilitators and barriers at these levels may also interact to influence implementation.

A preliminary scoping search revealed a range of primary research on facilitators and barriers to the use of a physiological approach in OUs. To date, however, there is no extant systematic review of the qualitative literature on which to base guidance or recommendations.

A systematic review and thematic synthesis was therefore conducted to address the research aim: To explore facilitators and barriers to the implementation of a physiological approach during labour and birth in OUs.

Objectives:

- To identify and understand how facilitators and barriers at the level of the organisation, professional groups (i.e. midwives and obstetricians) and women influence the implementation of a physiological approach
- To explore how facilitators and barriers located at these levels interact to influence the implementation of a physiological approach.

System-level factors are important but an in-depth exploration at this level was beyond the scope of the current review and would need to be done separately.

Methods

This review is reported in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). PRISMA guidelines are a minimum set of items for reporting systematic reviews (Shamseer et al., 2015). The study search and selection process adhered to guidance for undertaking a review by the Centre for Reviews and Dissemination, University of York, 2008.

Qualitative data from exclusively qualitative or mixed methods studies were identified and a thematic synthesis method was applied (Thomas and Harden, 2008). Unlike quantitative studies, which mainly report on rates of adherence to a physiological approach, qualitative data is better suited to addressing the stated aim and objectives of the review which focus on complex issues of how facilitators and barriers operate and interact across different levels to influence implementation.

Electronic Databases

An initial systematic search was conducted in January 2018. Four databases (CINAHL, Medline, SocIndex and Embase) were searched to identify relevant

research. Only journals in the English Language were searched as funding was not available for translation costs. Supplementary Table 1 lists the Subject Headings and free text terms used. Supplementary Table 2 outlines the search strategy.

Inclusion criteria

- Studies reporting qualitative data that explored facilitators and barriers to implementation of PCPs in obstetric units
- Empirical studies published between 1990 and Oct 2019. This time frame marked active debate and research in the UK on care delivery in maternity services, instigated by the Changing Childbirth (DOH 1993) document.

Exclusion Criteria

- Descriptive case studies and commentaries
- Studies in countries where access to healthcare facilities and healthcare professionals is poor (WHO Global Health Observatory, 2018b). These system level factors are not the focus of this review
- Studies in countries where care is provided by birth attendants or obstetric nurses or where variations exist in the integration of midwives into the healthcare system e.g. USA. In the US, midwives are not universally licensed to practice or integrated into regional healthcare systems. Roles and responsibilities vary in different birth settings (UNFPA, ICM, WHO, 2014; ACNM, 2016, Vedam et al., 2018). The inclusion of these studies would reduce the applicability of findings to healthcare systems where midwifery is fully integrated and recognised as an autonomous profession
- Studies from countries that operate exclusively private healthcare systems.

The titles and abstracts of all identified articles from the database searches were screened independently against the inclusion and exclusion criteria by two researchers (FD+CMc). Disagreements in selection decisions were resolved through discussion. Subsequently FD+CMc independently screened all full text articles considered for possible inclusion in the review followed by discussions to reach agreement on articles for inclusion in the critical appraisal. The full texts of all articles retained after initial screening were independently critically appraised by two reviewers (FD + CMc; FD + MC) using the Joanna Briggs Checklist for Qualitative Research (JBI, 2017). This checklist identifies ten items to assess congruity between methodological aspects of qualitative studies (e.g. philosophical perspective, research objectives, data collection methods) and other features (e.g. reflexivity, adequate representation of participants' voices, ethics, and credibility) to determine whether the methods used were appropriate.

Each of the ten items were scored either a 0 (does not meet the criterion), 1 (unclear whether it meets the criterion) or 2 (meets the criterion). Summing across the 10 items an overall quality score for each study was produced: 0-10 (low), 11-16 (medium) and 17-20 (high). Agreement between pairs of reviewers was reached on the rating for each study. The study assessed as low quality was excluded (n=1), those assessed as medium and high were retained (n=27).

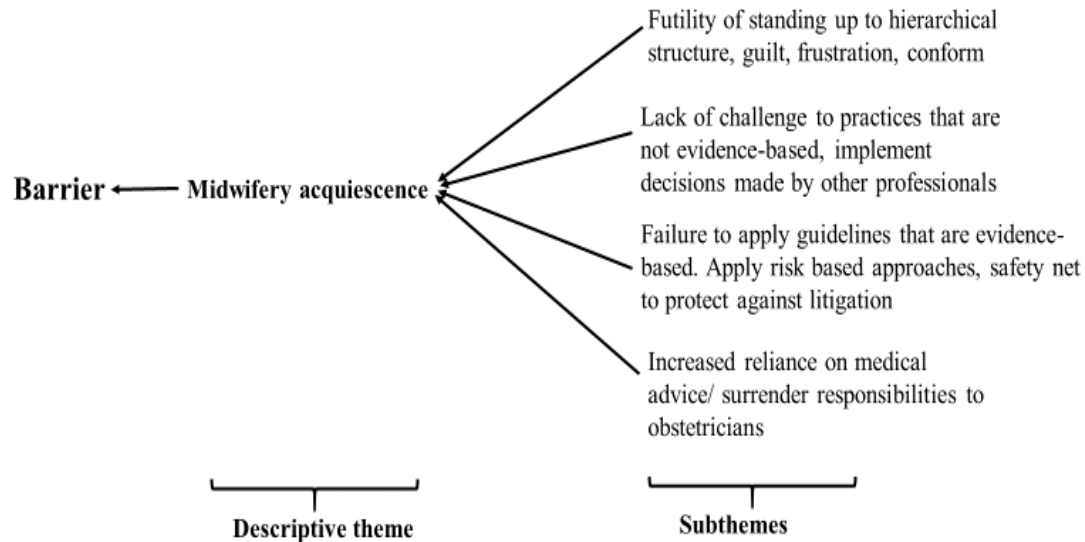
Data Extraction and synthesis

After a detailed reading of the retained papers, text from the results section of each article, including quotations from participants, was imported into NVivo 11 software (QSR International, 2019). Thematic synthesis involves three phases: (i.) line by line

coding of the findings of the primary studies, (ii.) development of descriptive themes, and (iii.) development of analytical themes (Thomas and Harden, 2008). This method enabled us to identify facilitators and barriers, and through conceptual corroboration across the studies, explore the interactive nature of these facilitators and barriers on implementation. This process involved:

- (i.) Line by line coding by reviewer 1 (FD) to identify all relevant phrases, concepts, and ideas
- To facilitate rigour of the coding process reviewers 2 (CMc) and 3 (MC) each independently reviewed and coded 16 papers (i.e. 32 papers in total; this includes the 27 articles retained after screening and quality assessment plus 5 additional articles identified through references and a citation search). This was followed by discussions to resolve any disagreements (Figure 1 provides an example of how one of the descriptive themes were generated)
- (ii.) Development of descriptive themes across the different levels showing how facilitators and barriers operate followed by the development of analytical themes
- Reaching agreement between the reviewers that the descriptive and analytical themes were derived from data presented in the studies
- (iii.) Grouping descriptive and analytical themes into a working explanatory model followed by further discussions between all reviewers to understand the interactive nature of facilitators and barriers.

