A mixed methods review to develop and confirm a framework for assessing midwifery practice in perinatal mental health

Running head: Midwifery practice and perinatal mental health

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Abstract

Aim: To ascertain whether a new framework examining midwifery practice in perinatal mental health is supported by the research literature.

Background: The identification and care of women with perinatal mental health problems is increasingly considered part of midwifery practice. Research suggests that many midwives lack knowledge, skills and confidence. It would be useful to be able to determine barriers and facilitators to effective clinical practice. The authors propose a framework comprising five potentially measurable domains which impact on midwives’ ability to identify, assess and care for women with perinatal mental health problems.

Design: This mixed-methods review uses an innovative qualitative convergent design based on framework synthesis.

Data sources: Relevant electronic databases were searched for the period from January 2007 to December 2016; 33 studies from nine countries met the inclusion criteria.

Review methods: Study quality was assessed using critical appraisal tools. Study findings were mapped onto the five domains of the framework: knowledge, confidence, attitudes, illness perception and infrastructure. Findings were then synthesized for each domain.

Results: All five domains are substantially represented in the literature, thus supporting the proposed framework. A number of sub-domains and relationships between domains were identified. Varying levels of knowledge, confidence, attitudes and illness perceptions were found; evidence suggests that midwives benefit from further training within these domains. Features of organisational infrastructure act as barriers or facilitators to effective care; these need to be addressed at organisational level.

Conclusion: The proposed framework was confirmed and can be used to inform practice, policy and research.
Keywords
midwifery; midwives; perinatal mental health; postnatal depression; antenatal depression; midwifery education; mixed-methods review; framework synthesis

SUMMARY STATEMENT

Why is this review needed?
- Perinatal mental health problems can have serious consequences for women, their babies and their families.
- Midwives are increasingly involved in the assessment and care of women with perinatal mental health problems, but research shows that they may lack relevant knowledge, skills and confidence and that problems are often not identified or treated adequately.
- The review aims to confirm a framework which can be used to identify barriers and facilitators to the effective assessment and care of women with perinatal mental health problems.

What are the key findings?
- The review confirms the proposed framework and provides further details of the content of each of the five domains and how they are linked.
- Midwives’ knowledge, confidence, attitudes and illness perceptions vary considerably and may hinder the provision of effective care for women with perinatal mental health problems.
- Appropriate organisational infrastructure, including referral pathways, the organisation of care and adequate training, is crucial in supporting effective midwifery practice.

How should the findings be used to influence policy/practice/research/education?
- The framework can be used to enhance clinical practice by identifying facilitators and barriers to effective care.
- The framework can be used to support further research and the development of measures of the five domains.
- The framework can potentially be applied to other conditions and/or groups of health professionals and is suitable for use in different countries and health service structures.
INTRODUCTION

There is significant and continually accruing evidence of the deleterious consequences of perinatal mental health (PMH) problems for pregnancy outcomes (Dunkel Schetter & Tanner, 2012) and the well-being of mothers, fathers and babies (Stein et al., 2014). Identification and assessment of mental health issues can be critical in facilitating timely and appropriate liaison with relevant professionals, discussion regarding treatment and support options, and the development of management plans for the perinatal period. In the ten years since the publication of the UK National Institute for Health and Care Excellence (NICE) guidelines (NICE, 2007) for antenatal and postnatal mental health, which made recommendations and provided guidelines for the assessment and care of women with PMH problems, it would seem reasonable to expect significant changes. However, national reports (Knight et al., 2015; RCOG, 2017) continue to emphasize gaps in service provision and failures to appropriately identify and care for women with PMH problems. It seems timely, specifically in the light of significant investment in new service development in the UK and increasing political mobilisation in other countries, to seek greater understanding of the challenges midwives face, and to provide an explanatory framework which can identify why to date numerous policy drivers and guidelines have failed to translate into practice and how that could be better supported.

Background

Whilst midwives are increasingly involved in the assessment and care of women with PMH problems, evidence suggests that many express concern regarding their knowledge and skills and hence lack confidence (Noonan, Doody, Jomeen, & Galvin, 2017; Ross-Davie, Elliott, Sarkar, & Green, 2006). Research exploring women’s experiences has highlighted that a lack of knowledge of PMH among health professionals can act as a barrier to women’s access to care (Byatt et al., 2013; Higgins, Tuohy, Murphy, & Begley, 2016b). Low levels of confidence can have a negative impact on midwives’ behaviour during assessment and care (Davis, Foureur, Clements, Brodie, & Herbison, 2010).
Research with health visitors suggests that confidence in identifying and managing women with PMH problems is closely linked to knowledge (Jones et al., 2015).

Negative attitudes and stigmatisation associated with mental illness are an important issue and result in labelling people as ‘different’, stereotyping, and discrimination (Mårtensson, Jacobsson, & Engström, 2014). When this is linked to the literature which attributes knowledge deficits and low levels of clinical confidence to a greater likelihood of negative attitudes toward individuals with mental health issues (Schafer, Wood, & Williams, 2011), an interesting context begins to emerge, where a complexity of factors interact to influence practitioner behaviours. Whilst this has not to date been explored in the perinatal context, evidence does seem to indicate that lack of knowledge, experience and familiarity are factors related to more negative attitudes in healthcare staff. It is feasible then to suggest that a similar context could exist for student midwives or midwives who are not specifically trained in mental health. The impact of negative attitudes can be substantial and affects understanding of PMH problems (McGookin et al., 2017) and professional behaviour (Noonan et al., 2017), which may reduce the likelihood of women disclosing problems. Furthermore, women themselves often perceive their mental health problems as a stigma, which can be instrumental in preventing them from seeking help (Bilszta, Ericksen, Buist, & Milgrom, 2010; Byatt et al., 2013; Dennis & Chung-Lee, 2006).

Health professionals’ perceptions of an illness, i.e. their understanding of symptomology, causes and consequences of conditions, as well as perceptions of how much ‘personal control’ patients can exercise over their symptoms and behaviour, can influence patient-practitioner encounters (Worsely, Whitehead, Kandler, & Reuber, 2011). Practitioners actively form mental representations of an illness, which determine how they respond in terms of clinical decision-making. The fascinating aspect of illness perceptions is how practitioners can have widely different perceptions of a condition and these perceptions can lead the same patients down very different illness trajectories (Petrie & Weinman, 2006).
Further complicating the issue of effective care of PMH problems is a general acknowledgement that unless it forms an integral part of a resourced infrastructure, with clear pathways that can offer diagnostic assessment, effective and available treatment options and support, then practitioners are less likely to actively engage in the identification and assessment process (Jomeen & Martin, 2014; Noonan et al., 2017). Research into women’s experiences echoes the importance of clear referral processes and integrated services (Darwin, McGowan, & Edozien, 2015; Higgins et al., 2016b; Phillips & Thomas, 2015; Rollans, Schmied, Kemp, & Meade, 2013b). Access to a specialist PMH service promotes more positive experiences (Higgins et al., 2016b; Myors, Schmied, Johnson, & Cleary, 2014).

From this narrative snapshot of the literature, it appears that five domains – knowledge, confidence, attitudes, illness perception and organisational infrastructure – are likely to impact on midwives’ ability to identify, assess and care for women with PMH problems. The last two decades have seen a growing body of research in relation to the identification and care of women with PMH problems by midwives. A recent review (Noonan et al., 2017) exploring midwives’ perceptions and experiences of caring for women with PMH problems concludes that midwives’ knowledge, skills and attitudes were of great importance in the care for these women. Midwives need to be supported not just by further training opportunities, but also by appropriate referral pathways and a supportive infrastructure. This paper reviews a similar body of literature, but has a different focus with a different approach. The aim of this review is to systematically identify whether the international research literature supports the proposed five-domain framework in terms of midwives’ clinical practice.
Aims

The overall aim of this mixed methods review using a framework approach was to identify whether research into midwives’ clinical practice within the identification and care of women with PMH problems confirms the proposed five-domain framework or whether it needs to be modified.

Design

This review synthesizes findings from qualitative, quantitative and mixed methods studies using a framework approach. While the review includes quantitative and qualitative evidence, the methodological and philosophical differences between the qualitative and quantitative studies (including within mixed methods studies) were not very large. The qualitative studies tended to be descriptive rather than interpretative. The quantitative studies used mostly simple surveys, with some employing a pre-/post-test design, and were also more descriptive in nature; they were not suitable for inclusion in a meta-analysis. Therefore findings were integrated by transforming quantitative into qualitative findings (Sandelowski, Voils, & Barroso, 2006). Following Pluye and Hong (2014), the approach taken can be described as a qualitative convergent design.

Framework synthesis employs a framework as a ‘scaffold’ against which findings from qualitative studies are mapped (Carroll, Booth, & Cooper, 2011; Carroll, Booth, Leaviss, & Rick, 2013). While Carroll et al (2013) include the systematic identification of frameworks in the literature and the subsequent generation of the a priori framework, for this review a suitable framework had already been identified. The a priori framework used in this review is based on existing research evidence and the authors’ expert knowledge, as discussed above.

Search methods

Inclusion criteria
Studies were eligible for inclusion if they were empirical research, written in English, published between January 2007 and December 2016, and related to midwifery practice in PMH from midwives’ perspectives, i.e. with midwives as participants.

**Search strategy**

The search terms are shown in Table 1. Searches were conducted on PubMed, PsycINFO and CINAHL. Reference lists of identified papers were searched for further papers. After eliminating duplicates, search results were further screened by title, abstract and full text. The search was carried out in March 2017 by one of the authors (FW).

**Search outcome**

**Study selection**

The flow diagram in Figure 1 shows the number of studies retrieved and retained at each stage of the screening process. A total of 33 studies were included in the review. The selection of studies was carried out by one of the authors (FW) and agreed by the other authors.

**Study characteristics**

The eligible studies included 12 qualitative, five mixed methods and 16 quantitative studies originating from nine countries, with the majority conducted in Australia and the UK. The studies’ aims, sample characteristics, methodological approaches, and findings are shown in Table 2. Aims, study design and methodological approaches varied considerably.

Six studies evaluated the impact of pre- and post-qualification training (Elliott, Ross-Davie, Sarkar, & Green, 2007; Higgins, Carroll, & Sharek, 2012; Higgins, Carroll, & Sharek, 2016a; Jardri et al., 2010; Lau, McCauley, Moss, Miles, & Cross, 2015; McLachlan, Forster, Collins, Gunn, & Hegarty, 2011). Two looked at specific groups of women: black and ethnic minority women (Edge, 2010) and those with a
refugee background (Nithianandan et al., 2016). Midwives’ involvement in, and views of, PMH screening and assessment were examined in five studies (Rollans, Schmied, Kemp, & Meade, 2013a; Rompala, Cirino, Rosenberg, Fu, & Lambert, 2016; Williams, Turner, Burns, Evans, & Bennert, 2016; Yamashita et al., 2007; Yelland, McLachlan, Forster, Rayner, & Lumley, 2007). One study explicitly explored the impact of PMH assessments on midwives (Mollart, Newing, & Foureur, 2009).

