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Midwives and the research integrity agenda

Key words: Research integrity, honest broker, truth telling, whistleblower, evidence-based midwifery

Welcome to the first edition of *EBM* in 2014 – the year the ICM Congress is held in Prague. A staggering 1360 abstracts from midwives in 85 countries were peer reviewed and over a 1000 papers selected for presentation (ICM, 2014). We are delighted that research is gaining an even higher profile within the profession and that midwifery researchers have an increasingly visible role. However, with this elevation comes increased accountability and the need for midwives to develop a research integrity code of practice, if we are to maintain public trust and confidence in a research world that is being torn apart by frequent exposure of plagiarism, lies and fraud.

The new 'Retraction Watch' publication data provides sober reading about the number of research papers that have been removed from prestigious journals because of data falsification or interpretation. Top science scandals for 2012 included biomedical researcher Eric Smart, who fabricated 10 years of data using laboratory mouse models that never existed; work that contributed to our scientific knowledge base on cardiac disease and diabetes; Annie Dookhan, a forensic chemist from Massachusetts, was exposed for fabricating records on samples she never processed, leading to possible wrongful imprisonment (Zielinska, 2012).

However, the record for retraction of scientific papers has been set by Japanese anaesthesiologist Yoshitaka Fujii, who pulled 172 papers after being exposed for fabrication of clinical research data, operating without ethical approval and claiming to have seen patients that he did not (Zielinska, 2012). Furthermore, the highly publicised work of Dong-Pyou Han (Iowa University funded by the US NIH for over \$19m) brought us a breakthrough vaccine for AIDS in 2012, but it was faked by spiking rabbit blood with human antibodies to create a false belief that the vaccine was creating the desired immune defence (Leys, 2014).

In 2010, the American Senate introduced the Whistle Blower's Enhancement Protection Act. According to the Union of Concerned Scientists (2010), this was to protect researchers who found themselves either having to uphold their research integrity in order to protect the public (and consequently losing their job), or keeping quiet about issues of observed untruthfulness, fraud, abuse and illegality (sacrificing their integrity), in order to remain employed.

Although the opportunity to whistleblow is now a protected option in the UK, concerned researchers continue to drive forward a culture of integrity and transparency that prevents the reputational damage associated with whistleblowing. Taking a lead on the need for future researchers and innovators to act with integrity, Harvard Business School reported the findings of a survey of 2000 US psychology researchers, who were asked to report on the prevalence of questionable research practices and incentives for truth-telling (Johnston, 2012). The results revealed that research integrity was questionable on a larger scale than previously thought, with one in 10 researchers owning up to falsification of data and three in

10 doubting the integrity of their own research. Fortunately, there are no midwives identified yet. However, we must be proactive not reactive. Midwives can be brought down like any other researcher who is tempted by money, prestige or the need to achieve academic or professional status in a restricted economic climate, where competitiveness and ambition can lead to decision-making that brings quick, short-term gains, but harms, disrupts and fails public confidence in the long term.

Overall, reports of dishonest healthcare researchers indicate that the research community is under the microscope. Consequently, in 2014, the term 'honest broker' is becoming increasingly familiar, as researchers aim to restore public confidence and trust related to the use of data and alignment of politics, policy, research and practice (Pielke, 2010). As midwives, there is a reality that women now act as their own honest brokers, when they turn to other women in chat rooms, social networks and tweets to seek the truth and deliberately avoid professional, evidence-based resources. A loss of confidence in midwives' advice may be understandable; but perhaps it is time for midwives who may have been motivated to misrepresent or mislead through the way in which they generate or direct evidence-based practice, to respond to the call for truth-telling and re-direct their innovation towards excellence in women-centred care, before either 'big brother' software finds them out or a whistleblower emerges.

Professional, legal and moral research training is not a luxury, it is a necessity as midwives and the public need to have confidence in evidence that was honestly and transparently generated, analysed and interpreted with and for women.

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Applying the ARCS design model to breastfeeding advice by midwives in order to motivate mothers to personalise their experience

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Abstract

Background. Improving the implementation of evidence-based practice is critical to achieving the public health agenda. However, progress is hampered by the lack of a comprehensive and coherent framework to guide the theoretical and systematic design of complex interventions. Breastfeeding is a good example; in spite of the immense public health value, no theoretically-designed, complex intervention exists that is capable of establishing persistence to breastfeed.

Objective. This paper reports how a complex intervention was designed by applying the systems approach of the Attention, Relevance, Confidence, Satisfaction (ARCS) model of motivational design, as a means of theoretically addressing low maternal persistence in the first three weeks of learning.