Figure I: An illustration of how one of the themes were generated



Findings

Results of the search

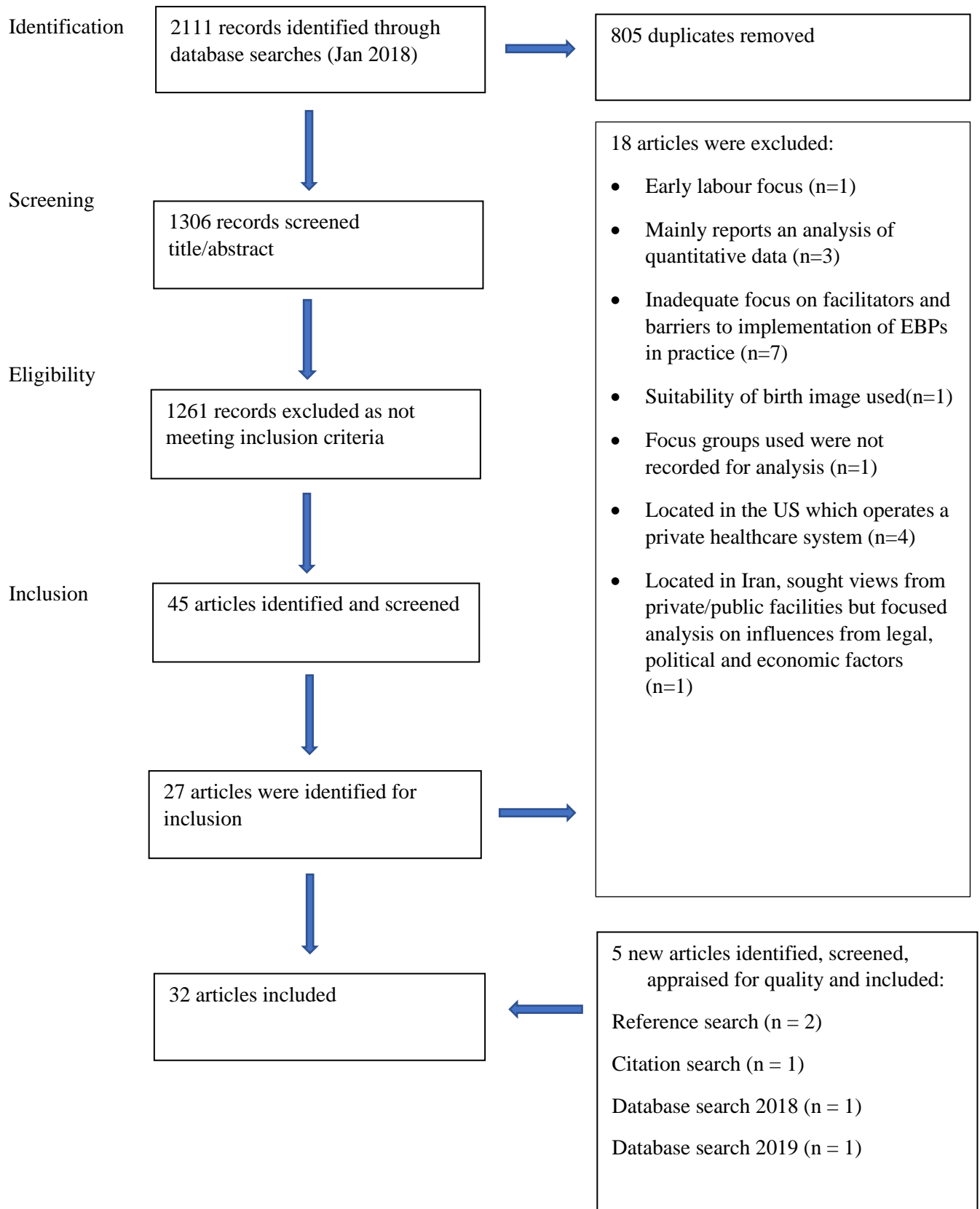
The initial database search yielded 1306 articles. Of these, 1261 were ineligible after the initial screening of the title and abstract. Full text articles (n=45) were assessed for eligibility, 17 were excluded as not meeting the study criteria and one was excluded after being appraised as low quality, leaving 27 articles.

The study by Lavender and Chapple (2004) was the only study excluded on basis of methodological quality. In this study focus-groups were not audio recorded and 11 out of 16 focus groups lasting for 60 -120 minutes were reported as being managed by a single researcher (i.e. facilitating the focus group and simultaneously taking field notes). This raises questions about the comprehensiveness of the data gathered, and member checking used does not necessarily address this weakness (Morse, 2015).

Additionally, only brief verbatim quotes were used, and this did not adequately contribute to the analysis. All three mixed method studies identified in the initial electronic database search were also excluded because their respective analyses were focused on quantitative data.

Five additional articles were identified following a reference and citation search of the 27 articles and three repeat database searches. This resulted in 32 articles published over 21 years from 1997 to 2018.

Figure II: Prisma chart



Characteristics of included studies

Of the final 32 articles (Table 3), one primary study contributed three articles (Scamell, 2011, 2016, Scamell and Alaszewski, 2012) and two primary studies contributed two articles each (Earl, 2004, Earl and Hunter, 2006), (Hunter and Segrott, 2010, 2014). The studies were conducted in England (n=6), Australia (n=4), Norway (n=3), Scotland, (n=2), Sweden (n=2), New Zealand (n=2), Iran (n=2), Wales (n=1), Republic of Ireland (n=1), Netherlands (n=1), Germany (n=1), Cyprus (n=1), Canada (n=1), Japan (n=1).

The studies used relevant methodologies, e.g. ethnography (n=11) and phenomenology (n=5) and a variety of data collection methods, interviews (n=13), observation and interviews (n=10), focus groups (n=4) and focus groups and interviews (n=1). Participants included midwives (n=546), women (n=184), obstetricians (n=46), managers (n=21), other healthcare professionals (n=4), and members from a woman's pressure group (n=3).

Table 1: Characteristics of included studies

	Studies included	Country	Study aims	Participants and setting	Study design, data collection and analysis/ rating of quality (R1/R2)
1	Machin, D and Scamell, M. 1997	England	To examine why primigravid women who talk about rejecting medical intervention revert to the dominant medical culture during labour and birth	40 women who attended antenatal classes.	Ethnography. Participant and non-participant observation and interviews. wards. (M/M)
2	Richens, Y. 2000	England	To explore whether research evidence is being used in practice.	Sample size not given; study set in a delivery suite	Ethnography. Participant/ non-participant observation, interviews and use of clinical records (M/M)
3	Kornelson, J. 2005	Canada	To examine home and hospital birthing women's experiences with and attitudes to obstetric technology	40 women, 20 who birthed at home and 20 at hospital	Exploratory Qualitative. Semi structured interviews, thematic analysis. (M/M)
4	Earl, D. 2004 (Dissertation)	New Zealand	To gain a deeper understanding of how midwives' work within obstetric hospitals in relation to keeping birth normal	8 core midwives at 2 tertiary obstetric hospitals	Qualitative interpretive, Phenomenology, Interviews, thematic analysis. (H/H)
5	Earl, D and Hunter, M. 2006				The article explored one of the themes from the research. (M/M)
6	Lane, K. 2006	Australia	Explores the interplay between midwives and obstetricians as they contemplate a renegotiated order around expanded skillsets, knowledge bases and professional autonomy of midwives	9 obstetricians who worked in public hospitals and 29 midwives from hospitals, and community	Interview study. Critical discourse analysis. (M/M)
7	Russell, K.E. 2007	England	To describe midwives' experiences of supporting normal birth in obstetric-led units	6 midwives who worked in obstetric settings	Ethnography. Semi-structured Interview, grounded theory analysis (M/M)
8	Blaaka, G and Schauer, E.T. 2008	Norway	To describe midwives' practical skills in a centralised specialised maternity ward	7 midwives who worked in a hospital labour ward responsible for 5000 births	Phenomenology, Interviews, thematic analysis (M/H)