Eight studies explored midwives’ views, knowledge and experiences of specific PMH problems: maternal distress (Fontein-Kuipers, Budé, Ausems, de Vries, & Nieuwenhuijze, 2014), antenatal depression (Jomeen, Glover, & Davies, 2009), schizophrenia (McCann & Clark, 2010; Wan, Moulton, & Abel, 2008), posttraumatic stress symptoms (Nyberg, Lindberg, & Öhrling, 2010), traumatic birth (Reed, Fenwick, Hauck, Gamble, & Creedy, 2014), and fear of childbirth (Salomonsson, Alehagen, & Wijma, 2011). The remaining 12 studies explored midwives’ knowledge of, and attitudes to, PMH issues generally (Gibb & Hundley, 2007; Hauck et al., 2015; Jarrett, 2014, 2015; Jones, Creedy, & Gamble, 2011, 2012a, 2012b; Lees, 2009; McCauley, Elsom, Muir-Cochrane, & Lyneham, 2011; Mivšek, Hundley, & Kiger, 2008; Phillips, 2015; Rothera & Oates, 2011).

Quality appraisal
The quality of studies was assessed using the Critical Appraisal Skills Programme (CASP) (Critical Appraisal Skills Programme, 2017) tool for qualitative studies; the tool for cohort studies was adapted for the quantitative studies. CASP ratings and comments for individual studies are included in supplementary information table 1. No studies were excluded on grounds of quality, but ratings were taken into account during the synthesis. Quality assessments were done by one author (FW), with a sub-sample checked by another author (PJ); comparison of assessments showed good inter-rater agreement.

Data abstraction
Data from qualitative and quantitative studies were mapped against the framework. For mixed methods studies, qualitative and quantitative data were mapped separately. Mapping followed these steps:

1. In each paper, evidence of the domains was highlighted, using different colours for the five domains. These concepts represent distinct ‘units of meaning’.
2. Quantitative findings were transformed into qualitative findings.
3. Each concept was represented by a brief quote or description. These were entered into a table, with one column for each domain and an additional column for concepts which did not appear to fit into any of the domains. Each row contained the concepts for one paper.

Synthesis

*Synthesis of evidence for each domain*

After mapping the data against the domains, findings were drawn together and integrated for each of the five domains. Quantitative findings were transformed into qualitative findings (examples are given in supplementary information table 2). Qualitative and quantitative data were compared for areas of convergence, complementarity or discrepancy (O’Cathain, Murphy, & Nicholl, 2010). Findings were written up for each domain and sub-domain. The process of mapping concepts and writing up findings for each domain was iterative; referring back to the original papers as necessary helped to ensure that the concepts remained rooted in the original studies.

*Comparison of mapped evidence and the a prior framework*

The distribution and quality of evidence from qualitative and quantitative studies across all domains was then examined. Rich, in-depth evidence from a range of qualitative and quantitative sources for each domain indicates good evidence for confirmation of the framework (Carroll et al., 2013). The identification of concepts outside the five domains would suggest that the framework needs to be modified (Carroll et al., 2013).
RESULTS

Detailed findings are available in supplementary information table 3.

Knowledge

This domain relates to knowledge of PMH issues, knowledge of assessment, treatment and referrals, and interpersonal skills in interactions with women. There is a clear overlap with other domains, particularly confidence and illness perception. There was considerable variation in midwives’ levels of PMH knowledge. Overall, knowledge was good for most conditions, particularly PND, but there were notable gaps, particularly for more severe conditions and for risk factors and consequences of PMH problems (Elliott, 2007; Hauck, 2015; Higgins et al., 2016a; Jarrett, 2015; Jomeen et al., 2009; Jones et al., 2011; Phillips, 2015). Many studies examined self-rated knowledge, which tended to be more positive than assessed knowledge but is likely to be less reliable. Training increased levels of knowledge (Elliott et al., 2007; Higgins et al., 2012; Lau et al., 2015; McLachlan et al., 2011). Midwives used a range of assessment approaches (Gibb & Hundley, 2007; Yelland et al., 2007), including informal and adapted techniques (Jarrett, 2014; Rollans et al., 2013a; Salomonsson et al., 2011; Williams et al., 2016). Assessment of depression was more accurate than for other conditions (Hauck et al., 2015; Jones et al., 2012a). Assessment skills were improved by training (Higgins et al., 2012; Jardri et al., 2010; Yamashita et al., 2007). Knowledge of treatment and referrals varied, but was found to be poor in some midwives (Hauck et al., 2015; McCauley et al., 2011; Rothera & Oates, 2011; Wan et al., 2008; Williams et al., 2016). Interpersonal skills, particularly good communication skills and building rapport, were considered very important in facilitating disclosure and care (McCauley et al., 2011; McLachlan et al., 2011; Mivšek et al., 2008; Rollans et al., 2013a; Williams et
al., 2016), but there was limited information in the included studies on the adequacy of interpersonal skills.

Confidence
Not many of the papers discussed confidence explicitly; it is, however, implicit in other domains and there is an overlap with knowledge and to a lesser extent with attitude. Although there were some exceptions, there was a general lack of confidence among midwives in the identification, care and referral of women with PMH problems (Edge, 2010; Gibb & Hundley, 2007; Hauck et al., 2015; Jomeen et al., 2009; Lees, 2009; McCauley et al., 2011; Phillips, 2015; Reed et al., 2014; Yelland et al., 2007), particularly with respect to women with serious mental health problems (Jarrett, 2015; McCauley et al., 2011; Rothera & Oates, 2011). Confidence appeared to be higher in the assessment of women than in caring for women (Jarrett, 2015; Jones et al., 2012b). Lack of confidence can lead to increases in referrals to other services (Rothera & Oates, 2011). Training increased levels of confidence (Elliott et al., 2007; Higgins et al., 2012; Lau et al., 2015; McLachlan et al., 2011; Reed et al., 2014; Williams et al., 2016), as did previous experience (Hauck et al., 2015), although Jomeen and colleagues (2009) suggest that taught, rather than accrued, conceptualisations of PMH problems are more likely to be effective in increasing confidence.

Attitude
This domain has two sub-domains: (1) midwives’ attitude to their role within PMH and (2) their attitude towards women with PMH problems. Midwives’ attitudes to their role varied, with some studies revealing partially conflicting views, particularly in the case of more severe PMH problems. Midwives were more likely to consider assessments as part of their role, but felt that care and treatment, particularly of women with severe problems, was the responsibility of other professionals (Hauck et al., 2015; Jones et al., 2012b). Attitudes to women with PMH problems were mixed.
Attitudes are hard to measure accurately due to subjective perceptions and the impact of social desirability bias. Negative attitudes are often not expressed overtly but tend to be hidden or subconscious (Hauck et al., 2015). Many midwives had positive attitudes towards women with PMH problems, but stereotyping and stigma were also evident (Hauck et al., 2015; Higgins et al., 2016a; Jarrett, 2014; McCauley et al., 2011; Phillips, 2015). In two of the qualitative papers, midwives talked about the reluctance of midwifery generally to adopt a more psychological perspective, rather than a focus purely on physical health (Phillips, 2015), and suggest that mental health is still regarded as a taboo subject (Lees, 2009). Several studies showed that training can help to reduce stigma and increase understanding (Elliott et al., 2007; Higgins et al., 2012; Higgins et al., 2016a; McLachlan et al., 2011; Reed et al., 2014).

Illness perception
In the included studies, illness perceptions related to contributing factors and prevalence, symptoms and consequences, and treatment and recovery. The accuracy of illness perceptions varied between studies. Illness perceptions appeared to be more accurate for more historically acknowledged conditions such as postnatal depression, which have received more emphasis in training and clinical practice. Perceptions of antenatal depression were less accurate, which may reflect less emphasis in training on depression in pregnancy (Jomeen et al., 2009; Jones et al., 2011). Perceptions were also less accurate for more severe conditions, especially in terms of contributing factors and consequences (Jarrett, 2015; McCann & Clark, 2010). There was evidence of lay or ‘common sense’ perceptions, particularly in terms of factors contribution to PMH problems (Hauck et al., 2015; McCann & Clark, 2010). This underlines the importance of adequate training in PMH issues, including severe conditions. One of the included studies illustrates the importance of illness perceptions in the context of antenatal depression: midwives demonstrated varied levels of understanding of the condition, which impacted on identification and led to failure to make referral decisions, despite the majority of midwives believing that antenatal depression was treatable (Jomeen et al., 2009).
Infrastructure

Sub-themes in this domain were time pressures, referral pathways and further services, the organisation of maternity care, training and support for midwives. Many midwives said that time pressures made assessment and care more challenging and could be a barrier to effective assessment (Edge, 2010; Lees, 2009; Nithianandan et al., 2016; Phillips, 2015; Rompala et al., 2016). Some felt that caring for women with PMH problems required additional time (McCauley et al., 2011; Mivšek et al., 2008). Time pressures were particularly acute in the initial appointment (Lees, 2009; Nithianandan et al., 2016). Many of the studies underlined the inadequacy of referral pathways and a lack of appropriate services for referral. Several studies highlighted the importance of good communication between health professionals and appropriate integration of services for effective care (McCauley et al., 2011; Mivšek et al., 2008; Phillips, 2015). Continuity of care was identified as being important for the provision of effective care as it enabled midwives and women to build up a relationship and makes it easier for midwives to identify problems (Gibb & Hundley, 2007; Jones et al., 2012b; Mivšek et al., 2008; Reed et al., 2014; Wan et al., 2008; Williams et al., 2016; Yelland et al., 2007).

Lack of adequate training and the need for further training were common themes in many studies (Hauck et al., 2015; Jomeen et al., 2009; Jones et al., 2011; Lees, 2009; McCann & Clark, 2010; McCauley et al., 2011; Phillips, 2015; Rothera & Oates, 2011; Wan et al., 2008). As one of the studies (McCann & Clark, 2010) showed, students who have just started a midwifery course are likely to use lay conceptualisations of mental disorders, highlighting the need for comprehensive PMH training within the curriculum. Several studies included in this review found that training improved confidence, knowledge and skills and reduced stigma among midwives (Elliott et al., 2007; Higgins et al., 2012; Higgins et al., 2016a; Jardri et al., 2010; Lau et al., 2015; McLachlan et al., 2011; Reed et al., 2014; Williams et al., 2016). This needs to be treated with some caution as in many studies knowledge and skills were self-rated and any increase in knowledge and training was
assessed soon after training and may not necessarily be sustained over a longer time period. It is promising that overall the later studies in this review suggest higher levels of knowledge compared to the earlier studies, indicating a general improvement in training and knowledge. A few papers emphasized the emotional impact of caring for women with PMH problems on midwives and the need for both formal and informal support in order to enable midwives to provide good quality care (Mollart et al., 2009; Nyberg et al., 2010; Rothera & Oates, 2011; Salomonsson et al., 2011).