Design. Following an introduction to the model, a stepwise account of the diagnostic, design and evaluation phases applied within a suburban trust (3600 births annually) is reported. The diagnostic phase included nine structured observation studies of routine educational environments (167 hours observing 130 women and 20 midwives over a three-month period) and motivational profiling of 202 women who were learning to breastfeed in the early weeks using the Breastfeeding Motivational Instructional Measurement Scale. Diagnostic results identified a direct theoretical relationship between routine antenatal education and the lack of maternal goals and postnatal motivation to persist. The design phase reports how the motivational deficits mapped in the diagnostic phase were resolved through the application of theoretical motivational tactics and redesigned breastfeeding education. Evaluation phase summarises the findings from a feasibility trial (ISRCTN47056748) confirming as hypothesised. Following motivational enhancement of breastfeeding education, there was a significant increase ($p < 0.05$) for first-time mothers' confidence in their ability to breastfeed ($t = 4.81$; $df = 89.22$; $p < 0.001$) and in their perceived relevancy of the goal-structuring provided ($t = 7.21$; $df = 80.39$; $p < 0.001$). A significant increase in persistent breastfeeding at three weeks postnatal was also noted ($\chi^2 = 16.26$; $df = 1$; $p < 0.001$).

Conclusion. This paper contributes to our understanding of the value of theoretically and systematically designed complex interventions; the ARCS model offers health educators a robust approach to designing and implementing relevant and effective health education, therefore connecting the effects of health education with the causal links of 'what works' and 'for whom'.

Key words: ARCS model, breastfeeding, complex intervention, goals, motivation, theory, evidence-based midwifery

Introduction

Improving the implementation of evidence-based practice is critical to achieving the public health agenda. The Medical Research Council (2008) stated that for health interventions to be successful, they must be systematically and theoretically designed. Implementation has been hampered by the lack of comprehensive and coherent frameworks capable of systematically guiding the theoretical design process (Michie et al, 2011a). To determine 'what works' and 'for whom', so increasing the potential for effective replication, a suitable framework must address key characteristics. The process must be integrative and include a theoretical, systematic, comprehensive and responsive approach to the target audience, and be able to define the intervention content and identify the causal mechanisms that underlie behavioural success (Michie et al, 2011b). As a tested framework or model with these qualities is not currently available in health education, this paper proposes the ARCS and discusses the value of this model for future development and testing of complex health behavioural change interventions.

The example used is the 'Designer Breastfeeding Programme of Motivational Instruction Design' and this doctoral study was funded by the HSC Research and Development Office (Northern Ireland). Ethical approval was obtained from the Office of Research Ethics (NI) and the University of Ulster Ethics Committee in 2004.

Background to the public health challenge

Breastfeeding is a complex, sensitive and learned behaviour that has immense public health value for the individual and society, but it poses enormous challenges for policy-makers, public health activists and educators. Evidence demonstrates that many women within countries like the UK (Bolling et al, 2007), Ireland (Begley et al, 2008) and the US (Centre for Disease Control and Prevention, 2010) will stop breastfeeding within the first few weeks. Understanding what motivates women to continue the behaviour is essential if sustained breastfeeding is to be achieved.

Within current best instructional practice (UNICEF, 1998), breastfeeding is introduced to women as an instinctive,

natural behaviour which requires 'learning'. Even though success requires that both mother and baby learn, the motivational energy required to sustain the learning episodes is exclusively maternal (Stockdale et al, 2011a). The behaviour of the baby can influence the motivational energy experienced within the complexity of the mother/baby dyad; however, it is the mother who interprets her baby's behaviour, makes sense of it and adjusts her behaviour accordingly. Evidence indicates that, while many women who are learning to breastfeed may still value breastfeeding, their decision to stop early is related to their low expectancy for success as a result of their perceived experience (Thulier and Mercer, 2009; Schmied et al, 2001; Mozingo et al, 2000). In this research study, the authors addressed this problem by using the ARCS Model of Motivational Instructional Design (Keller, 1987a) as a means of building on current best practice by midwives. The motivational goal was to detect the source of women's low confidence when learning to breastfeed and adjust current best educational practice to address this problem. This required a theoretically-driven programme of instruction and education. A summary of the stages in the systems process associated with the ARCS model is described in Figure 1.