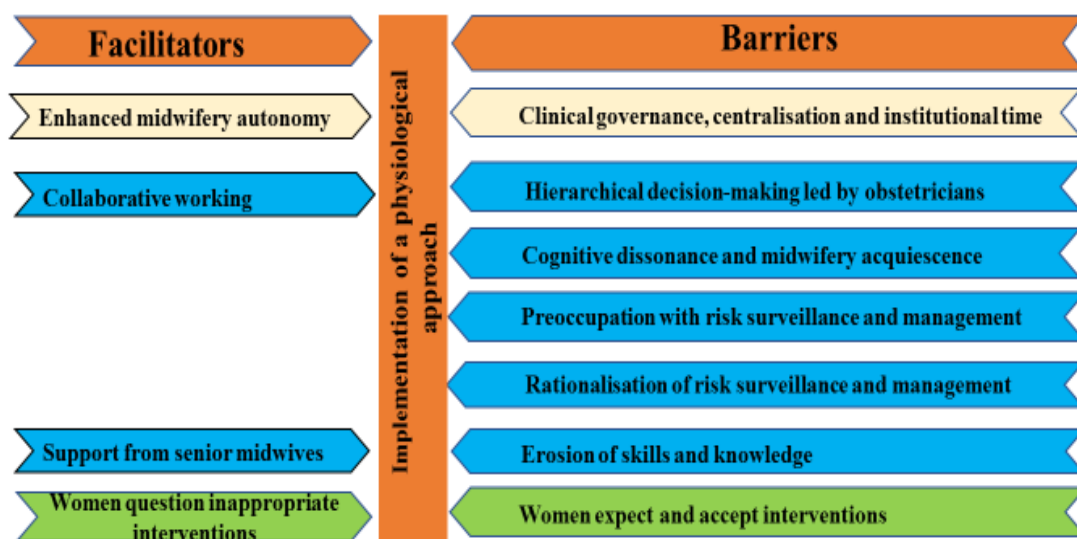
	Studies included	Country	Study aims	Participants and setting	Study design, data collection and analysis/rating of quality (R1/R2)
9	Larsson et al., 2009	Sweden	To explore how midwives' experience their professional role and identity after changes over 25 years	20 midwives who worked in a university hospital	Exploratory qualitative design. Focus groups, thematic content analysis. (M/M)
10	Keating, A and Fleming, V.E.M. 2009	Scotland	To explore midwives' experience of facilitating normal birth in an obstetric unit	10 midwives who worked in an obstetric unit	Feminist approach. Semi structured interviews, thematic analysis. (H/H)
11	Weik, E. 2009	Germany	To enquire into institutional logics, identity, and power relations in different settings for birth	15 self-employed midwives and obstetricians (hospitals are referred to as clinics).	Constructivist, phenomenological. Semi-structured interviews, personal experiences of birth and media reports on birth and birth practices. Narrative analysis (M/M)
12	Hood et al., 2010	Australia	To describe Australian midwives' experience of an external review of obstetric services.	16 midwives who worked at a tertiary referral unit	Exploratory Descriptive design, semi-structured interviews. Thematic analysis. (M/M)
13	Behruzi et al., 2010	Japan.	To explore Japanese birthing experiences	18 midwives, 6 obstetricians and 1 paediatrician who worked in tertiary and private hospitals and 19 women.	Observations of labour ward, antenatal and postnatal care. Semi-structured interviews and focus groups with professionals and women. Inductive content analysis. (M/M)
14	Kennedy et al., 2010	England	To explore factors that foster or hinder the support of normal birth	26 midwives, 6 obstetricians, 1 anaesthesiologist and 27 women in two public hospitals	Interpretive qualitative combining institutional ethnography and narrative methods. (H/H)
15	Surtees, R. 2009	New Zealand	To critically explore ways midwives conduct themselves as accountable professionals	40 midwives who worked in hospitals, community or were self-employed.	Critical Discourse Analysis, interviews and observations. (M/M)

	Studies included	Country	Study aims	Participants and setting	Study design, data collection and analysis/rating of quality (R1/R2)
16	Hunter, B and Segrott, J. 2010	Wales	Investigation of the implementation of a pathway to support normal birth	4 senior practitioners, 41 midwives, 5 managers and 6 obstetricians from a semi-rural unit and a tertiary hospital	Ethnography. Observations of the use of a normal birth pathway in real life settings and evaluation of implementation, thematic analysis. (H/H)
17	Hunter, B and Segrott, J. 2014	Wales	Explores how the pathway influenced inter-professional relationships and boundaries between midwives and doctors	Drawn from the above study	(H/M)
18	Scamell, M. 2011	England	To explore how midwives, make sense of risk and how this sense making affects clinical practice	10 managers, 14 midwives who worked different settings for birth, 3 members of a maternity and midwifery pressure group	Ethnography. Participant and non-participant observation of 42 births including interviews. (H/M)
19	Scamell, M and Alaszewski, A. 2012	England	To examine the ways in which risk is categorised in birth, and how it affects decision-making.		A/A (Uses data from 2011 study) (H/M)
20	Scamell, M. 2016	England	To examine how risk management constitutes midwifery understanding of birth		A/A (Uses data from 2011 study) (H/H)
21	Hadjigeorgiou, E and Coxon, K. 2014	Cyprus	To explore midwives' perception as advocates for client's normal birth	20 midwives who worked in public hospitals	Participant observations of L/W practices, semi-structured interviews, thematic analysis (M/H)
22	Page, M and Mander, R. 2014	Scotland	To explore midwives' perception of uncertainty when caring for women in low risk labour	19 midwives practising in a range of maternity settings	Grounded theory. Unstructured in - depth interviews, focus groups. thematic analysis. (M/M)
23	Carolan-Olah et al., 2015	Australia	To explore midwives' experiences and views of factors that facilitate or impede normal birth	Interviews with 22 midwives in a public hospital	Interpretive phenomenological approach. Interviews, Thematic analysis. (M/M)
24	Janani, F and Kohan, S. 2015	Iran	To explore the challenges of implementing a physiological birth programme.	38 midwives and 6 obstetricians who worked in a public hospital	Exploratory qualitative. Semi-structured interviews, Content analysis. (M/M)

	Studies included	Country	Study aims	Participants and setting	Study design, data Collection and analysis/ rating of quality (R1/R2)
25	Thompson et al., 2016	Netherland	To describe Dutch midwives' attitudes and motivation for the promotion of physiological birth	3 focus groups of 14 hospital-based midwives and 4 focus groups of 23 community - based midwives	Exploratory design. Focus groups, thematic analysis (H/M).
26	Robertson, J.H and Thomson, A.M. 2016	England	To explore how midwives' personal involvement in clinical negligence litigation affects midwifery practice	22 midwives who have been alleged as negligent	Descriptive Phenomenological - Interviews. (M/M)
27	Pazandeh et al., 2017	Iran	To understand women's experiences of care during labour and birth in a risk-based approach context	26 women who birthed in public hospitals	Qualitative study. Semi - structured interviews, thematic analysis. (M/M)
28	Healy et al., 2017	Republic of Ireland	To explore midwives' and obstetricians' perception of risk on practices in different settings for birth.	16 midwives and 9 obstetricians who worked in different birth settings.	Semi - structured interviews, thematic analysis. (M/H)
29	Newnham et al., 2017	Australia	To explore personal, social, cultural and institutional influences on women's decision to use epidural analgesia	Observation of 6 labouring women, interviews with 16 women, two antenatal interviews and 1 postnatal.	Ethnography, Critical Medical Anthropology, Foucauldian and Feminist theory. Participant observation.(H/H)
30	Aune et al., 2018	Norway	To gain a deeper understanding of the thoughts and experiences of midwives promoting normal births.	9 midwives at three maternity wards who worked in hospitals and the community	Qualitative. In-depth interviews. (M/M)
31	Panda et al., 2018	Sweden	To explore Swedish obstetricians' and midwives' perceptions of the factors influencing decision-making for CS.	11 midwives and 5 obstetricians from two selected Swedish maternity hospitals	A qualitative design. Four audio-recorded focus group interviews, thematic analysis (M/M)
32	Aanensen et al., 2018	Norway	To explore and describe midwives' experiences of promoting normal birth in obstetric-led birth units in Norway.	10 midwives working in two maternity hospitals	A qualitative research design, Semi-structured interviews. Systematic Text Condensation. (M/M)