DISCUSSION

Support for the framework

There was rich evidence for all five domains of the a priori framework (Figure 2) in qualitative and quantitative studies, ranging from 19 studies (illness perception) to 29 studies (knowledge) (Table 3). There was some overlap between several of the domains and consequently the allocation of some concepts to domains has been ambiguous. In particular, there was considerable overlap between the domains of knowledge and illness perception; in many cases it was difficult to decide to which domain concepts should be assigned. In terms of the knowledge domain, this was the case for knowledge of PMH conditions and treatment options, rather than interpersonal skills. However, overall the domains are distinct enough to represent separate components of the framework.

Additional domains

Originally, several concepts were identified as potentially being outside the five domains. One of these was midwives’ interpersonal skills in the interaction with women. The decision was made to include this in the knowledge domain, but it is important to note that it constitutes a separate sub-domain to ‘knowledge about PMH issues and ‘knowledge of assessment, treatment and referrals’.
This raises some questions about the content of the knowledge domain. The emotional impact on midwives of caring for women with PMH problems and midwives’ need for support were also originally considered outside the five domains. However, as the provision of support largely falls under organisational infrastructure, these concepts were included within the infrastructure domain.

Sub-domains

Sub-domains were identified for four of the five domains, further elaborating the structure of the framework. Knowledge can be split into knowledge about PMH issues, knowledge of assessment, treatment and referrals, and knowledge of interpersonal skills. To some extent knowledge can be divided into knowing what and knowing how. Knowing what relates to knowledge of facts about PMH issues (including prevalence rates, predisposing factors, illness characteristics, consequences) and knowledge of assessment, treatment and referral options. Knowing how is more closely related to skills in assessment and treatment, as well as interpersonal skills. The attitude domain contains two distinct subdomains: attitudes towards midwives’ role in assessment and treatment of PMH and attitudes towards women with PMH problems. Illness perception can be divided into perception of contributing factors and prevalence, symptoms and consequences, and treatment and recovery. Within infrastructure the subdomains are quite distinct: lack of time, referral pathways and further services, the organisation of maternity care, training and support for midwives, though lack of time could be included with the organisational subdomain.

Relationship of domains to each other

Knowledge is a critical component of the framework and to some extent underpins confidence, attitude and illness perception. The link with confidence is relatively direct: higher levels of knowledge and skills generally increase confidence (Jones et al., 2015). Benner’s ‘from novice to expert’ stages of clinical competence (Benner, 1982) can be used to explore the link between
knowledge and confidence. Knowledge is a critical component which develops over time, is reinforced by experience and underpins performance through the five levels of proficiency. The ‘novice’ has little or no knowledge or experience in the situation in which they are expected to perform and as a consequence lacks confidence (i.e. student midwife). As the practitioner moves through the stages of clinical competence, gaining knowledge and experience, confidence is enhanced and facilitates conscious, analytical contemplation of the problem. A proficient practitioner has a perspective on the whole problem and hence is able to take into account the holistic picture which improves clinical decision-making and efficiency. The ‘expert’ ultimately is able through knowledge, confidence, experience and deep insight to ensure accurate identification of the problem, even in situations where she has no experience of that particular problem (i.e. experienced midwife with specialist knowledge of PMH problems).

Knowledge is also linked to attitude, as improved knowledge of PMH conditions, treatments and referral options may make it more likely that midwives recognise that assessment and care of women with PMH problems are part of their role (Jardri et al., 2010; Noonan et al., 2017). Higher levels of confidence are likely to result in midwives having a more positive attitude towards their own role in the assessment and care of women with PMH problem. However, attitudes to midwives’ role in PMH also go beyond individual levels of knowledge and confidence, as evidenced by the two papers in which midwives talked about a reluctance in midwifery generally to take a more psychological perspective (Lees, 2009; Phillips, 2015). While this is likely to be partly due to a lack of confidence and knowledge, it may also be related to the dominance of the biomedical approach in maternity care which prevails despite challenges from the alternative humanistic normality paradigm (Brubaker & Dillaway, 2009). Better knowledge, and more accurate illness perceptions, can improve attitudes towards women with PMH problems by counteracting negative stereotypes and stigma and reducing fear. This is supported by a number of studies included in this review which suggest that training, and therefore increased knowledge, helps to reduce stigma and increases
understanding (Elliott et al., 2007; Higgins et al., 2012; Higgins et al., 2016a; McLachlan et al., 2011; Reed et al., 2014).

There are number of links between knowledge and organisational infrastructure. Clear, readily available referral pathways and information about further services are likely to increase knowledge of referral and treatment options (Jomeen & Martin, 2014; Noonan et al., 2017). There is good evidence that effective training, both as part of midwifery education and through ongoing professional development, increases knowledge of all types (Elliott et al., 2007; Higgins et al., 2012; Higgins et al., 2016a; Jardri et al., 2010; Lau et al., 2015; McLachlan et al., 2011; Reed et al., 2014; Williams et al., 2016). Training also increases confidence through increased knowledge and the presence of clear referral pathways is likely to increase midwives’ confidence in referring women for further treatment (Hogg, 2013). All infrastructure subdomains are likely to have an impact on midwives’ attitudes towards their own role in PMH. Lack of time and support and the absence of effective referral pathways and further services may lead to midwives feeling that the identification care of women with PMH problems is beyond the scope of their role (Byatt, Simas, Lundquist, Johnson, & Ziedonis, 2012; Hogg, 2013).

Strengths and limitations
This review used an innovative approach to conduct a mixed methods systematic review using framework synthesis. It was strengthened by the inclusion of a wide range of qualitative and quantitative research studies conducted in a number of countries using different perspectives and research conditions. However, the different contexts and methodologies of studies included in the review made comparison of the studies difficult. Some studies were of methodological quality, with relatively low sample sizes and often high drop-out rates. The frequent use of midwives’ self-report assessment of knowledge and confidence and of non-validated questionnaires was also problematic and could undermine the accuracy of the findings from these particular studies.
CONCLUSION

This mixed methods review used a framework synthesis approach to confirm five domains of midwifery practice in the care and identification of women with PMH problems. It identified a number of subdomains and how domains are related to each other. The review identified variations in midwives’ knowledge, confidence, attitudes and illness perceptions. Knowledge was confirmed as a critical component of practice which underpins other domains, and emphasizes the need for high quality, effective training in PMH issues. Other factors also constrain effective identification and care of women with PMH problems, including organisational processes. It is essential for service providers to identify and modify those barriers to midwives becoming ‘experts’ in the care of women with PMH problems.

This framework can be used to systematically identify gaps in knowledge, confidence, attitudes, illness perceptions, and training. It can also aid in the identification of barriers to effective care in terms of factors related to organisational infrastructure. In research, the framework can facilitate a conceptual exploration of facilitators and barriers to the identification and care of women with PMH problems. Furthermore, the framework has already aided the development of validated measures assessing mental health awareness in midwives and student midwives (Martin, Jomeen, & Jarrett, 2017) and professional issues in maternal mental health (Jomeen, Jarrett, & Martin, 2018). The framework has international relevance and can potentially be applied to other conditions and groups of health professionals. Further research is required into the use of these measures and potential ways of assessing other domains. Research which explicitly explores how domains are linked and support each other would strengthen the framework and could be used to enhance effective care and service delivery.
REFERENCES

Benner, P. (1982). From novice to expert. *AJN The American Journal of Nursing, 82*(3), 402-407.

Bilszta, J., Ericksen, J., Buist, A., & Milgrom, J. (2010). Women’s experience of postnatal depression - beliefs and attitudes as barriers to care. *Australian Journal of Advanced Nursing, 27*(3), 44-45.

Brubaker, S. J., & Dillaway, H. E. (2009). Medicalization, natural childbirth and birthing experiences. *Sociology Compass, 3*(1), 31-48. doi:10.1111/j.1751-9020.2008.00183.x

Byatt, N., Biebel, K., Friedman, L., Debordes-Jackson, G., Ziedonis, D., & Pbert, L. (2013). Patient’s views on depression care in obstetric settings: how do they compare to the views of perinatal health care professionals? *General Hospital Psychiatry, 35*(6), 598-604.

doi:http://dx.doi.org/10.1016/j.genhosppsych.2013.07.011

Byatt, N., Simas, T. A. M., Lundquist, R. S., Johnson, J. V., & Ziedonis, D. M. (2012). Strategies for improving perinatal depression treatment in North American outpatient obstetric settings. *Journal of Psychosomatic Obstetrics & Gynecology, 33*(4), 143-161.

doi:10.3109/0167482X.2012.728649

Carroll, C., Booth, A., & Cooper, K. (2011). A worked example of "best-fit" framework synthesis: a systematic review of views concerning the taking of potential chemopreventive agents. *BMC Medical Research Methodology, 11*. doi:10.1186/1471-2288-11-29

Carroll, C., Booth, A., Leaviss, J., & Rick, J. (2013). “Best fit” framework synthesis: refining the method. *BMC Medical Research Methodology, 13*(1), 37. doi:10.1186/1471-2288-13-37

Critical Appraisal Skills Programme (2017). CASP Checklists. Retrieved from http://www.casp-uk.net/casp-tools-checklists

Darwin, Z., McGowan, L., & Edozien, L. C. (2015). Antenatal mental health referrals: review of local clinical practice and pregnant women’s experiences in England. *Midwifery, 31*(3), e17–e22.

doi:10.1016/j.midw.2014.11.004
Davis, D., Foureur, M., Clements, V., Brodie, P., & Herbison, P. (2012). The self reported confidence of newly graduated midwives before and after their first year of practice in Sydney, Australia. *Women and Birth, 25*(3), e1-e10. doi:https://doi.org/10.1016/j.wombi.2011.03.005

Dennis, C. L., & Chung-Lee, L. (2006). Postpartum depression help-seeking barriers and maternal treatment preferences: a qualitative systematic review. *Birth, 33*(4), 323-331. doi:10.1111/j.1523-536X.2006.00130.x

Dunkel Schetter, C., & Tanner, L. (2012). Anxiety, depression and stress in pregnancy: implications for mothers, children, research, and practice. *Current Opinion in Psychiatry, 25*(2), 141-148. doi:10.1097/YCO.0b013e3283503680

Edge, D. (2010). Falling through the net — Black and minority ethnic women and perinatal mental healthcare: health professionals' views. *General Hospital Psychiatry, 32*(1), 17-25. doi:http://dx.doi.org/10.1016/j.genhosppsych.2009.07.007

Elliott, S., Ross-Davie, M., Sarkar, A., & Green, L. (2007). Detection and initial assessment of mental disorder: the midwife's role. *British Journal of Midwifery, 15*(12), 759-764. doi:10.12968/bjom.2007.15.12.27791