The model has been validated and used extensively in Asia, Europe, and Latin America. Research reports include the testing of the model in diverse curricular areas, such as science education (Feng and Tuan, 2005), learning styles (Kapp and Ferguson, 2002), manufacturing and engineering (Shellnut et al, 1999), e-learning (Keller and Suzuki, 2003), reducing attrition (Chyung, 2001), and the relationship between mental effort and performance (Paas et al, 2005). The following account provides a summary of a five-year research project that applied the model in a health education context.

Diagnostic phase

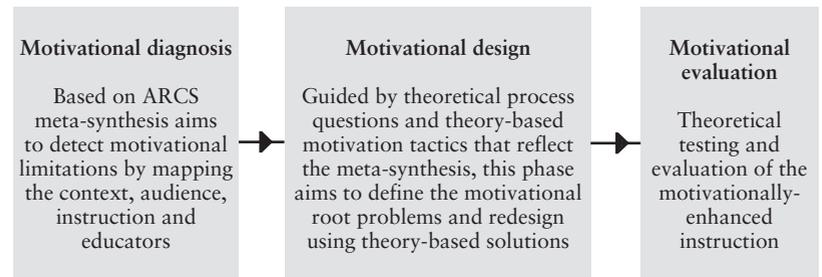
The diagnostic phase consisted of mapping key information that is likely to have a bearing on the motivational optimism of the learners. This included investigating the course (defined as all educational episodes) and the audience (defined as women who received the course).

Step 1: Course and audience information analysis

The course and audience information analysis provided the design team with an initial contextualisation and mapping of the audience, the instructional environment[s], the educator[s] and the scheduling of the educational episodes. The setting for the research was a teaching hospital with 3500 births per annum. Women came from the inner city, suburban and rural areas and consultant- and midwifery-led models of care were provided. The trust was fully accredited by the Baby Friendly Initiative (UNICEF, 1998).

The instruction provided was a combined antenatal/postnatal breastfeeding programme, facilitated by the midwives; two lactation midwives were available on request (Monday to Friday) for further instructional support.

Figure 1. The Systems Research Approach and Theoretical Guidance of the ARCS Model by Keller (1987)



Interviews with the midwifery manager and parent education midwife, combined with hospital audit data, confirmed that the instructional programme started at the antenatal booking visit and used mainly a one-to-one 'drip-feed' approach through to three weeks postnatal. Data collection was guided by an adapted version of the *ARCS handbook* and included information about maternal age, socio-demographic profile, the scheduling of the midwife-led education episodes in the antenatal and postnatal phases and the breastfeeding and educational expertise of the educators. A summary of the key information necessary to inform the design process is outlined here:

- Audit data confirmed that a motivational problem existed; reflecting the national *Infant-feeding survey* (Bolling et al, 2007), in which 54% of women started breastfeeding, dropping to 34% at the end of two weeks
- Women attending the antenatal education programmes represented all socio-economic backgrounds, yet women from lower socio-economic groups were the least likely to breastfeed
- Routine breastfeeding education started at the antenatal booking visit (10 to 12 weeks' gestation) and continued to three weeks postnatal, when care was transferred to the health visitor
- A series of one-to-one episodes during the antenatal and postnatal phases and a two-hour free evening course for women and partners was provided. Women attending this class were approximately 32 weeks pregnant
- The majority of women attending the class were first-time mothers with no direct experience of learning to breastfeed. Women could choose to attend
- Women were not given a choice as to whether they wished to participate in the one-to-one educational episodes integrated into the antenatal care appointments. Midwives used checklists to record the transfer of all key information
- Women who had previous children but no breastfeeding experience were invited to attend the evening antenatal class, but their attendance was poor
- The education team consisted of a team of six midwives and a parent education midwife. None of the staff held a formal educational qualification and the majority had no personal experience of breastfeeding
- Data indicated a decline in attendance from the antenatal breastfeeding class in comparison with the class about pain relief in labour. Rescheduling the sequencing of the classes did not increase attendance.

On completion of the course and audience information analysis, it was concluded that a high intensity of antenatal and postnatal educational episodes were provided. However, many women chose not to use the two-hour evening class. This suggested a possible motivational problem associated with the perceived relevancy of the educational design. The audit data indicated that women's lack of motivation to sustain breastfeeding was potentially the result of instruction that failed to increase maternal confidence and satisfaction when learning. To investigate further, a more structured motivational analysis of the current instructional programme was completed.

Step 2: Motivational and instructional analysis

This step aimed to identify the motivational strengths, weaknesses and deficits of the instructional episodes already mapped. A series of structured observational studies were carried out that explored the goal structuring suggested to women across the antenatal and postnatal learning environments. Considering that women use the internet for confirming professional instruction (Dickerson, 2006; Dede and Fontana, 1995), this included a structured observational study of the instruction provided by 30 frequently accessed breastfeeding websites (Stockdale et al, 2007).