A discussion of facilitators and barriers to the implementation of a physiological approach to care is presented at the level of the organisation, professional groups (i.e. midwives and obstetricians) and women (Figure III). The analysis focuses on barriers because they are more widely identified and explored in the primary studies, compared to facilitators. Interactive influences of facilitators and barriers are identified (Figure IV and V). This is followed by analysis of the two overarching analytical themes that emerged from this synthesis.

Figure III: Facilitators and barriers to the implementation of a physiological approach



Footnote: The longer arrows denote barriers that arise from the more dominant perceptions of birth as inherently risky and the shorter arrows denote the facilitators that arise from the more muted perceptions of birth as inherently physiological.
 Organisational level □ Professional groups □ Women □

Facilitators: Organisation

Reconfiguration of services to enhance autonomy

Most studies in this review were conducted in OUs located in large public hospitals. Five studies included midwives who practiced concurrently in OUs and other settings e.g. community midwifery (Lane, 2006, Thompson et al., 2016), MLUs (Page and Mander, 2014, Healy et al., 2017), case-load practices (Carolan-Olah et al., 2015) and home births (Page and Mander, 2014). Midwives interviewed in these studies described how their experiences in other settings outside the OU; enhanced their autonomy and ability to implement a physiological approach. They also described how their use of a physiological approach influenced the practices of other midwives and obstetricians in the OU:

“Obstetricians were using birth stools”, and OU midwives were saying, “I will do that too.” (Community MW, Thompson et al., 2016, pp.70)

“I learned from the midwives that “.... waiting is not a bad thing...” (OBS, Lane, 2006, pp. 347).

One study explored midwifery experiences of autonomous working in OUs supported by a normal labour pathway (Hunter and Segrott, 2010, 2014). A normal labour pathway was described by one midwife as legitimising their use of a physiological approach in an autonomous capacity because it was evidence based: “It’s backed by research, which is really how midwifery should be practised, rather than that’s how it’s always been done” (MW, Hunter and Segrott, 2014, pp. 728). Not all midwives agreed; some described their use of physiological approach as “midwifery work” that did not need to be justified using a pathway (Hunter and Segrott, 2010, pp. 232).

However, referring to the risk averse culture in OUs and differing views amongst professionals, one midwife said: “I think it’s helped me to have the confidence really to say, this woman falls into the normal pathway therefore this is what I am going to do” (MW, Hunter and Segrott, pp. 728).

Facilitators: Professionals (Midwife)

Support from senior midwives

Midwives described the value of working with senior midwives who chose to foster a physiological approach. These senior midwives worked clinically and were described as:

“Believing in the ability of women to labour without having to have [clinical] interventions. They were able to stand-up to medical staff... a big influence in... wait and see” (MW, Keating and Fleming, 2009, pp. 525).

In several other studies, senior midwives who acted as role models, instilled confidence and developed competence (Earl, 2004, Kennedy et al., 2010, Hadjigeorgiou and Coxon, 2014, Carolan-Olah, 2015, Healy et al., 2017) were described as important to implementing a physiological approach in OUs.

Facilitators: Other professional groups

Collaborative working

In OUs with lower clinical intervention rates, studies described collaboration between midwives and obstetricians (Kennedy et al., 2010, Panda et al., 2018). Describing a team approach, one obstetrician said: “Every time it goes wrong,we talk about it and then you can learn something. Where the reason for CS is...dystocia...we would

discuss it with the midwife rather than a senior consultant” (Obstetrician, Panda et al., 2018, pp.5). One midwife said:

“I think that generally people in charge respect our judgement,I think most of the time it is left to us to facilitate that normal birth, and ...that's really important to me” (MW, Carolan-Olah et al., 2015, pp.116).

Collaborative working in OUs also appeared to be experienced in services with established midwifery-led services. One midwife described how, “it took a while for the doctors to realise that there is room for us and them, but a trusting relationship had developed” (Healy et al., 2017, pp. 371). Other studies describe similar experiences (Lane, 2006, Thompson et al., 2016, Aune et al., 2018).

Facilitators: Women

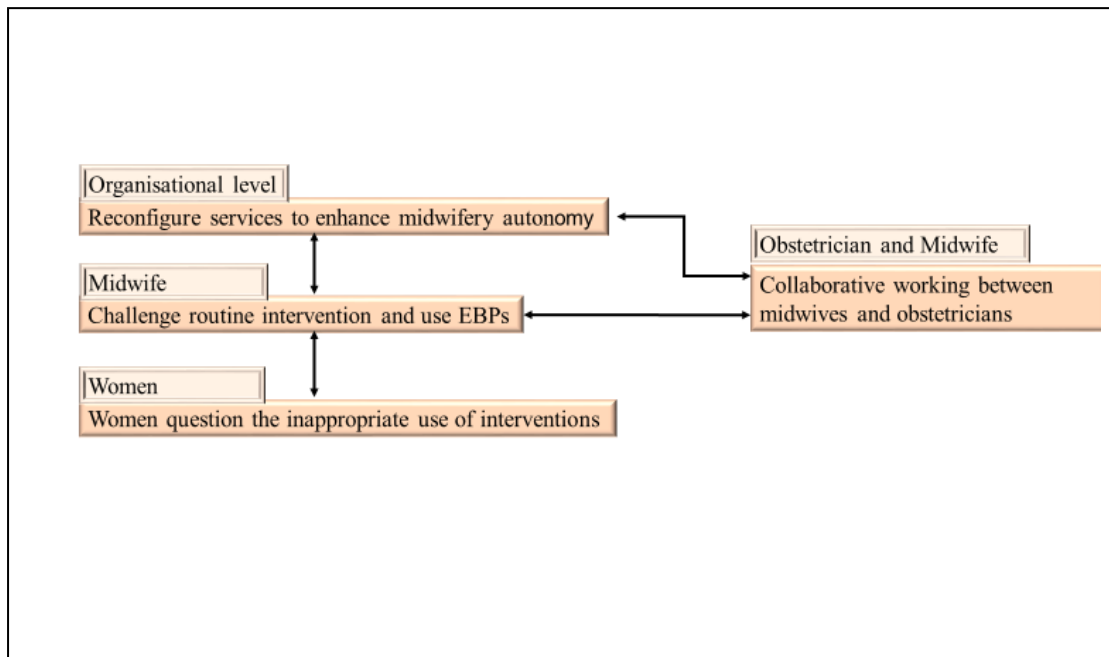
Questioning the inappropriate use of clinical interventions

Some women expressed their unease about routine clinical intervention use:

“Being in the hospital was quite upsetting because, you know, the technology was there, and they wanted to use it” (W, Kornelson, 2005, pp.1500).