Fontein-Kuipers, Y. J., Budé, L., Ausems, M., de Vries, R., & Nieuwenhuijze, M. J. (2014). Dutch midwives' behavioural intentions of antenatal management of maternal distress and factors influencing these intentions: An exploratory survey. *Midwifery, 30*(2), 234-241. doi:http://dx.doi.org/10.1016/j.midw.2013.06.010

Gibb, S., & Hundley, V. (2007). What psychosocial well-being in the postnatal period means to midwives. *Midwifery, 23*(4), 413-424. doi:http://dx.doi.org/10.1016/j.midw.2006.07.005

Hauck, Y. L., Kelly, G., Dragovic, M., Butt, J., Whittaker, P., & Badcock, J. C. (2015). Australian midwives knowledge, attitude and perceived learning needs around perinatal mental health. *Midwifery, 31*(1), 247-255. doi:http://dx.doi.org/10.1016/j.midw.2014.09.002

Higgins, A., Carroll, M., & Sharek, D. (2012). ‘It opened my mind’: student midwives’ views of a motherhood and mental health module. *MIDIRS Midwifery Digest, 22*(3), 287-292.
Higgins, A., Carroll, M., & Sharek, D. (2016a). Impact of perinatal mental health education on student midwives' knowledge, skills and attitudes: A pre/post evaluation of a module of study. *Nurse Education Today, 36*, 364-369. doi:http://dx.doi.org/10.1016/j.nedt.2015.09.007

Higgins, A., Tuohy, T., Murphy, R., & Begley, C. (2016b). Mothers with mental health problems: Contrasting experiences of support within maternity services in the Republic of Ireland. *Midwifery, 36*, 28-34. doi:http://dx.doi.org/10.1016/j.midw.2016.02.023

Hogg, S. (2013). *Prevention in mind. All babies count: Spotlight on perinatal mental health.*. Retrieved from https://www.nspcc.org.uk/globalassets/documents/research-reports/all-babies-count-spotlight-perinatal-mental-health.pdf

Jardri, R., Maron, M., Pelta, J., Thomas, P., Codaccioni, X., Goudemand, M., & Delion, P. (2010). Impact of midwives’ training on postnatal depression screening in the first week post delivery: a quality improvement report. *Midwifery, 26*(6), 622-629. doi:http://dx.doi.org/10.1016/j.midw.2008.12.006

Jarrett, P. (2014). Attitudes of student midwives caring for women with perinatal mental health problems. *British Journal of Midwifery, 22*(10), 718-724. doi:https://doi.org/10.12968/bjom.2014.22.10.718

Jarrett, P. (2015). Student midwives’ knowledge of perinatal mental health. *British Journal of Midwifery, 23*(1), 32-39. doi:https://doi.org/10.12968/bjom.2015.23.1.32

Jomeen, J., Glover, L. F., & Davies, S.-A. (2009). Midwives' illness perceptions of antenatal depression. *British Journal of Midwifery, 17*(5), 296-303. doi:https://doi.org/10.12968/bjom.2009.17.5.42221

Jomeen, J., & Martin, C. (2014). Developing specialist perinatal mental health services. *Practising Midwife, 17*(3), 18-21.

Jomeen, J., Jarrett, P. M., & Martin, C. R. (2018). Professional issues in maternal mental health scale (PIMMHS): The development and initial validation of a brief and valid measure. *European Journal of Midwifery, 2*(2). doi:10.18332/ejm/83276
Jones, C., Jomeen, J., Glover, L., Gardiner, E., Garg, D., & Marshall, C. (2015). Exploring changes in health visitors knowledge, confidence and decision making for women with perinatal mental health difficulties following a brief training package. *European Journal for Person Centered Healthcare*, 3(3). doi:http://dx.doi.org/10.5750/ejpch.v3i3.1012

Jones, C. J., Creedy, D. K., & Gamble, J. A. (2011). Australian midwives' knowledge of antenatal and postpartum depression: a national survey. *Journal of Midwifery and Women's Health*, 56(4), 353-361. doi:10.1111/j.1542-2011.2011.00039.x

Jones, C. J., Creedy, D. K., & Gamble, J. A. (2012a). Australian midwives' awareness and management of antenatal and postpartum depression. *Women and Birth*, 25(1), 23-28. doi:http://dx.doi.org/10.1016/j.wombi.2011.03.001

Jones, C. J., Creedy, D. K., & Gamble, J. A. (2012b). Australian midwives' attitudes towards care for women with emotional distress. *Midwifery*, 28(2), 216-221. doi:http://dx.doi.org/10.1016/j.midw.2010.12.008

Knight, M., Tuffnell, D., Kenyon, S., Shakespeare, J., Gray, R., Kurinczuk, J. J., & on behalf of MBRRACE-UK. (2015). *Saving Lives, Improving Mothers’ Care - Surveillance of maternal deaths in the UK 2011-13 and lessons learned to inform maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2009-13*. Retrieved from Oxford: https://www.npeu.ox.ac.uk/downloads/files/mbrrace-uk/reports/MBRRACE-UK%20Maternal%20Report%202015.pdf

Lau, R., McCauley, K., Moss, C., Miles, M., & Cross, W. (2015). Evaluation of an advanced perinatal mental health program for midwives. *Australian Nursing and Midwifery Journal*, 22(11), 44.

Lees, S. B., M.; Mills, N.; McCalmont, C. (2009). Professionals’ knowledge of perinatal mental health care. *Mental Health Practice*, 13(4), 24-27. doi:10.7748/mhp2009.12.13.4.24.c7409

Mårtensson, G., Jacobsson, J. W., & Engström, M. (2014). Mental health nursing staff's attitudes towards mental illness: an analysis of related factors. *Journal of Psychiatric and Mental Health Nursing*, 21(9), 782-788. doi:10.1111/jpm.12145
Martin, C. R., Jomeen, J., & Jarrett, P. M. (2017). The Development and Initial Validation of the Perinatal Mental Health Awareness Scale in Student Midwives. *Journal of Midwifery and Reproductive Health, 5*(4), 1021-1031. doi:10.22038/jmrh.2017.9251

McCann, T. V., & Clark, E. (2010). Australian Bachelor of Midwifery students’ mental health literacy: an exploratory study. *Nursing and Health Sciences, 12*(1), 14-20. doi:10.1111/j.1442-2018.2009.00477.x

McCauley, K., Elsom, S., Muir-Cochrane, E., & Lyneham, J. (2011). Midwives and assessment of perinatal mental health. *Journal of Psychiatric and Mental Health Nursing, 18*(9), 786-795. doi:10.1111/j.1365-2850.2011.01727.x

McGookin, A., Furber, C., & Smith, D. M. (2017). Student midwives’ awareness, knowledge, and experiences of antenatal anxiety within clinical practice. *Journal of Reproductive and Infant Psychology, 35*(4), 380-393. doi:10.1080/02646838.2017.1337270

McLachlan, H. L., Forster, D. A., Collins, R., Gunn, J., & Hegarty, K. (2011). Identifying and supporting women with psychosocial issues during the postnatal period: Evaluating an educational intervention for midwives using a before-and-after survey. *Midwifery, 27*(5), 723-730. doi:http://dx.doi.org/10.1016/j.midw.2010.01.008

Mivšek, A. P., Hundley, V., & Kiger, A. (2008). Slovenian midwives’ and nurses’ views on post-natal depression: an exploratory study. *International Nursing Review, 55*(3), 320-326. doi:10.1111/j.1466-7657.2008.00620.x

Mollart, L., Newing, C., & Foureur, M. (2009). Midwives’ emotional wellbeing: Impact of conducting a Structured Antenatal Psychosocial Assessment (SAPSA). *Women and Birth, 22*(3), 82-88. doi:http://dx.doi.org/10.1016/j.wombi.2009.02.001

Myors, K. A., Schmied, V., Johnson, M., & Cleary, M. (2014). 'My special time': Australian women’s experiences of accessing a specialist perinatal and infant mental health service. *Health and Social Care in the Community, 22*(3), 268-277. doi:10.1111/hsc.12079
NICE. (2007). Antenatal and postnatal mental health: clinical management and service guidance. London: National Institute for Health and Care Excellence. Retrieved from https://www.nice.org.uk/guidance/cg45 [accessed 12 February 2015]

Nithianandan, N., Gibson-Helm, M., McBride, J., Binny, A., Gray, K. M., East, C., & Boyle, J. A. (2016). Factors affecting implementation of perinatal mental health screening in women of refugee background. *Implementation Science, 11*(1), 150. doi:10.1186/s13012-016-0515-2

Noonan, M., Doody, O., Jomeen, J., & Galvin, R. (2017). Midwives’ perceptions and experiences of caring for women who experience perinatal mental health problems: An integrative review. *Midwifery, 45*, 56-71. doi:http://dx.doi.org/10.1016/j.midw.2016.12.010

Nyberg, K., Lindberg, I., & Öhrling, K. (2010). Midwives’ experience of encountering women with posttraumatic stress symptoms after childbirth. *Sexual & Reproductive Healthcare, 1*(2), 55-60. doi:http://dx.doi.org/10.1016/j.srhc.2010.01.003

O’Cathain, A., Murphy, E., & Nicholl, J. (2010). Three techniques for integrating data in mixed methods studies. *BMJ, 341*. doi:10.1136/bmj.c4587

Petrie, K. J., & Weinman, J. (2006). Why illness perceptions matter. *Clinical Medicine (Lond), 6*(6), 536-539.