In keeping with the expectancy-value approach to motivation, a theoretical goal structure was imposed on the observations, in that '*goals serve to direct attention (attention), define what is important about engagement (relevance), influence competence valuation (confidence), task involvement, and perceived competence (satisfaction)*' (Harackiewicz and Sansone, 2000: 98). Guided mainly by the work of these authors, instruction designed to influence maternal goal setting was observed, with the aim of understanding the phenomena observed in step one.

The structure incorporated key motivational goal components related to persistence and attainment of breastfeeding as a learning goal; that is, suggestions for adopting breastfeeding (purpose goals), sub-goals for attaining the purpose goal (target goals) and associated performance feedback indicators (measures of progress and proximal target goal achievement).

A total of 167 hours of observation sampled all breastfeeding education. Over a 12-week period, this resulted in observing 130 women and 20 midwives who were providing breastfeeding education at different points in the educational trajectory. In addition to verbal instruction, 12 breastfeeding leaflets and two books routinely provided were analysed. On completion of the observational study, content analysis was applied in relation to the proposed goal structuring. The following summary of the results interpreted within the four theoretical components of the ARCS model, highlights the incongruent nature of the goal structures observed.

The main emphasis routinely communicated related to why women should 'value breastfeeding' (purpose goals). Pregnant women were introduced to the multiple benefits of breastfeeding eight to 15 times; for example, including increased maternal/infant bonding and optimal child intelligence. Only five target goals (feed in the first half an

hour, feed your baby when hungry, learn to position and attach correctly, breastfeed exclusively and seek help from a midwife) were communicated. Each was accompanied by an associated performance feedback indicator as a maternal reference value by which they could measure their success. A summary of the motivational limitations observed in the antenatal goal structures suggested:

- An over-emphasis on performance and getting breastfeeding 'right' from the outset. Throughout the antenatal phase, women were informed that breastfeeding was a learned behaviour, implying the need to master it (mastery-orientated goals). However, the target goals and performance feedback indicators were communicated using mainly performance-orientated language, such as 'when performed properly, breastfeeding will be easy, straightforward and satisfying'.
- Incomplete goal structures were observed, for example, where a specific target goal was introduced, such as 'learn how to position and attach your baby properly', the accompanying reinforcement schedule lacked synchronisation and representation of the learning stages of this particular target goal. Rather than women being given indicators that their baby was learning how to achieve an optimal latch, they were given an absolute performance-orientated measure of 'if it hurts, you are not doing it properly'. This incomplete goal structuring was likely to have a de-motivational effect on confidence, satisfaction and engagement with breastfeeding when difficulty was experienced.

It was theorised that the failure to provide a comprehensive mastery-orientated target goal structure would negate attention, relevance, confidence and satisfaction when learning to breastfeed. The emphasis on breastfeeding being easy and straightforward would reduce women's sense of challenge and curiosity to learn how to breastfeed (attention); encourage unrealistic expectations of what needed to be navigated to succeed (relevance); create a reference value system that, when applied postnatally, would lower women's confidence, resulting in an overall lack of satisfaction and disengagement in learning. The antenatal goal structure observed presumed that women would follow an expected learning path of successful, problem-free breastfeeding, where any deviation in experience indicated abnormal performance and underachievement.

Observation of the postnatal instructional goals offered by midwives when breastfeeding started, provided confirmation of the results of the antenatal analysis. A distinct shift in the suggested goal provision was noted. Purpose goals were no longer dominant post-birth; instead, midwives were observed introducing new target goals in response to managing women's unexpected and diverse breastfeeding experiences.

Incongruity between the new target goals observed and those introduced antenatally was evident. For example, pregnant women were advised to feed their baby when hungry, while in the postnatal phase, a new target goal instructed 'wake your baby and try to feed him'. Likewise, many babies did not spontaneously breastfeed within the first 30 minutes following birth, providing women with evidence of an antenatal target goal failure within the first hour of

motherhood. More direct discrepancies between the antenatal performance feedback indicators and women's postnatal experiences were noted. For example, women whose babies refused to settle after breastfeeding could not use the antenatal performance feedback indicator that 'if your baby is content, he/she is breastfed well'. Communication of purpose goals (reasons for breastfeeding) was limited in the postnatal phase to one-to-one discussion, when a woman expressed that she no longer wished to breastfeed. Anxiety, stress and emotional outbursts relating to learning to breastfeed were observed frequently in the early weeks, indicative of high relevance, low confidence and low satisfaction in the learning process. Theoretically, high anxiety is associated with helplessness, depressed curiosity and a lowered interest in learning (Day, 1968). However, to complete the diagnostic work, it was important to confirm the observed analysis by measuring the motivational profile of women who were learning to breastfeed under this instructional programme.