Others spoke about the distressing nature of clinical interventions, questioning whether labour and birth should be “controlled in this way” (W, Parzandeh et al., 2015, pp.66). Women expressed an openness to clinical interventions but as one put it, “I am not in a place where I need to have all the technology gone, I just want it to be used in an appropriate manner” (W, Kornelson, 2005, pp.1500).

Figure IV: Themes denoting facilitators arising from a perception of birth as inherently physiological and interactive nature of these influences



Barriers: Organisational

Organisational clinical governance

Many of the studies were in OUs in large public hospitals accessed by women considered at low risk as well as women considered at high risk of complications. In the studies reviewed, clinical governance strategies ostensibly designed to protect women and their babies, were evident in the use of local protocols, guidelines, audits and training to manage risks (Keating and Fleming, 2009, Surtees, 2009, Larsson et al., 2009, Scamell, 2011, 2016, Scamell and Alaszweski, 2012, Hadjigeorgiou and Coxon, 2014, Page and Mander, 2014, Healy et al., 2017). Referring to training, a midwife said,

“You know, there are lots of study days and development, but they all manage high risk” (MW, Healy et al., 2017, pp. 372).

Studies in some countries reported a lack of policies and guidelines to support a physiological approach, for example Australia (Carolan-Olah et al., 2015), Cyprus (Hadjigeorgiou and Coxon, 2014) and Iran (Janani and Kohan, 2015).

Institutional time

Centralisation of care also meant that the length of time women could labour on OUs was limited (Weik 2009, Newnham et al., 2017). One author described how access to these units by other women was achieved by ‘fixing stalled labours’ with clinical interventions such as augmentation, ‘pushing women to keep pace with institutional time’ rather than the ‘rhythms of their labouring bodies’ (Newnham et al., 2017).

Others described similar findings (Kornelson, 2005, Blaaka and Schauer, 2008, Weik, 2009, Surtees, 2009, Keating and Fleming, 2009, Page and Mander, 2014, Carolan-Olah et al., 2015, Aune et al., 2018, Aanensen et al., 2018).

Resourcing priorities

Resourcing priorities were described by midwives as focused on risk surveillance technologies rather than, for example, equipment to facilitate birth in alternative positions (Thompson *et al.*, 2016, Janani and Kohan, 2015). Midwives also observed that the poor resourcing of staffing did not support the safe care of large numbers of women who accessed centralised units (Richens, 2002, Janani and Kohan, 2015, Newnham et al., 2017), nor did it support a physiological approach where complex and variable labour processes needed more time for care (Richens, 2002, Keating and Fleming, 2009, Page and Mander, 2014, Aune et al., 2018, Aanensen et al., 2018).

Barriers: Professionals (Midwives)

Cognitive Dissonance

In most studies, midwives described experiencing what could be termed a cognitive dissonance, when they wanted to use PCPs to aid labour progress and birth, but instead felt compelled to use risk surveillance and restrictive time frames to actively manage labour, using clinical interventions such as augmentation to hasten progress and birth (Richens, 2002, Earl, 2004, Russell, 2007, Larsson et al., 2009, Keating and Fleming, 2009, Hunter and Segrott, 2010, 2014, Hadjigeorgiou and Coxon, 2014, Carolan-Olah et al., 2015, Janani and Kohan, 2015, Thompson et al., 2016, Newnham et al., 2017, Healy et al., 2017, Aune et al., 2018, Aanensen et al., 2018).

Midwives responded to this internal conflict with feelings of anger, guilt and frustration:

“I disagree with them, but local hospital protocols and hierarchy prevent me from reacting or intervening [PCPs], I feel bad, guilty.” (MW, Hadjigeorgiou and Coxon, 2014, pp.986).

“The most frustrating thing about working here is you just want to slow everything down. I mean, just give her a chance.” (MW, Newnham et al., 2017, pp.7).

The studies showed that midwives viewed implementing a physiological approach as their professional responsibility but their efforts to use PCPs may or may not be supported (Earl, 2004, Russell, 2007, Lane, 2006, Behruzi et al., 2010, Blaaka and Schauer, 2008, Keating and Fleming, 2009, Hunter and Segrott, 2010, 2014, Page and Mander, 2014, Janani and Kohan, 2015, Hadjigeorgiou and Coxon, 2014, Carolan-

Olah et al., 2015, Thompson et al., 2016, Healy et al., 2017, Aune et al., 2018, Aanensen et al., 2018). One midwife explained:

“I was angry that I was in a disempowered position. All the decision-making process and power was held by the doctors. I was just the handmaiden that carried out the instructions. So, I was very sad, very disappointed. It is hard to reconcile your own practice when things like that happen (MW, Earl, 2004, pp.125)

Acquiescence, Risk Preoccupation and Rationalisation

Despite emotional responses to not being able to implement a physiological approach, most studies described how midwives mainly conformed, employing risk surveillance and active management of labour using routine clinical interventions (Earl, 2004, Weik, 2009, Surtees, 2009, Behruzi et al., 2010, Blaaka and Schauer, 2008, Keating and Fleming, 2009, Hunter and Segrott, 2010, 2014, Page and Mander, 2014, Hadjigeorgiou and Coxon, 2014 Janani and Kohan, 2015, Carolan-Olah et al., 2015, Thompson et al., 2016, Healy et al., 2017, Aune et al., 2018, Aanensen et al., 2018).

In these circumstances, some midwives and obstetricians, questioned midwives’ commitment to their professional role and responsibility to implement a physiological approach:

“Sometimes I feel they just don’t take pride in their role as a midwife and the huge kind of responsibility they have as a midwife to promote and advocate for patients that are low risk” (Obstetrician (OB), Hunter and Segrott, 2014, pp.371).

“I think that's [normal birth] not easy, but I think you can choose it. Staying with the womanwhat will I do? I will do observations or offer her drugs because it is uncomfortable just to sit here and do nothing. Being with women is really hard for some midwives (MW, Carolan-Olah et al., 2015, pp.118).

However, midwives frequently expressed a sense of futility in challenging hierarchical structures that impose a risk-based approach (Richens, 2002, Surtees, 2009, Behruzi et al., 2010, Blaaka and Schauer, 2008, Keating and Fleming, 2009, Hunter and Segrott, 2010, 2014, Page and Mander, 2014, Hadjigeorgiou and Coxon, 2014, Janani and Kohan, 2015, Carolan-Olah et al., 2015, Thompson et al., 2016, Healy et al., 2017, Aune et al., 2017, Aanensen et al., 2018). One study employing an ethnographic approach used three articles to describe in depth, a midwifery preoccupation with risk where midwives through their words and actions demonstrated that normality cannot be presumed, and can only be verified through surveillance (Scamell, 2011, 2016, Scamell and Alaszewski, 2012). Other studies reported a similar preoccupation (Surtees, 2009, Hunter and Segrott, 2014, Page and Mander, 2014, Robertson and Thompson, 2016). Some studies described how risk preoccupations were rationalised by midwives by offering a view of physiological birth that accommodates a level of surveillance which is not supported by evidence (Earl and Hunter, 2006, Surtees, 2009, Keating and Fleming, 2009, Scamell, 2011, 2016, Scamell and Alaszewski, 2012, Page and Mander, 2014):

“When they come in, I would do a baseline CTG, to make sure that everything was OK, and then I wouldn't do another CTG for another 4–5 hours, and I

would do one after 4–5 hours to keep an eye on the baby” (MW, Keating and Fleming, 2009, pp. 526).