Phillips, L. (2015). Assessing the knowledge of perinatal mental illness among student midwives. *Nurse Education in Practice, 15*(6), 463-469. doi:http://dx.doi.org/10.1016/j.nepr.2014.09.003

Phillips, L., & Thomas, D. (2015). The first antenatal appointment: An exploratory study of the experiences of women with a diagnosis of mental illness. *Midwifery, 31*(8), 756-764. doi:http://dx.doi.org/10.1016/j.midw.2015.04.004

Pluye, P., & Hong, Q. N. (2014). Combining the Power of Stories and the Power of Numbers: Mixed Methods Research and Mixed Studies Reviews. *Annual Review of Public Health, 35*(1), 29-45. doi:10.1146/annurev-publhealth-032013-182440
RCOG (2017). *Maternal mental health - women’s voices*. Retrieved from London:

https://www.rcog.org.uk/globalassets/documents/patients/information/maternalmental-healthwomens-voices.pdf

Reed, M., Fenwick, J., Hauck, Y., Gamble, J., & Creedy, D. K. (2014). Australian midwives’ experience of delivering a counselling intervention for women reporting a traumatic birth. *Midwifery, 30*(2), 269-275. doi:http://dx.doi.org/10.1016/j.midw.2013.07.009

Rollans, M., Schmied, V., Kemp, L., & Meade, T. (2013a). ‘We just ask some questions...’ the process of antenatal psychosocial assessment by midwives. *Midwifery, 29*(8), 935-942. doi:http://dx.doi.org/10.1016/j.midw.2012.11.013

Rollans, M., Schmied, V., Kemp, L., & Meade, T. (2013b). Digging over that old ground: an Australian perspective of women’s experience of psychosocial assessment and depression screening in pregnancy and following birth. *BMC Women’s Health, 13*(1), 18. doi:10.1186/1472-6874-13-18

Rompala, K. S., Cirino, N., Rosenberg, K. D., Fu, R., & Lambert, W. E. (2016). Prenatal Depression Screening by Certified Nurse-Midwives, Oregon. *Journal of Midwifery and Women’s Health*. doi:10.1111/jmwh.12491

Ross-Davie, M., Elliott, S., Sarkar, A., & Green, L. (2006). A public health role in perinatal mental health: Are midwives ready? *British Journal of Midwifery, 14*(6), 330-334. doi:https://doi.org/10.12968/bjom.2006.14.6.21181

Rothera, I., & Oates, M. (2011). Managing perinatal mental health: A survey of practitioners’ views. *British Journal of Midwifery, 19*(5), 304-313. doi:https://doi.org/10.12968/bjom.2011.19.5.304

Salomonsson, B., Alehagen, S., & Wijma, K. (2011). Swedish midwives’ views on severe fear of childbirth. *Sexual & Reproductive Healthcare, 2*(4), 153-159. doi:http://dx.doi.org/10.1016/j.srhc.2011.07.002

Sandelowski, M., Voils, C. I., & Barroso, J. (2006). Defining and designing mixed research synthesis studies. *Research in the schools, 13*(1), 29.
Schafer, T., Wood, S., & Williams, R. (2011). A survey into student nurses' attitudes towards mental illness: Implications for nurse training. *Nurse Education Today, 31*(4), 328-332. doi:https://doi.org/10.1016/j.nedt.2010.06.010

Stein, A., Pearson, R. M., Goodman, S. H., Rapa, E., Rahman, A., McCallum, M., . . . Pariante, C. M. (2014). Effects of perinatal mental disorders on the fetus and child. *The Lancet, 384*(9956), 1800-1819. doi:https://doi.org/10.1016/S0140-6736(14)61277-0

Wan, M. W., Moulton, S., & Abel, K. M. (2008). The service needs of mothers with schizophrenia: a qualitative study of perinatal psychiatric and antenatal workers. *General Hospital Psychiatry, 30*(2), 177-184. doi:http://dx.doi.org/10.1016/j.genhosppsych.2007.12.001

Williams, C. J., Turner, K. M., Burns, A., Evans, M. M. M. D. J., & Bennert, K. (2016). Midwives and women's views on using UK recommended depression case finding questions in antenatal care. *Midwifery, 35*, 39-46. doi:http://dx.doi.org/10.1016/j.midw.2016.01.015

Worsely, C., Whitehead, K., Kandler, R., & Reuber, M. (2011). Illness perceptions of health care workers in relation to epileptic and psychogenic nonepileptic seizures. *Epilepsy & Behavior, 20*(4), 668-673. doi:10.1016/j.yebeh.2011.01.029

Yamashita, H., Ariyoshi, A., Uchida, H., Tanishima, H., Kitamura, T., & Nakano, H. (2007). Japanese midwives as psychiatric diagnosticians: application of criteria of DSM-IV mood and anxiety disorders to case vignettes. *Psychiatry and Clinical Neurosciences, 61*(3), 226-233. doi:10.1111/j.1440-1819.2007.01659.x

Yelland, J., McLachlan, H., Forster, D., Rayner, J., & Lumley, J. (2007). How is maternal psychosocial health assessed and promoted in the early postnatal period? Findings from a review of hospital postnatal care in Victoria, Australia. *Midwifery, 23*(3), 287-297. doi:http://dx.doi.org/10.1016/j.midw.2006.06.003
Impact statement

This review adds to the body of knowledge around midwives’ practice in the identification and care of women with perinatal mental health problems. The authors propose a framework comprising five domains: knowledge, confidence, attitudes, illness perception, and organizational infrastructure. Relevant research is reviewed to further develop the framework and confirm its domains. The proposed framework, which is supported by the evidence synthesized in the review, can be used to support clinical practice by identifying gaps in effective care, training needs and elements of organisational infrastructure required to support midwives in their role. The framework can also be used in research and the development of relevant measures and can be applied to other conditions and groups of health professionals.
| Table 1 | Search terms (limited to 2007-2016) |
|---------|-----------------------------------|
|         | midwife OR midwives OR midwifery |
|         | AND                               |
|         | perinatal OR antenatal OR prenatal OR antepartum OR postnatal OR postpartum OR pregnancy OR maternal |
|         | AND                               |
|         | “mental health” OR anxiety OR depression OR stress OR distress |
|         | AND                               |
|         | identification OR diagnosis OR disclosure OR assessment OR management OR care |
| Study Characteristics | Aims | Sample and Methods | Findings |
|-----------------------|------|--------------------|----------|
| Edge, 2010 (UK)       | Investigate health professionals' views about PMH care for Black & ethnic minority women | 42 health professionals (including 27 midwives) Interviews and focus groups (framework analysis) | Time, staff and resource shortages; lack of psychiatric knowledge and training; lack of clear referral process; some assumptions made about BME women |
| Elliott et al., 2007 (UK) | Evaluate a programme to encourage midwives to detect and refer women with MH problems (2 studies) | First study: 187 midwives (both questionnaires returned for 73); second study: maternity notes after discharge | First study: significant improvement in knowledge questions and self-reported confidence and attitudes Second study: significantly more notes showed mental health problems entered and more explanatory information besides diagnosis |
| Fontein-Kuipers et al., 2014 (Netherlands) | Explore midwives' behavioural intentions and their determinants regarding management of care of women with maternal distress | 112 midwives Questionnaire (work-related details; screening, support and collaboration) (multiple linear regression analysis) | Intention to support women and to collaborate with other HPs stronger than intention to screen for distress; predicting intention: finding maternal distress interesting topic, experience, attitude to screening and support, self-efficacy |
| Gibb & Hundley, 2007 (UK) | Explore midwives' views of psychosocial well-being in the postnatal period | 13 community midwives and 8 student midwives Focus groups (thematic analysis) | Importance of coping and unmet expectations, assessed through range of skills; assessment easier if midwives know women; use of stereotypical categories to describe women; identification of 'worrying behaviour' |
| Hauck et al., 2015 (Australia) | Explore midwives' knowledge of, and attitudes towards, mental health disorders in childbearing women vis-à-vis their perceived mental health learning needs | 238 midwives in public tertiary maternity hospitals Survey (employment data; professional development needs; mental health knowledge; attitudes) and vignettes (anxiety disorder, depression, manic episode, schizophrenia) | Lack of knowledge and access to information, need for further training; correct identification from vignettes highest for PND, lowest for schizophrenia; mostly positive attitudes to midwives' role in PMH; cluster analysis showed negative stereotyping of PMH disorders |
| Higgins et al., 2012 (Ireland) | Report on student midwives' views of a PMH module | 79 student midwives Questionnaire: satisfaction with the module (descriptive statistics) Textual data (thematic analysis) | Quantitative: high levels of satisfaction with module; qualitative: enhanced understanding and confidence; insights into the lived experience |
| Aims | Sample and Methods | Findings |
|------|--------------------|----------|
| Higgins et al., 2016a | Examine the impact of a PMH module on student midwives’ knowledge, skills, and attitudes | 28 student midwives attending PMH module Repeated measures survey before and after PMH training (knowledge, skill, attitudes); three open-ended questions (analysed thematically) | Quantitative: significant increase in knowledge and skills; positive attitudes towards women with PMH problems; qualitative: increased understanding and confidence |
| Jardri et al., 2010 | Evaluate the impact of training on early PND screening by midwives and the effectiveness of specific clinical recommendations | Women giving birth during pre-training period (n=472) and post-training period (n=343); midwives at the unit EPDS scores after birth pre-/post-training; midwives: clinical assessment questionnaire | Significant improvements in screening by midwives after training; improved midwives’ perception of poor emotional well-being; significant improvement in early detection of PND |
| Jarrett, 2015 | Explore the knowledge and experience of student midwives | 33 student midwives Questionnaire (training, confidence, knowledge, attitudes) | Students often underestimated risk of existing mental health problems developing into more serious problem; felt ill-prepared and lacked confidence |
| Jarrett, 2014 | Explore the attitudes of student midwives to the care of women with MH problems | 7 student midwives (near completion) Small group interviews (thematic analysis) | Use of informal knowledge in assessments; dislike of standardised questionnaires; use of stereotypes; anxiety and lack of confidence when caring for women |
| Jomeen et al., 2009 | Ascertain midwives’ level of knowledge of AND | 52 midwives Questionnaire (training information, experience of working with women, illness perception) | Generally poor levels of training and confidence, good levels of knowledge and appropriate illness perceptions |
| Jones et al., 2011 | Assess Australian midwives’ levels of knowledge and learning needs regarding antenatal and postnatal depression | 815 midwives Postal survey (employment data; education; knowledge of antenatal and postnatal depression) | Correctly answered 62.9% of items on antenatal depression and 70.7% of items on PND; lack of knowledge highest on risk factors, onset period and risk of suicide with antenatal depression |
| Jones et al., 2012a | Explore midwives’ care for women with perinatal depression, assessment ability and knowledge of therapeutic interventions | 815 midwives Postal survey (questions about screening and hypothetical case study) | Almost 70% of midwives reported screening for perinatal depression; time constraints major barrier; almost two-thirds correctly recognised depression in case study; anti-depressants recommended more frequently postnatally than antenatally |
| Jones et al., 2012b | Assess attitudes towards caring for women with emotional distress and opinions on role of policies | 815 midwives Postal survey (attitude towards role in management of women with perinatal MH disorders) | Midwives willing to help, acknowledged importance of providing emotional care; impeded in practice by perceived lack of competency rather than lack of interest |
| **Aims** | **Sample and Methods** | **Findings** |
|----------|------------------------|--------------|
| Lau et al., 2015 (Australia) | Assess the impact of a PMH education programme | 78 midwives | Questionnaire (self-efficacy, optimism, knowledge) | Post-training: increased optimism and self-efficacy; significant increase in perceived knowledge in PMH conditions |
| Lees et al., 2009 (UK) | Evaluate practitioners’ knowledge of women’s needs and available services | Midwives (34 for questionnaires, 50 for focus groups), 18 student midwives (focus groups), 14 obstetricians and 13 health visitors | Data from referral documentation; questionnaire: referral patterns and systems; focus groups | Referral documentation: lack of care pathways; Questionnaires: lack of knowledge, need for further training; qualitative: booking appointment too short, no set referral process; students: PMH issues still regarded as taboo subject, need to be better prepared |
| McCann & Clark, 2010 (Australia) | Examine midwifery students’ mental health literacy about postnatal women with schizophrenia | 38 first year midwifery students | Attitudes and Beliefs about Mental Health Problems: Professional and Public Views questionnaire (vignette on schizophrenia, knowledge, attitudes) | Quantitative: lack of confidence, skills and knowledge, need for further training; qualitative: feeling out of their depths (lack of knowledge, skills, understanding), also positive experiences |
| McCauley et al., 2011 (Australia) | Examine what midwives thought about their MH skills and knowledge when working with postnatal women | 161 midwives from 19 hospitals | Questionnaire (skills, knowledge, attitudes, experiences); open-ended question about experiences (qualitative thematic process, limited information) | Quantitative: lack of confidence, skills and knowledge, need for further training; qualitative: feeling out of their depths (lack of knowledge, skills, understanding), also positive experiences |
| McLachlan et al., 2011 (Australia) | Evaluate communication skills education for midwives | 25 midwives (21 completed pre- and post- survey) | Pre-/post survey (communication skills, willingness to change, learning style, knowledge, attitudes) | Post-training: increased confidence and knowledge |
| Mivšek et al., 2008 (Slovenia) | To explore midwives’ & nurses’ knowledge of and attitudes to PN mood disorders | 10 midwives and nurses (unclear how many midwives; only responses which were clearly from midwives were included in the review) | Focus groups (analysis unclear) | Lack of knowledge on postnatal mental health; did not consider management of PMH problems as their role; lack of continuity of care considered main obstacle; need for further training |
| Mollart et al., 2009 (Australia) | Investigate the impact of antenatal psychosocial assessments on midwives’ emotional well-being | 18 midwives with experience of conducting the psychosocial assessment at booking visits | Focus group interviews (thematic analysis) | Themes: cumulative complex disclosures; frustration and stress; lack of support for midwives; unhealthy coping strategies |
| Nithianandan et al., 2016 (Australia) | Investigate barriers and enablers to implementing PMH screening for women with a refugee background | 28 health professionals (including 5 midwives) | Interviews (thematic analysis, using Theoretical Domains Framework and Cultural Competency Framework) | Importance of PMH screening, including for PTSD; barriers and enablers with respect to knowledge, skills, professional roles, beliefs about capabilities and... |
| Aims | Sample and Methods | Findings |
|------|--------------------|----------|
| Nyberg *et al.*, 2010 (<Sweden>) | Describe midwives’ experiences with women with PTSD symptoms | 8 midwives Interviews (thematic content analysis) | Need to reflect on own attitude; need for sensitivity and training |
| Phillips, 2015 (<UK>) | Assess student midwives’ awareness of perinatal mental illness | 9 student midwives Focus group (thematic analysis) | Good knowledge; wanting to make a difference; cultural sensitivity; importance of communication; lack of time |
| Reed *et al.*, 2014 (<Australia>) | Describe midwives’ experiences of counselling women who had a traumatic birth | 18 midwives Semi-structured interviews (4 time points), diary entries, web-based postings (thematic analysis) | Challenging but rewarding; improvements in skills; using counselling skills in other areas |
| Rollans *et al.*, 2013a (<Australia>) | Describe the content and process of psychosocial assessment by midwives | 34 pregnant women, 18 midwives Ethnographic study: observation (structured tool, field notes); brief interviews with midwives (analysis unclear) | Midwives varied in approach to assessment, some were more approachable and flexible; need for further training |
| Rompala *et al.*, 2016 (<USA>) | Understand the antenatal screening practices of midwives in Oregon | 60 midwives Survey (practice characteristics, screening, perceived barriers to screening) | Almost all screened for antenatal depression, most used standardised screening tool; barriers to screening: lack of mental health services, lack of time and insurance constraints |
| Rothera & Oates, 2011 (<UK>) | Explore health professionals’ views on identification, treatment and management of PMH disorders | 768 health professionals, including 468 midwives 4 vignettes with pre-defined response categories; survey (attitudes to management of PMH disorders) | Participants lacked knowledge and skills to identify and manage PMH disorders effectively, limited training; need for specialised services |
| Salomonsson *et al.*, 2011 (<Sweden>) | Describe the views of midwives on severe fear of childbirth | 726 midwives Questionnaire (views of severe fear of childbirth) | Views: fear of childbirth had increased; education needed; identification intuitive, varied depending on work place |
| Wan *et al.*, 2008 (<UK>) | Understand health professionals’ perspectives of needs of mothers with schizophrenia | 28 perinatal psychiatry and antenatal service workers (including 15 midwives) Interviews; thematic analysis | Need for more support for women; importance of continuity of care and communication; need for further training |
| Williams *et al.*, 2016 (<UK>) | Explore midwives’ and women’s views of using the depression case finding questions | 15 midwives, 20 pregnant women Interviews (thematic analysis, constant comparison approach) | Questions useful for introducing PMH discussion; flexibility in how questions are used; lack of knowledge of treatments and referral options |
| Aims | Sample and Methods | Findings |
|------|--------------------|----------|
| Yamashita et al., 2007 (Japan) | Examine to what extent midwives agree with a psychiatrist on diagnoses of psychiatric disorders | 12 midwives, Vignettes of 29 cases (mood and anxiety disorders) | Overall good agreement with psychiatrist’s diagnosis; appropriately trained midwives can use diagnostic criteria reliably |
| Yelland et al., 2007 (Australia) | Describe how women’s MH is assessed and promoted during the postnatal hospital stay | 66 hospital respondents (survey); 11 midwifery or nurse unit managers, 14 associate unit managers, 8 clinical midwives, 5 medical practitioners (interviews) | Quantitative: lack of consistency between hospitals in assessment of PMH; qualitative: mixed levels of knowledge and skills |
Table 3  Number of studies in which evidence was found for each domain