Step 3: Motivational audience analysis

To explore if the observed performance-orientated goal structure was having a detrimental effect on women's motivation to persist with learning, the Breastfeeding Motivational Instructional Measurement Scale (Stockdale, et al, 2008a) was developed and applied. The tool consisted of 51 Likert questions and one open-ended question inviting women to add further meaning to their experience. A convenience sample of 202 women self-reported the degree of motivation experienced when learning to breastfeed in the early weeks and when directed by the observed educational programme. Exploratory factor analysis, using Oblimin rotation, revealed a three factor solution (Figure 2) that was consistent with the expectancy-value theory of motivation (Stockdale et al, 2013).

In particular, first-time mothers demonstrated that they valued breastfeeding and placed importance on midwife support, but experienced lower expectancy for success (confidence); findings that were aligned with the observed relevancy of the goal structuring and overall satisfaction with their experience of learning to breastfeed. Many women perceived their breastfeeding experience to be problematic, resulting in high levels of anxiety and potential goal disengagement:

"The past days of trying to learn and manage breastfeeding have been incredibly difficult, very stressful. Breastfeeding was (and still is) important to me, but the trauma that my inability to breastfeed was causing me and my baby every meal time was just too much to bear" (Q132).

On completion of steps one to three of the ARCS process, the following key motivational diagnosis emerged:

- When women's experience of breastfeeding matched the antenatal goal structure of problem-free breastfeeding, their motivation and persistence was protected
- When women's experience deviated from the observed antenatal goal structure, women felt low expectancy for success (confidence) and lacked relevant goal direction
- While postnatal instruction provided compensatory target goals as a means of navigating problematic

breastfeeding, relevancy of the instruction and first-time mothers' expectancy for success (confidence) remained low as women continued to use the antenatal performance feedback indicators as evidence of their failure

- As women failed to receive relevant, confidence-building and satisfactory reinforcement of their progress, disengagement lowered the valence associated with the behaviour and breastfeeding cessation often occurred.

Although the results of phases one to three provided instructional design guidance in relation to addressing the incongruent antenatal and postnatal goal structuring, Keller (2010) outlines the importance of capturing the multidimensional impact of the observed instruction in relation to the main motivational dynamics of the learners. The systematic design process therefore focused on mapping the motivational problems outlined, in terms of attention, relevance, confidence and satisfaction (ARCS) experienced by first-time mothers as an audience group.

Design phase

To achieve the educational design goal of creating an educational experience that achieves optimal learner motivation (Keller, 2010), the motivational problems must be resolved through the setting of motivational design objectives and the creation of theoretically-based solutions.

Step 4: Outlining the motivational problems and setting the design objectives

A review of the nature of breastfeeding and the theoretical findings related to each step of the diagnostic phase was used to guide this part of the design process. The audience's motivation in relation to attention, relevance, confidence and satisfaction was mapped across the educational trajectory. When any of the ARCS dimensions were too low or high, this was recognised as detrimental to the audience's motivation to learn. Unlike other educational contexts where the educational episodes are simultaneous to the experience of learning, breastfeeding is unique as educational groundwork was completed eight to 10 weeks prior to the opportunity to experientially learn from the behaviour. For this reason, the motivational problems and objectives set reflect the direct relationship between the motivational nature of the antenatal goal setting and postnatal goal attainment of optimal breastfeeding. The antenatal summary therefore reports the dimensions of the ARCS, taking into consideration women's motivation as a result of the antenatal education and the reality of the [pending] experience of breastfeeding. It is important to remember that the motivational problems and objectives refer to the group characteristics, not the motivation of individual learners.

Figure 2. The three factor solution representing the motivational profile of first-time mothers who were learning to breastfeed (Stockdale et al, 2013)



As a result of the education and realities of breastfeeding, it was concluded that the attention was low, in that maternal curiosity or inquiry was generated. Women accepted breastfeeding as easy and this had a direct relationship to an unhelpfully high level of antenatal confidence; a confidence that was performance-orientated, as opposed to mastery-orientated. Relevancy during the antenatal phase was low due to the over-emphasis on the benefits of breastfeeding and the failure to provide the necessary target goals required for successful navigation of the diverse learning experiences. As women remained unaware of the challenges associated with learning to breastfeed, they experienced a high level of satisfaction in the antenatal period because they valued breastfeeding and felt confident in their ability to optimally achieve. No gap in knowledge was experienced (high confidence), neither were any performance feedback indicators active as a means of behavioural reinforcement, so satisfaction remained artificially high.