Other forms of rationalisation included the classification of some clinical interventions as minor, for example, artificial rupture of membranes. This procedure does not constitute evidence-based practice when used routinely but was employed by midwives because it was viewed as possibly averting the need to use a ‘bigger’ clinical intervention, for example, augmentation with drugs to hasten labour (Earl and Hunter, 2006). A standardised approach to managing labour was also perceived by midwives as offering greater clinical certainty (Surtees, 2009, Larsonn et al., 2009, Weik, 2009, Page and Mander, 2014, Scamell, 2011, Scamell and Alaszewski, 2012, Healy et al., 2017). Page and Mander (2014) noted: ‘managing time contained intrapartum uncertainty, standardisation about assessment, points of intervention and the type of intervention to use, simplified decision-making processes.’

Fear of litigation was a key driver of a risk surveillance behaviour amongst midwives and was described by one author as ‘covering oneself’ and ‘playing it safe’ (Surtees, 2010). Other studies reported similar behaviours by midwives (Richens, 2002, Surtees, 2010, Weik, 2009, Larsonn et al., 2009, Scamell, 2011, 2016, Page and Mander, 2014, Robertson and Thompson, 2016). This fear also appeared to result in midwives abdicating an advocacy role that encouraged women to consider a physiological approach (Earl, 2004, Larsonn et al., 2009, Hood et al., 2010, Hadjigeorgiou and Coxon, 2014, Page and Mander, 2014, Robertson and Thompson, 2016). Personal experiences of midwives who were investigated for clinical negligence and external reviews of obstetric services also stoked fears of litigation

resulting in midwives adopting a risk-based approach to care (Robertson and Thompson, 2016, Hood et al., 2010).

Rather than confront risk-aversion, midwives described circumventing responses such as working on night shifts: “You can make decisions on night duty. It is easier, less hierarchical” (MW, Keating and Fleming, 2009, pp. 524) and falsifying findings of vaginal assessment to ‘buy women time’ for labour progress (Russell, 2007). Other midwives described leaving the OU to practice in MLUs or leaving the profession altogether (Hood et al., 2010, Robertson and Thompson, 2016).

Erosion of knowledge and skills

The perceived erosion of midwifery knowledge and skills from working in OUs was seen as a barrier to the implementation of a physiological approach:

“When you're not in a low risk unit... it's easy just to view everyone as high risk...I've spoken to midwives who have lost their confidence in normal birth because they haven't seen a normal birth” (MW, Carolan-Olah et al., pp.115).

For some midwives, this loss of knowledge, skills and confidence influenced their ability to work with the complexity and unpredictability associated with physiological labour and birth (Earl, 2004, Kornelson, 2005, Blaaka *et al.*, 2008, Hood et al., 2010, Page and Mander, 2014). In contrast, midwives who worked in other settings, such as home births or stand-alone midwifery units, described their experiences as developing “the midwives’ ability to tolerate such unpredictability” (Earl, 2004, Kornelson, 2005, Lane, 2006, Surtees, 2009, Blaaka and Schauer, 2008, Page and Mander, 2014, Healy et al., 2017).

Experienced senior midwives on whom junior midwives relied on for support may choose to facilitate a physiological approach (Earl, 2004, Carolan-Olah et al., 2015, Keating and Fleming, 2009) or impose risk surveillance and active management (Earl, 2004, Russell, 2007, Hunter and Segrott, 2010, 2014, Hadjigeorgiou and Coxon, 2014, Keating and Fleming, 2009, Scamell, 2011, 2016). In the context of a dominant risk culture, senior midwives often saw routine surveillance as necessary to identify and manage risk and were inclined to enforce this approach (Page and Mander, 2014, Hunter and Segrott, 2010, 2014, Scamell, 2011, 2016).

Barriers: Professionals (obstetricians)

Hierarchical decision-making led by obstetricians

Midwives frequently described obstetricians as assuming a position at the top of a hierarchical decision-making structure and as lead decision-makers in the care of women with low and high risk pregnancies in OUs (Richens, 2002, Lane, 2006, Russell, 2007, Surtees, 2009, Keating and Fleming, 2009, Larsson et al., 2009, Hadjigeorgiou and Coxon, 2014, Hunter and Segrott, 2014, Janani and Kohan, 2015, Thompson et al., 2016, Newnham et al., 2017, Healy et al., 2017, Aanensen et al., 2018). Some obstetricians questioned the evidence that informed a physiological approach. Another in reference to one national clinical guideline promoting a physiological approach said:

“We’re swapping one lot of vagueish evidence for another lot of vagueish evidence and wait and see if anything goes wrong” (OB, Hunter and Segrott, 2014, pp.232).

Obstetricians suggested that midwives wanted autonomy to make decisions, but not the accountability when things went wrong, and that obstetric involvement could avert problems (Lane, 2006, Surtees, 2009, Keating and Fleming, 2009, Hadjigeorgiou and Coxon, 2014, Hunter and Segrott, 2014, Janani and Kohan, 2015, Newnham et al., 2017).

Efforts to enhance midwifery autonomy prompted suggestions that midwives were promoting a ‘midwifery project’ (Hunter and Segrott, 2014). One obstetrician argued:

“The term woman-centred care is what we regularly hear but actually to be honest, when I sit it in these discussions, the woman at the centre of the care commonly, sadly, is the midwife” (OB, Healy et al., 2017, pp. 371).

Midwives saw professional delineation as necessary to challenge the current status quo of powerful obstetricians who, “just don’t have that belief in normal physiology” (MW, Hunter and Segrott, 2014, pp. 732). Despite challenges to obstetric dominance, several studies described a panoptic effect of surveillance, on professional groups like midwives, which engendered a preoccupation with risk surveillance including midwives self-monitoring their own compliance (Surtees, 2009; Scamell, 2011, Scamell and Alaszewski, 2012; Scamell, Page and Mander, 2014). For some midwives, the possibility of meaningful professional collaboration appeared elusive:

“Until they [the obstetricians] relinquish some of that [power] can we have true collaboration because there is no equality in terms of the midwife assuming some of that responsibility and accountability” (MW, Surtees, 2009, pp. 347).

Barriers: Women

Perceptions of birth as inherently risky

Some women's views of birthing appeared to be shaped by perceptions of birth as inherently risky: "I think the world we are living in possesses certain hazards... so it's not as easy to give birth as it would have been in a natural environment" (W, Kornelson, 2005, pp.1501). Authors of several studies also argued that women's perceptions of birth were influenced by the media; and reinforced by professionals, (Kornelson, 2005, Weik, 2009, Surtees, 2009, Larsson et al., 2009, Scamell, 2011) and family and peers (Hadjigeorgiou and Coxon, 2014, Janani and Kohan, 2015, Parzandeh et al., 2017).

Lack of knowledge

Midwives described a lack of knowledge among women as increasing clinical intervention use:

"A lotdon't know what's going on inside their body, feel out of control and want to control it. Usually that is with drugs or an epidural. So that comes back to antenatal time" (MW, Carolan-Olah et al., 2015, pp.116).

The lack of continuity and time for care during the antenatal period are described as important contributing factors to women's lack of knowledge (Carolan-Olah et al., 2015, Thompson et al., 2016, Aune et al., 2018). However, in the context of the midwife's diminished autonomy, women's knowledge (e.g. about the birthing process and their choice of care options) were viewed by midwives as important (Earl, 2004, Earl and Hunter, 2006, Page and Mander, 2014, Hadjigeorgiou and Coxon, 2014). Midwives expressed how they were more likely to adopt a physiological approach when it was congruent with women's wishes:

“If I have a woman who has very determined views, I would be more likely to argue for her but if not, I become a bit more submissive to the doctors” (MW, Page and Mander, 2014, pp. 33).