|               | Knowledge | Confidence | Attitude | Illness perception | Infrastructure |
|---------------|-----------|------------|----------|--------------------|----------------|
| Qualitative   | 10        | 6          | 9        | 7                  | 10             |
| Mixed methods | 5         | 5          | 5        | 3                  | 3              |
|               | (4/5)*    | (5/2)      | (4/3)    | (2/2)              | (3/3)          |
| Quantitative  | 14        | 11         | 9        | 9                  | 12             |
| Total         | 29        | 22         | 23       | 19                 | 25             |

* numbers in brackets relate to qualitative and quantitative elements of mixed methods studies

Figure 1  PRISMA flow diagram

* this adds up to more than 33 as mixed methods studies were included in the qualitative and quantitative synthesis
Figure 2  The five-domain framework

- Midwifery practice in PMH
- PMH issues
- Assessment, treatment, referrals
- Interpersonal skills

- Knowledge
- Confidence
- Attitudes

- Infrastructure
- Illness perception
- Contributing factors & prevalence
- Symptoms & consequences
- Treatment & recovery

- To role in PMH
- To women with PMH problems

- To midwives with PMH problems
- Organisation of care
- Training
- Support

- Time pressures
- Referral pathways & services
Supplementary information file 1: Quality ratings table

| Qualitative | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Comments |
|-------------|---|---|---|---|---|---|---|---|---|----|----------|
| Edge, 2010  |   |   |   |   |   |   |   |   |   |    | Limited detail regarding data analysis |
| Gibb & Hundley, 2007 |   |   |   |   |   |   |   |   |   |    | |
| Jarrett, 2014 |   |   |   |   |   |   |   |   |   |    | Small sample; low response rate therefore possible bias |
| Mivšek et al., 2008 |   |   |   |   |   |   |   |   |   |    | Suitability of methodology and research design for exploring knowledge; relatively small sample; too little detail of data analysis; limited generalizability |
| Mollart et al., 2009 |   |   |   |   |   |   |   |   |   |    | |
| Nithianandan et al., 2016 |   |   |   |   |   |   |   |   |   |    | |
| Nyberg et al., 2010 |   |   |   |   |   |   |   |   |   |    | |
| Phillips 2015 |   |   |   |   |   |   |   |   |   |    | Effectiveness of study in assessing knowledge; limited generalizability due to small sample |
| Reed et al., 2014 |   |   |   |   |   |   |   |   |   |    | Limited generalizability, specific to intervention only |
| Rollans et al., 2013a |   |   |   |   |   |   |   |   |   |    | Limited information about data analysis |
| Wan et al., 2008 |   |   |   |   |   |   |   |   |   |    | |
| Williams et al., 2016 |   |   |   |   |   |   |   |   |   |    | |
| Mixed methods |   |   |   |   |   |   |   |   |   |    | |
| Higgins et al., 2012 – qual |   |   |   |   |   |   |   |   |   |    | Limited information about open-ended questions |
| Higgins et al., 2012 – quant |   |   |   |   |   |   |   |   |   |    | No validated questionnaire, self-rated; not clear if all the results were reported |
| Higgins et al., 2016a – qual |   |   |   |   |   |   |   |   |   |    | No information on analysis of qualitative open-ended questions; limited generalizability |
| Higgins et al., 2016a – quant |   |   |   |   |   |   |   |   |   |    | No validated questionnaire, self-rated assessments; small sample size; no effect sizes; limited generalizability |
| Lees et al., 2009 – qual |   |   |   |   |   |   |   |   |   |    | Limited information provided on data collection; no information on data analysis; very brief findings, quotes not provided |
| Study                                      | Methodology | Notes                                                                                                                                 |
|-------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Lees et al., 2009 – quant                 | Quantitative| Limited information on recruitment; no information about questionnaire; small sample size was small; 47% response rate, no exploration of differences between responders and non-responders; no information on ethical issues; limited information regarding the analysis; limited results presented; limited generalizability |
| McCauley et al., 2011 – qual              | Qualitative | Limited scope in research design; one open ended question, therefore limited depth; limited information regarding ethical issues                                                              |
| McCauley et al., 2011 – quant             | Quantitative| 30% response rate, no information on differences between responders and non-responders; no details about ethical issues; not all results represented; limited generalizability                               |
| Yelland et al., 2007 qual                 | Quantitative| Limited generalizability                                                                                                         |
| Yelland et al., 2007 quant                | Quantitative| Questionnaire not validated, but piloted; not all findings appear to have been presented; limited generalizability                        |
| Quantitative                              |             |                                                                                                                                 |
| Elliott et al., 2007                      |             | Post-training survey completed by 39%; no information on whether returners/non-returners were different, assumption that non-respondents didn't change; questionnaire not validated, self-rated; not always clear which statistical tests were used, no effect sizes reported |
| Fontein-Kuipers et al., 2014              |             | Possible bias due to who responded; questionnaire based on guidelines and quality standards, not validated, but assessed using internal consistency and pretesting |
| Hauck et al., 2015                        |             | Possible bias in who responded; no comparison of responders and non-responders; 50% response rate; non-validated questionnaire, but piloted |
| Jardri et al., 2010                       |             | Not clear if there were any potential confounding differences between the two study periods; no demographic information on participant |
| Jarrett, 2015                             |             | No discussion regarding difference between those who took part and those who declined; mix of self-rated and actual knowledge; 15% did not answer all questions; small sample therefore analysis limited to descriptive statistics only; no information on demographics of participants; not all data was presented (e.g. in tables); small sample so hard to generalise but findings supported by other studies |
| Jomeen et al., 2009                       |             | Unclear if there were differences between participants and those who didn’t take part. 9.6% of sample completed survey only partially; relatively small sample, low response rate; some limited generalizability |
| Jones et al., 2011                        |             | Self-rated knowledge; potentially limited generalizability                                                                      |
| Jones et al., 2012a                       |             | Self-rated confidence; not clear if all data presented; potentially limited generalizability                                      |
| Jones et al., 2012b                       |             | Results not presented in detail; potentially limited generalizability                                                            |
| Lau et al., 2015                          |             | Brief research report presented only; insufficient detail provided for recruitment, intervention control, data collection, ethics, analysis and results; limited generalizability |
| McCann & Clark 2010                       |             | Small sample; limited generalizability                                                                                           |
| Study                          | Methodology | Rationale and aims                                                                 |
|-------------------------------|-------------|-----------------------------------------------------------------------------------|
| McLachlan et al., 2011        | No information was on those who did not take part in the study; non-validated questionnaire, self-rated; small sample |
| Rompala et al., 2016          | Questionnaire not validated, but piloted; low response rate of 37%; no discussion of differences between responders and non-responders; relatively small sample; limited generalizability |
| Rothera & Oates 2011          | Questionnaire not validated; low response rate (26.7%); differences between responders and non-responders not discussed; effect sizes not given; some limits to generalizability |
| Salomonsson et al., 2011      | Questionnaire not validated, but based on experience and previous study, piloted; effect sizes not discussed |
| Yamashita et al., 2007        | Vignettes of psychiatric disorders, not PMH-specific therefore possible differences; no comparison pre-training; not much detail of training; limited generalizability |