Women's experience of learning to breastfeed resulted in two motivational groups; those whose breastfeeding experience was straightforward and those who experienced unexpected challenges. This paper reports the motivational profile of those whose experience deviated from straightforward breastfeeding, resulting in behavioural cessation. In contradiction to the antenatal summary, attention was drawn towards breastfeeding, mainly through the role of breastfeeding difficulties and women's motivation to resolve their difficulties. Although attention was high, this interest was indicative of a high relevance that culminated in feelings of anxiety and stress in trying to breastfeed correctly (performance-orientation). As women used the antenatal performance feedback indicators that accompanied the five target goals, they interpreted their difficulties as evidence of their inability and failure to breastfeed. This negatively affected their satisfaction with breastfeeding, depleted as the continued difficulties reinforced their perceived failure. When midwives intervened and helped women to successfully attach their babies, confidence would continue to deplete as success was attributed to the health professional. As confidence and satisfaction depleted and attention and relevance increased, women's motivation to persist with learning would often decrease and cessation was frequently observed.

The main motivational root problem was defined as the creation of unrealistic expectations in the antenatal period of an easy breastfeeding experience that was not matched to the learning activity required in the postnatal period. This phenomenon was further supported by the provision of an incomplete target goal structure that was performance-orientated in design.

The design objectives were in response to the diagnostic work and the main motivational root problem – that the antenatal goal structure was having a detrimental effect on women's motivation to sustain their learning activity postnatally. The main objective was, therefore, to redesign the antenatal education to address the incongruity between antenatal learning goals and the diversity of postnatal experiences. Previous researchers have recommended that pregnant women are told the 'truth' about breastfeeding,

so they could psychologically prepare (Schmied et al, 2001; Mozingo et al, 2000). While it was anticipated that this approach to instructional design may support the development of a mastery-orientated goal structure for learning how to breastfeed, theoretical concern was raised in that pre-warning women about the 'problems' of breastfeeding had the potential to encourage the creation of an 'avoidance-orientated' goal, as opposed to an 'approach-orientated' goal. It was anticipated that where women's self-regulation focused on avoiding potential problems, there was a possibility that they would either avoid all breastfeeding or lose their intrinsic satisfaction associated with mastery (Stockdale et al, 2011a, 2011b; Linnenbrink and Pintrich, 2000). Influenced further by the results of a clustered randomised controlled trial (RCT) (Lavender et al, 2005) where pre-warning women within a professional support intervention did not significantly increase maternal persistence, it was decided that neither 'pre-warning' nor 'not warning' women about the 'reality' of breastfeeding, was sufficient in attaining effective mastery-orientated learning. Guided by theory application (ARCS meta-synthesis) and personal communication with previous researchers (Coombs, et al, 1998), it became evident that, to create the required mastery-orientated goal structuring for first-time mothers, additional design objectives needed to be achieved:

- Design new mastery-orientated antenatal target goals that provide women with the necessary target goal structure to support their experience of breastfeeding
- Redesign existing target goals so that each target goal met the requirements of a mastery-orientated goal, including the provision of relevant performance indicators.

Step 5: Applying the theoretical ARCS to achieve the desired instructional design objectives of mastery-orientated, goal-based instruction, the design process focused on the application of the ARCS process tactics (Keller, 2010). Guided by the process questions such as: 'How can we stimulate an attitude of inquiry?' And motivational tactics such as: 'Use visuals to stimulate curiosity or create mystery' (attention tactic), two expert midwives, three practitioners, two service-users and one midwifery researcher discussed possible solutions to the motivational objectives set. It was hypothesised that if the objectives set were achieved through the applied theoretical tactics of the ARCS model, women's demotivational state as a result of experiencing breastfeeding difficulties would be prevented.