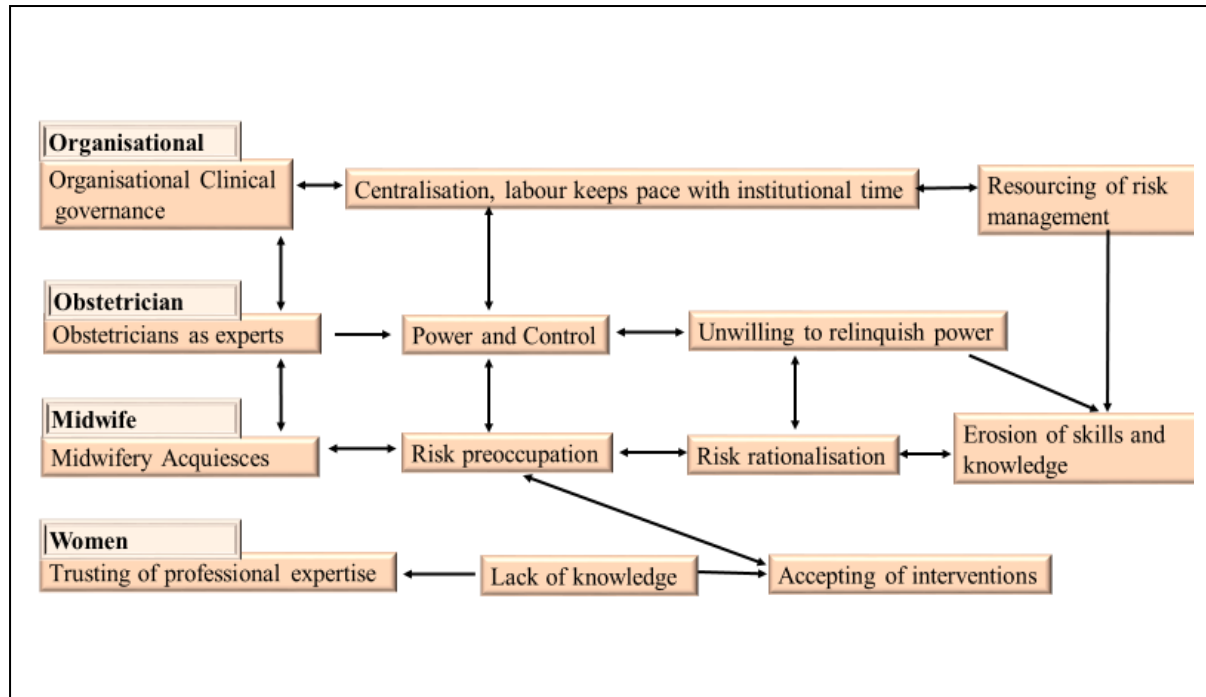
However, women’s expressed desire to acquire knowledge and skills to become involved in decision-making varied (Machin and Scamell, 1997, Kornelson, 2005).

Trusting professionals

Some women explained they trusted professionals: “all the things that are going on around you. It's just a relief to know at least someone is in control here” (W, Machin and Scamell, 1997, pp.82). Women were also perceived by midwives as preferring obstetricians rather than midwives, to make decisions on their behalf (Larson et al., 2009, Parzandeh et al., 2017, Hadjigeorgiou and Coxon, 2014). Some women described the need for flexibility: “I didn’t want a lot of stuff, but if I needed it, I needed it” (W, Kornelson, 2005, pp.1500). Others described how they expected clinical interventions and did not always question their use (Kornelson, 2005, Parzandeh et al., 2017).

Using observations and interviews with women, authors cast doubts about the women’s ability to resist clinical interventions in OUs, even when they were empowered to birth with minimal clinical interventions (Machin and Scamell 1997, Kornelson, 2005). The authors argue that the strong “risk-based approach metaphor” (Machin and Scamell, 1997) of birth in OUs increased women’s vulnerability and engendered greater reliance on professionals to make decisions on their behalf, increasing their susceptibility to clinical interventions (Machin and Scamell 1997, Kornelson, 2005, Parzandeh et al., 2017).

Figure V: Themes denoting barriers arising from prevalent perceptions of birth as inherently risky on the implementation of a physiological approach and the interactive nature of these influences



Analytical themes

Two overarching analytical themes emerged from this synthesis: ‘birth as inherently risky’ and ‘birth as inherently physiological.’ This thematic synthesis suggests that the perception of ‘birth as an inherently risky’ is predominant in OUs, driving organisational policies based on risk management; and professional practices focused on routine surveillance, the application of standardised time frames to the labour process, and the use of routine clinical interventions to hasten progress and birth.

(Earl, 2004, Kornelson, 2005, Lane, 2006, Russell, 2007, Blaaka and Schauer et al., 2008, Surtees, 2009, Weik, 2009, Scamell, 2011, 2016, Scamell and Alaszweski, 2012, Page and Mander, 2014, Hadjigeorgiou and Coxon, 2014, Weik, 2009, Keating and Fleming, 2009, Behruzi et al., 2010, Janani and Kohan, 2015, Carolan-Olah et al.,

2015, Healy et al., 2017, Parzandeh et al., 2017, Newham et al., 2017, Aanensen et al., 2018).

In the included studies, the legitimacy of a physiological approach that informs a ‘watch and wait’ approach to care, the judicious use of clinical interventions, and physiological care practices to aid labour progress and birth was often challenged by obstetricians and not always supported by midwives working in OUs (Surtees, 2009, Weik, 2009, Behruzi et al., 2010, Hunter and Segrott, 2010, 2014, Scamell, 2011, Page and Mander, 2014, Hadjigeorgiou and Coxon, 2014, Keating and Fleming, 2009, Janani and Kohan, 2015, Carolan-Olah et al., 2015, Healy et al., 2017, Parzandeh et al., 2017, Newham et al., 2017, Aanensen et al., 2018; Earl, 2004, Russell, 2007, Hunter and Segrott, 2010, 2014, Scamell, 2011, Page and Mander, 2014).

The strong influences of the perception of ‘birth as an inherently risky’ in OUs remain despite decades of policies, (UK’s Changing Childbirth Policy, 1993; UK’s Better Birth Policy, 2017); clinical guidelines (WHO, 1994, 2018) and research evidence (Chalmers et al., 1989; Downe and Byrom, 2019) that have sought to encourage a reconceptualisation of birth as a physiological process and promote the implementation of a physiological approach to care.

Discussion

This systematic review and thematic synthesis critically examines facilitators and barriers to the use of a physiological approach to care at the level of the organisation, professional groups (i.e. midwives and obstetricians) and women. We identified 16 descriptive themes from 32 included studies and generated two over-arching analytical

themes that recurred in all studies: perceptions of birth as inherently risky and perceptions of birth as inherently physiological. The thematic synthesis presents rigorous qualitative evidence about interactive influences of risk perceptions of birth on the practices of midwives and obstetricians in OUs. The range of relevant methodologies and methods used in the primary research enhances the trustworthiness of findings.

At an organisational level, centralisation of care in OUs, clinical governance and associated risk management strategies, ostensibly designed to promote safety, sustained a risk-based approach. Centralisation resulted in women's labours being subjected to what was described as 'institutional time' where active management and clinical interventions were routinely used to deliver women; and make beds available for other women who wanted to access these units. This did not benefit women who needed more time on these units in order to experience a physiological labour and birth. Organisational influences were a focus in only three studies (Weik, 2009, Scamell, 2011, Newnham et al., 2017) and further research is required.