**Key**

| Yes | Partial | No | Unclear | n/a |
|-----|---------|----|---------|-----|

**Qualitative**

1. Rationale and aims
   - Goal of the research?
   - Why was it thought important?
   - Relevance?

2. Is a qualitative methodology appropriate?
• Does the research seek to interpret or illuminate the actions and/or subjective experiences of participants?
• Is qualitative research the right methodology for addressing the research goal?

3. Was the research design appropriate to address the aims of the research?
• Has the researcher justified the research design?

4. Was the recruitment strategy appropriate to the aims of the research?
• Do the authors explain how participants were selected?
• Are the participants appropriate (do they provide access to the type of knowledge sought by the study)?
• Are there any discussions around recruitment (e.g. why did some not take part)?

5. Was the data collected in a way that addressed the research issue?
• Was the setting for data collection justified?
• Is it clear how data were collected?
• Was this appropriate?
• Was data saturation discussed (if appropriate)?

6. Has the relationship between researcher and participants been adequately considered?
• Did the researchers critically examine their own role, biases and influences?
• How did researchers respond to events during the study?
• Did they consider implications of changes to the research design?

7. Have ethical issues been taken into consideration?
• Is there sufficient detail about how the research was explained to participants?
• Did the researchers discuss issues raised by the study (e.g. about informed consent or confidentiality)?
• Has ethical approval been granted?

8. Was the data analysis sufficiently rigorous?
• Is the analysis process described in depth?
• Is it clear how categories/themes were derived from the data (if applicable)?
• Did the researchers explain how data presented (e.g. quotes) were chosen from the original sample to demonstrate the analysis process?
• Are sufficient data presented to supported findings?
• Are contradictory data taken into account?
• Have the researchers critically examined their own role and biases during analysis?

9. Is there a clear statement of findings?
- Are findings explicit?
- Is there adequate discussion of evidence for and against the researchers’ arguments?
- Have the researchers discussed the credibility of their findings (e.g. triangulation, respondent validation, more than one analyst)?
- Are the findings discussed in relation to the original research question?

10. How valuable is the research?
- Have the researchers discussed the contribution to existing knowledge or understanding (with respect to current practice, policy or existing literature)?
- Have the researchers identified new areas of research?
- Have the researchers discussed whether and how findings can be transferred to other populations or how research may be used?

Quantitative

1. Rationale and aims
   - Did the study address a clearly focused issue?
   - Is this issue relevant?
   - Are aims / research questions clearly stated?

2. Research design
   - Was the research design clearly described?
   - Was it appropriate for the aims and research questions?

3. Recruitment
   - Was the sample representative of a defined population?
   - Were inclusion/exclusion criteria clear?
   - Was recruitment appropriate?
   - What was the response rate? Did the researchers look at differences between responders and non-responders?

4. Outcome measures
   - Were the measures appropriate (validated, subjective/objective)?
   - Timings?

5. Intervention / control group
   - If an intervention was used (e.g. training), has it been described adequately?
   - If a control group has been used, is it appropriate?

6. Data collection
   - Was the sample size large enough?
   - Is the data collection procedure clear?
   - What was the drop-out / non-completion rate? Did the researchers consider differences between completers and non-completers?
7. Ethics
   • Are ethical issues discussed?
   • Was ethical approval given (if applicable)?

8. Analysis
   • Is the analysis appropriate?
   • Has sufficient statistical information been provided (e.g. effect size)?

9. Results
   • Is suitable information on demographics provided?
   • Are the results presented clearly and comprehensively?
   • Is the interpretation of results appropriate?
   • Have alternative explanations been considered?

10. Value
    • Does the study make a contribution to knowledge/understanding?
    • Is it relevant to clinical practice and/or policy?
    • Are the findings generalizable?
Additional File 2: Examples of transformations of quantitative findings into qualitative findings

| Quantitative findings | Transformation to qualitative |
|-----------------------|------------------------------|
| **Higgins et al., 2012:** post-module questionnaire on satisfaction with a PMH module; 79 midwifery students |  |
| Module was very valuable: 91% agree/strongly agree; 9% neutral (p. 289) | The majority of students found the module very valuable. |
| Module helped develop confidence to practise: 85% agree/strongly agree; 13% neutral; 3% disagree/strongly disagree (p. 289) | The majority of students said that the module helped them to develop confidence to practice; a very small minority disagreed. |
| **Higgins et al., 2016a:** pre-/post-module questionnaire on impact of PMH module on knowledge, skills and attitudes; 28 midwifery students |  |
| Pre-/post-survey: statistically significant increase in self-rated knowledge: mean score increased from 1.59 (SD = .24) to 2.60 (SD = .24); paired sample t-test was statistically significant (t (24)= −18.29, p < .001) (p. 366) | Students’ self-rated knowledge was improved significantly by the module. |
| PND: 36% reported very good/excellent knowledge (p. 366) | Just over a third of student midwives felt that they had very good knowledge of PND. |
| Response to ‘One of the main reasons women experience mental illness is a lack of self-discipline and will power’: 93% negative pre-survey (7% neutral), 100% negative post-survey (p. 367) | Participants’ perceptions of the amount of control women have over PMH problems was fairly accurate before the module, but improved even more afterwards. |
| **Lees et al., 2009:** questionnaires to evaluate knowledge of women’s needs and available services; 34 midwives |  |
| 91%: ‘stated that their knowledge of perinatal mental health issues was inadequate and they recognised that they would benefit from further training’ (p. 26) | A majority of practitioners said that their knowledge of PMH issues was inadequate and that they would benefit from further training. |
| **Hauck et al., 2015:** survey of midwives; 238 midwives |  |
| 37.6% felt ‘well equipped to support women with perinatal mental health disorders’ (p. 250) | Just over a third of midwives felt they were well equipped in supporting women with PMH problems. |
| **Jones et al., 2011:** survey of midwives’ knowledge; 815 midwives |  |
| 86.9% aware of comorbidity of depression and anxiety (p. 355) | Most midwives were aware of the comorbidity of depression and anxiety. |
| 55.8%: too little emphasis on assessment and management of women with PMH problems in midwifery education (18.1%: no emphasis; 24.3% adequate emphasis) (p. 356) | Most midwives said that there had been too little or no emphasis on assessment and management of women with perinatal problems in midwifery education. |
| **Rothera & Oates, 2011:** survey of views on identification and management of PMH problems; 468 midwives |  |
| Need guidelines/protocols for referral procedure to manage PMH disorders: 53% mild, 66.9% serious (p. 309) | Most midwives expressed a need for guidelines and protocols for referral procedures to manage PMH disorders. |
| Need more training for PMH problems: 90.4% agree (p. 310) | A large majority of midwives said they needed more training for PMH problems. |
### Knowledge

| PMH issues | Good knowledge of PMH issues, with some exceptions (Hauck et al., 2015; Phillips, 2015) |
|------------|-------------------------------------------------------------------------------------|
|            | Lack of sufficient knowledge in general (Edge, 2010; Mivšek et al., 2008)            |
|            | Good knowledge of onset, symptoms and treatment for psychosis; knowledge of risk factors weaker (Elliott et al., 2007) |
|            | Self-rated knowledge generally good for postnatal depression (Elliott et al., 2007; Higgins et al., 2016a; Jarrett, 2015) |
|            | Generally good knowledge of antenatal depression; less so for consequences (knowledge of postnatal depression applied to this) (Jomeen et al., 2009) |
|            | Better knowledge of postnatal than antenatal depression, particularly for risk factors (Jones et al., 2011) |
|            | Lack of knowledge about traumatic birth experience (Reed et al., 2014)                 |
|            | Training increased knowledge (Elliott et al., 2007; Higgins et al., 2012; Lau et al., 2015; McLachlan et al., 2011) |

| Assessment, treatment and referrals | Range of techniques (Gibb & Hundley, 2007; Yelland et al., 2007) |
|------------------------------------|------------------------------------------------------------------|
|                                    | Use of informal, ‘common sense’ knowledge (Jarrett, 2014; Salomonsson et al., 2011) |
|                                    | Adapting use of assessment tools (Rollans et al., 2013a; Williams et al., 2016) |
|                                    | Two-thirds correctly diagnosed depression from case study (Jones et al., 2012a) |
|                                    | Almost all identified depression from vignettes; most correctly identified manic episode, bipolar disorder and schizophrenia (Hauck et al., 2015) |
|                                    | Knowledge of EPDS poor for some (Hauck et al., 2015)               |
|                                    | Some lacked knowledge about treatment and referrals (Hauck et al., 2015; McCauley et al., 2011; Rothera & Oates, 2011; Wan et al., 2008; Williams et al., 2016) |
|                                    | Training improved assessment skills (Higgins et al., 2012; Jardri et al., 2010; Yamashita et al., 2007) |

| Interpersonal skills | Good interpersonal skills important (McCauley et al., 2011; Mivšek et al., 2008; Williams et al., 2016) |
|----------------------|------------------------------------------------------------------------------------------------------|
|                      | Important for encouraging disclosure of PMH problems (Rollans et al., 2013a)                         |
|                      | Different styles in interaction with women, some midwives using a more engaging and friendly approach (Rollans et al., 2013a) |
|                      | Training in counselling skills effective not just in improving midwives’ care for women, but also in their own lives (Reed et al., 2014) |
|                      | Poor skills in responding to women with psychotic symptoms, obsessive thinking or eating disorders, or when assessing suicide (Higgins et al., 2016a) |
|                      | Communication skills, teamwork, rapport building and grief counselling listed as the four most important skills (McCauley et al., 2011) |
Midwives satisfied with their communication skills (McLachlan et al., 2011)