Theoretical limitations surrounded the direct introduction of breastfeeding problems into routine antenatal education. To overcome these and still achieve a mastery-orientated goal structure, it was decided that the common 'problems' associated with learning to breastfeed, such as when the baby demonstrates difficulty attaching, should be motivationally redesigned as a mastery-orientated target goal and reintroduced into antenatal education as a 'normal challenge' associated with learning. It was anticipated that this instructional change from performance-orientated goal structures to mastery-orientated goal structures would

normalise multiple breastfeeding learning experiences and so achieve a psychological shift for women who were low in the ARCS achievement motivation. It was presumed, as in the case of Astlietner and Keller (1995), that only women low in outcome expectancies would benefit (those that experienced difficulties) and that those high in outcome expectancies would continue to attribute their success to their perceived ability and performance. This shift away from performance-orientated goals to that of mastery-orientated goals, as described by Linnenbrink and Pintrich (2000), became central to achieving optimal motivated breastfeeding behaviour for the audience investigated.

While it is beyond the scope of this paper to describe in detail each aspect of the complex intervention, an example is provided to illustrate how mastery-orientated learning was facilitated through the theoretical re-design of an antenatal target goal.

Some babies followed the expected feed-sleep pattern communicated through routine antenatal education. Women found that their babies either incessantly breastfed or refused to initiate breastfeeding. Whereas the postnatal midwives were observed providing different troubleshooting target goals to address this problem (observational data), evidence from the audience analysis (factor analysis data) indicated women used the antenatal performance feedback indicators as evidence of their 'breastfeeding failure'. To motivationally manage this instructional deficit, a new mastery-orientated target goal was designed by applying a selection of attention tactics (creating curiosity and interest), relevancy tactics (matching the goal to a personal aspect of the behaviour), confidence-building (giving women control over learning to achieve this target goal) and satisfaction-based tactics (providing women with reference values that enabled them to see their progress and experience intrinsic satisfaction in the process of learning). To achieve this, the new target goal introduced women to three feeding characteristics that their newborn baby was likely to display:

- Snacking mode – when their baby would breastfeed persistently over a set period, in order to increase maternal milk supply (commonly known as a growth spurt)
 - Sleepy mode – when their baby preferred to sleep than breastfeed, commonly experienced within the first 48 hours following birth
 - Systematic mode – those times when their baby would develop a regular pattern of breastfeeding and sleeping.
- Introduced in the antenatal class as a large floor puzzle, women and their partners were challenged to recognise the characteristics of each mode and plan how they might map and manage their baby's own unique feeding pattern. Strategies for managing day-to-day life during any of these modes of neonatal behaviour were provided.

It was anticipated that personal relevance would be increased as all babies are unique in their feeding patterns. Likewise, it was concluded that unhelpful performance feedback indicators, such as social comparisons between mothers, would be reduced, as would the effects of the reference value: 'You will know your baby is well fed when he settles and sleeps well.' To ensure safety, each target goal

was reviewed by the lactation consultant and parameters inserted. For example, if snacking persisted beyond the recommended number of hours, women were advised to call the lactation midwife.

Through this new learning goal, the causal links could be mapped back to the application of relevant theories, in that a sense of inquiry, curiosity and mastery were created that reflected a parental approach to self-determination (Ryan and Deci, 2000), the need for affiliation, achievement and power (McClelland, 1976), intrinsic interest and effort (Hidi, 2000) and competence acquisition (Butler, 2000). This theoretically-designed, mastery-orientated goal was then re-embedded into the overall breastfeeding curriculum, alongside other new and revised target (and purpose) goals. The enhanced version of the breastfeeding curriculum was considered comprehensive as it provided motivational learning goals for multiple breastfeeding experiences. The final step in the application of the ARCS model was to test the effects of the motivational design process by completing a feasibility study.

Evaluation phase

In step with the ARCS design and evaluation process, the last phase of this research project was to evaluate the motivational impact of the theoretically-designed complex intervention. Measuring women's motivation and persistence as the primary outcomes, an RCT (Stockdale et al, 2008b) was conducted. A two-day staff training programme that focused on the motivational diagnosis and theoretical nature of motivation was developed and delivered to midwifery staff, whose remit it was to educate women in the experimental group (antenatal and postnatal education). Although the results of the trial are reported elsewhere (Stockdale et al, 2008b), it is important to point out that as hypothesised, the motivationally-enhanced goal-based education significantly increased first-time mothers' confidence in their ability to succeed in learning to breastfeed ($t=4.81$; $df=89.22$; $p<0.001$) through the increased relevancy of a redesigned goal structure ($t=7.21$; $df=80.39$; $p<0.001$). Theoretically, when an audience experiences greater levels of satisfaction when learning, increased persistence and task engagement result: this trial demonstrated greater persistence and task engagement in that a significant increase in breastfeeding rates was noted on discharge ($\chi^2=5.64$; $df=1$; $p<0.02$) and at three weeks post-birth when midwifery breastfeeding education ceased ($\chi^2=16.26$; $df=1$; $p<0.001$).