The theme 'cognitive dissonance' describes conflicts experienced by midwives who wanted to implement a physiological approach but felt compelled to use a risk-based approach. Midwives described their efforts to negotiate the use of a physiological approach "as a struggle on a daily basis" (Blaaka and Schauer, 2008). In her study on "emotion work" in midwifery Hunter (2004) notes that while emotional burdens in the workplace are frequently located in worker/client relationships, in midwifery they appear to be caused by dissonance associated with the conflicting ideologies of a risk-based versus physiological approach. This review strengthens this finding. Such

emotional difficulties are evidenced as an important contributory factor in the psychological stresses experienced by midwives and are reported as reasons for midwives leaving the profession (Harvie et al., 2019, Cull et al., 2020.)

There is evidence of variations in practices within the two professional groups: some midwives align with a risk-based approach and some obstetricians with a physiological approach. However, a recurring theme was the curtailment of midwives' ability to implement a physiological approach by a dominant risk-based approach led by obstetricians. The theme 'hierarchical decision-making led by obstetricians' describes how they imposed a risk-based approach using routine clinical interventions despite evidence of harm, for example, the overuse of inductions and augmentation have been associated with uterine rupture, perineal lacerations and anal sphincter injury (Miller et al., 2016)

In a risk averse culture, evidence-based guidelines that recommend PCPs were frequently resisted. Several studies (Lane, 2006, Surtees, 2009, Scamell, 2011, Newnham et al., 2017) drew on panopticism, a social theory developed by Foucault (1995), to describe how a dominant risk-based approach impelled midwives to use risk surveillance and obsessive self-checking to ensure compliance. Rationalisation of routine clinical intervention use was evident amongst midwives, who expressed the view of physiological labour and birth as accommodating a level of surveillance and a perceived risk-based approach as affording greater clinical certainty. Their strategies included classifying some clinical interventions as minor when used to try to prevent more substantial interventions. Experiences of investigations for clinical negligence,

external review of OUs and fears of litigation were also important drivers of risk-based approaches at organisational and professional levels.

Several studies also reported how a dominant risk-based approach prompted midwives to use covert strategies such as working night shifts, when greater autonomy was experienced or ‘buying women more time’ by falsifying assessments of labour progress (Richens, 2002; Russell, 2007). Exploring midwives’ use of altered assessments of labour progress, Scamell and Stewart (2014) describe how midwives felt it was justified because women needed to be protected from iatrogenic risk imposed by rigid time frames to assess and manage labour progress. Scamell and Stewart (2014) observe that midwives are not risk takers, but their use of covert strategies suggests an understanding about the need for flexibility in assessments to avoid clinical interventions. Others argue that such covert strategies do not enable midwives to bring about collective change where a physiological approach can be normalised and openly used to support women (e.g. Kirkham, 1999).

A persistent risk-based approach has led to an erosion of knowledge and skills to support a physiological approach. In this context, experienced senior midwives are described as potentially important facilitators of a physiological approach (Earl, 2004, Keating and Fleming, 2009; Kennedy et al., 2010, Carolan-Olah, 2015, Hadjigeorgiou and Coxon, 2014, Healy et al., 2017). Exploring midwives’ experiences in publicly-funded hospital setting, O’Connell and Downe (2009), identify senior midwives as the direct determinants of midwifery practice rather than obstetricians. Our analysis shows that senior midwives were influential in midwives being able to use a physiological approach, however their experiences in a risk averse culture also led

some to encompass routine surveillance to identify and manage risk and use their senior positions to enforce risk-based approaches. O'Connell and Downe (2009) report similar findings. The differing positions senior midwives adopt, reasons for this, and their effects requires further research.

Women's perceptions of birth as inherently risky influenced their decision-making during labour. Women who used OUs understood that clinical intervention maybe needed and described the need to be flexible. However, women also said that clinical interventions must be used appropriately, and such a view appears to support the midwives' use of physiological approaches in OUs (Kornelson, 2005, Page and Mander, 2014). Women also described a reliance on professionals to make decision on their behalf. Some were described by midwives as lacking in knowledge, and others were described as vulnerable in OUs, despite being knowledgeable about birthing with minimal interventions. A reliance on professionals to make decisions increased women's susceptibility to clinical interventions. An important consequence of a risk-based approach for women was a loss of advocacy by midwives. Women expected clinical interventions to shape their experiences and were generally accepting rather than resistant.

Only four studies explored women's experiences of care, all used interviews and focus groups for data collection. Both are useful tools for exploring women's subjective experiences of care. However, to understand how decisions are made during labour, methods using observational techniques (e.g. focused ethnography) are required to study interactions between women and the professionals caring for them (midwives, obstetricians) and between different professionals in the care team. Socio-cultural

factors (e.g. concerns about vaginal birth on sexual relationship with their partners) beyond the scope of this review, were explored briefly in three studies (Behruzi et al., 2010; Janani and Kohan, 2015, Parzandeh et al., 2017) and are an important area for research.

An important facilitator of implementation of a physiological approach to care was collaborative working between midwives and obstetricians. In units where collaborative working was observed, labour and birth was viewed as a physiological process by midwives and obstetricians and autonomous decision-making by midwives was valued by obstetricians. However, the widely held view by midwives that obstetricians on the whole did not see birth as a physiological process may have the unintended consequence of reducing collaboration (Downe et al., 2010). Facilitating influences of collaborative working and ways this can be enhanced and supported remains an important area for further research and action.

Strengths and limitations

A strength of this review was the use of widely recognised guidelines reflecting best practice (Shamseer et al., 2015; York Centre for Reviews and Dissemination, 2008) to develop a review protocol; and write a review that was comprehensive, robust and transparent. Close collaboration amongst reviewers was used to develop an inclusion and exclusion criteria to conduct a systematic search, and carefully screen studies for inclusion before performing an independent quality appraisals of articles. Agreement was reached that descriptive and analytical themes were derived from the primary studies before developing an explanatory model to explore facilitators and barriers and their interactive influences. Through application of a thematic synthesis method

(Thomas and Harden 2018) a high level of analytical abstraction was achieved for themes related to perceptions of birth and barriers at the level of midwives and obstetricians to the implementation of a physiological approach.

A limitation of this review is that many of the studies explored experiences from primarily or exclusively midwifery perspective. The exploration of other perspectives (e.g. obstetricians, women, partners and managers) was limited. The use of observational data collection techniques were lacking, and this limited findings on the interactive influences of facilitators and barriers at the levels explored. Most of the studies described the birth setting but this was usually brief. We were careful to ensure that all data included in the synthesis was drawn from OUs. However, we are not able to account for contextual differences in OUs that may be organised differently, unless this was reported in the primary literature. System level influences were beyond the scope of this study, so the ways and extent to which these broader influences affect frontline care in OUs were not examined.

Conclusions

Contrary to evidence-based guidelines that recommend a physiological approach, this review highlights the dominance of risk-based approaches in OUs. Primary research has mainly identified barriers to implementing a physiological approach at a professional level, and this has been studied largely from a midwifery perspective. To aid comprehensive investigations of facilitators and barriers and their interactive influences, this review identifies important research gaps for study across all levels: organisation, professionals (midwives and obstetricians) and women.

The evidence of preoccupation with risk and its rationalisation and consequently negatively influences on knowledge and skills in the use of a physiological approach must prompt reflection and action. The power imbalances between midwives and obstetricians need to be addressed drawing on experiences of collaborative working in OUs and in maternity services with different birth settings. This would benefit from research that explores issues such as influences of differing levels of midwifery autonomy on the use of clinical interventions, and professional views of and attitudes towards the capabilities of different professional groups to implement a physiological approach. Finally, woman-centred research is urgently needed to study influences on women's engagement with and resistance to clinical interventions in OUs.

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