**Confidence**

Lack of confidence with PMH generally (Lees, 2009; McCauley et al., 2011; Phillips, 2015), in identifying women with PMH problems (Edge, 2010; Gibb & Hundley, 2007; Yelland et al., 2007), caring for women (Hauck et al., 2015; Jomeen et al., 2009; McCauley et al., 2011; Reed et al., 2014; Yelland et al., 2007) and referrals (Phillips, 2015)

Lacking confidence particularly for more severe problems (Jarrett, 2015; McCauley et al., 2011; Rothera & Oates, 2011)

Lack of confidence results in increased referrals to other services (Rothera & Oates, 2011)

Midwives’ self-efficacy for supporting women with distress relatively high (Fontein-Kuipers et al., 2014); most midwives felt adequately prepared when meeting a woman with severe fear of childbirth (Salomonsson et al., 2011)

Confidence may be higher with regards to assessment (Jarrett, 2015; Jones et al., 2012b) compared to caring for women

Training increased confidence (Elliott et al., 2007; Higgins et al., 2012; Lau et al., 2015; McLachlan et al., 2011; Reed et al., 2014; Williams et al., 2016), as did previous experience (Hauck et al., 2015)

Some midwives had ‘false’ confidence in their knowledge of PMH problems, reported feeling confident but lacked important knowledge (Mivšek et al., 2008)

**Attitudes**

| Midwives’ role | Identification of problems and referrals part of their role (Hauck et al., 2015; Jarrett, 2015; Jones et al., 2012b; Mivšek et al., 2008; Nithianandan et al., 2016; Salomonsson et al., 2011; Williams et al., 2016) |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | Not part of their role: takes too much time or too difficult and women with PMH problems should be cared for elsewhere (McCauley et al., 2011); lack training (Phillips, 2015); treating postnatal depression is doctor’s responsibility and educating expectant parents in PMH issues not their role either (Mivšek et al., 2008) |
|               | Assessment more likely to be considered part of role (Hauck et al., 2015; Jones et al., 2012b) than caring for women |
|               | More likely to consider assessment part of their role after training (Jardri et al., 2010) |
|               | Midwifery reluctant to take a non-medical, more psychological perspective (Phillips, 2015); PMH issues still regarded a taboo subject (Lees, 2009) |

| Women with PMH problems | Feeling frightened of women with serious PMH problems, some considered them difficult to manage (Jarrett, 2014; McCauley et al., 2011) |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         | Generally positive attitudes, but cluster analysis of warmth/friendliness and competence/capability ratings revealed attitudes to women with PMH problems more negative than towards other women (Hauck et al., 2015) |
|                         | Positive attitudes to women with PMH problems (Higgins et al., 2016a) |
|                         | Fewer than half rated experience of working with women with PMH problems as positive (McCauley et al., 2011) |
|                         | Some stigma towards women with PMH problems (Phillips, 2015); some sometimes did not refer women to specialist services because they were trying to protect them |
from being stigmatised, more than 60% said other midwives responded negatively to women with PMH problems (McCauley et al., 2011)

43% worried about the safety of other women and babies when caring for a woman with severe PMH problems, 12% anxious about own safety (Jarrett, 2015)

Training helped to reduce stigma and increase understanding (Elliott et al., 2007; Higgins et al., 2012; Higgins et al., 2016a; McLachlan et al., 2011; Reed et al., 2014)

### Illness perception

#### Contributing factors and prevalence

- Contributing factors generally: mismatch between expectations and reality, difficulties in coming to terms with the reality of life with a new baby, exhaustion, being older, a lack of support and labour experiences (Gibb & Hundley, 2007); cultural pressures (Jarrett, 2014; Phillips, 2015); social and economic factors, relationship problems, age, isolation and certain personality traits (Mivšek et al., 2008); low socio-economic and refugee status (Phillips, 2015); history of abuse or trauma and a personal or family history of mental illness (Hauck et al., 2015)
- Contributing factors for antenatal depression: relationship problems, psychiatric history, low social support, unintended pregnancy, hormonal imbalances, previous pregnancy loss, and stress or worry (Jomeen et al., 2009)
- Some inaccurate perceptions around contributing factors (Hauck et al., 2015; Jomeen et al., 2009; Mivšek et al., 2008)
- Almost half underestimated prevalence of antenatal depression (Jones et al., 2011)
- A fifth of student midwives underestimated risk of developing puerperal psychosis; only a quarter aware that a woman was more likely to develop puerperal psychosis if she had it previously (Jarrett, 2015)
- More than two-thirds thought that the incidence of severe fear of childbirth had increased over the last 10 years; two-thirds believed fear of childbirth is different from other phobias (Salomonsson et al., 2011)

#### Symptoms and consequences

- Some believed women often displayed extreme or obsessive behaviours with respect to themselves, their baby or the house (Gibb & Hundley, 2007)
- Student midwives considered women’s environment, attitude, appearance and behaviour to be indicators of psychological well-being (Jarrett, 2014)
- Midwives believed some sadness, caused by hormonal changes, is experienced by almost all women after birth, but ‘real’ depression is not very common; postnatal depression was believed not to start until after the third month postnatally (Mivšek et al., 2008)
- Midwives said it was sometimes difficult to distinguish between symptoms of early pregnancy and symptoms of depression (Williams et al., 2016)
- Generally appropriate illness perceptions of antenatal depression; mostly good awareness of symptoms, but perceived large overlap with symptoms experienced frequently by non-depressed pregnant women (Jomeen et al., 2009)
- A third of student midwives believed puerperal psychosis had gradual onset in first six months after giving birth (Jarrett, 2015)
- Not coping with requirements of daily life and the new baby seen as central (Gibb & Hundley, 2007)
- More than half were aware that PMH problems could lead to attachment problems; most believed women were likely to recover eventually (Hauck et al., 2015)
Most aware that antenatal depression could have major consequences for women, but knowledge of specific consequences less accurate and tended to be based on knowledge of postnatal depression (Jomeen et al., 2009)

Almost all underestimated proportion of women with antenatal depression who attempted suicide after birth (Jones et al., 2011)

| Treatment and recovery | Recommended mostly support, advice and self-help groups for mild problems; considered referral to other services more appropriate for severe problems (Rothera & Oates, 2011) Less likely to suggest antidepressants for antenatal than postnatal depression; more likely to suggest self-help techniques and additional support for antenatal depression, recommended seeking help from specialists for postnatal depression (Jones et al., 2012a) Third of student midwives not aware that effective treatment for psychosis requires medication and hospital admission (Jarrett, 2015) Student midwives aware that outcome for women with schizophrenia favourable if treated, but lacked some understanding of consequences of not obtaining professional help; understanding largely based on lay perceptions of treatment (McCann & Clark, 2010) Third of midwives felt a visit to the labour ward decreases fear of childbirth, over two-thirds believed specialist fear of childbirth team helped to reduce incidence, almost 80% thought that making a birth plan was beneficial (Salomonsson et al., 2011) |

| Infrastructure | Time pressure makes it more difficult to identify PMH problems (Edge, 2010; Lees, 2009; Nithianandan et al., 2016; Phillips, 2015) Looking after women with PMH problems requires additional time (McCauley et al., 2011; Mivšek et al., 2008) If problems are identified, more time needed to discuss options and referrals (Phillips, 2015) Time pressure most acute in initial appointment as already very busy (Lees, 2009; Nithianandan et al., 2016) Time pressures mean that focus is on women with serious mental illness, leaving women with less severe problems without help they need (Edge, 2010) Almost half said lack of time can be barrier to screening for antenatal depression (Rompala et al., 2016) More than half said that of time sometimes makes it difficult to provide quality care for women with depression; 60% reported having enough time to assess emotional health (Jones et al., 2012b) |

| Referral pathways and further services | Lack of clear and effective referral pathways (Edge, 2010; Lees, 2009; McCauley et al., 2011; Mollart, Newing, & Foureur, 2009; Nyberg et al., 2010; Phillips, 2015; Rompala et al., 2016) Lack of appropriate services for referral (Nyberg et al., 2010; Rothera & Oates, 2011; Wan et al., 2008); can be barrier to screening and referring women (Jones et al., 2012a; Lees, 2009) |
## Organisation of care

Importance of continuity of care (makes it easier to identify problems and build good relationship) (Gibb & Hundley, 2007; Jones et al., 2012b; Mivšek et al., 2008; Reed et al., 2014; Wan et al., 2008; Williams et al., 2016; Yelland et al., 2007)

Importance of good communication and co-operation between health professionals and better integration of midwifery and mental health services (McCauley et al., 2011; Mivšek et al., 2008; Phillips, 2015)

Presence of interpreters and family members (Nithianandan et al., 2016) and partners and medical students (Williams et al., 2016) during assessments identified as potential barrier to disclosure

Inclusion of mental health assessments in booking appointment not ideal: no time to build relationship, due to timing early symptoms of pregnancy can be misinterpreted as symptoms of depression (Williams et al., 2016)

Organisational priorities encourage focus only on problems directly presented by women, not underlying issues (Jones et al., 2012b)

Insurance constraints as barrier to screening (Rompala et al., 2016)

## Training

Midwives identified need for further training in PMH (Hauck et al., 2015; Jomeen et al., 2009; Jones et al., 2011; Lees, 2009; McCann & Clark, 2010; McCauley et al., 2011; Phillips, 2015; Rothera & Oates, 2011; Wan et al., 2008)

Found training helpful and relevant to clinical practice (Higgins et al., 2012; Reed et al., 2014)

Overall, PMH training increased knowledge, skills and confidence (Elliott et al., 2007; Higgins et al., 2012; Higgins et al., 2016a; Jardri et al., 2010; Lau et al., 2015; McLachlan et al., 2011; Reed et al., 2014; Williams et al., 2016) and helped to reduce stigma and increase understanding (Elliott et al., 2007; Higgins et al., 2012; Higgins et al., 2016a; McLachlan et al., 2011; Reed et al., 2014)

Lack of training affected how midwives viewed their role within PMH (Phillips, 2015)

## Support for midwives

Cumulative emotional impact of doing psychosocial assessments, particular disclosure of trauma; can lead to unhelpful coping strategies (Mollart et al., 2009)

Difficult to keep professional distance and deal with emotions professionally (Nyberg et al., 2010)

Need for support (informal support, formal supervision, mentoring) (McCauley et al., 2011; Nyberg et al., 2010; Rothera & Oates, 2011; Salomonsson et al., 2011)