On completion of the trial, it was concluded that the motivational deficits associated with failure to breastfeed were in a direct response to a lack of motivational design and the performance-orientated goal structuring currently associated with breastfeeding education.

Conclusion

The ARCS model of instructional design offers health educators a potentially robust approach to designing and implementing relevant and effective health education that connects the effects of health education with the causal links of what works and for whom.

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Evaluation of a next birth after caesarean antenatal clinic on women's birth intention and outcomes, knowledge, confidence, fear and perceptions of care

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Abstract

Aim. In 2008, a Western Australian maternity hospital began a next birth after caesarean (NBAC) service to improve the quality of care offered to pregnant women who had experienced a caesarean section (CS) in a previous pregnancy. The aim of this study was to evaluate the NBAC service at three time points (booking visit, 36 weeks' gestation and six weeks postnatal) to determine changes in childbirth fear, confidence, knowledge and intention to pursue a vaginal birth after caesarean (VBAC) in a current pregnancy, compared to those women receiving standard antenatal care.

Method. A comparative descriptive study design was implemented following receipt of ethical approval from the study hospital. A total of 47 women who attended the NBAC service for their antenatal care and a comparison group of 45 women who attended the main hospital clinic were recruited. Descriptive statistics, chi-square and t-test analyses were used. Women provided additional qualitative comments at 36 weeks and six weeks postnatal regarding their perceptions of care, which were analysed using content analysis.

Results. At recruitment, the comparison and NBAC groups were comparable for demographic variables and birth intention. Birth outcomes were not different with 15 out of 25 comparison women (60%) achieving their desired VBAC, compared to 20 out of 34 NBAC women (58.8%). At 36 weeks' gestation, NBAC women had increased knowledge of behavioural techniques to assist with labour and birth ($p=0.0004$) and higher self-efficacy (confidence) scores ($p=0.011$). There were no differences in terms of childbirth fear with both groups reporting high mean childbirth fear scores. Content analysis highlighted the positive and negative aspects of women's antenatal care experiences.

Implications. Findings suggest that providing pregnant women who had experienced a previous CS with evidence-based information about birth options did increase their knowledge, confidence and satisfaction with care. Childbirth fear levels were high for both groups and midwives with appropriate skills may be ideally placed to provide counselling intervention in conjunction with antenatal care.

Key words: Caesarean section, childbirth fear, childbirth knowledge, midwifery-led care, next birth after caesarean, vaginal birth after caesarean, VBAC, evidence-based midwifery

Introduction

The caesarean section (CS) rate in Western Australian (WA) in 2010 was 33.6% and for those women who had a prior CS, 86.3% had a repeat CS, with 10.1% having a vaginal birth after caesarean (VBAC) (Joyce and Hutchinson, 2012). This is despite evidence that suggests between 60% to 80% of women who had a previous lower segment CS should be able to give birth vaginally in their subsequent pregnancy (Hamilton, 2011; Guise et al, 2010; McGrath and Ray-Barruel, 2009; Stamilio and Shanks, 2008).

Women experiencing a CS are more likely to be disappointed, distressed or dissatisfied with this mode of birth (Lobel and DeLuca, 2007; Humenick, 2006; Fenwick et al, 2003). CS is associated with increased risk to baby and mother. Complications include: infection, injury to organs, haemorrhage, death and respiratory distress and

injuries in babies (Lobel and DeLuca, 2007; O'Leary et al, 2007). These complications can impact on the emotional and psychological wellbeing of the woman, influencing her transition to parenthood, family functioning and childhood development (Lobel and DeLuca, 2007). Moreover, the financial cost of unnecessary intervention to families, communities and the health system in Australia is unsustainable (Druzin, 2006).

As the CS rate has increased, so too has consumer concern. In WA, Birthrites – Healing After Caesarean Incorporated has been driving a maternity reform agenda to improve options and services to women following CS. In 2006, Birthrites facilitated a forum to bring together maternity health service providers, WA health representatives and consumers. The outcomes formed the basis of a governmental policy, *Improving maternity services*

(Department of Health WA, 2007), to introduce a policy framework to improve women's childbirth experiences and reduce the CS rate, and, in particular, planned repeat CS.

In response to consumer and governmental concern about the rising CS rate and lack of services for women wanting a VBAC, an innovative clinical practice initiative – the next birth after caesarean (NBAC) service – was developed and began at WA's only tertiary public maternity hospital in 2008.

The NBAC antenatal service

Pregnant women, who have experienced one previous CS, are booked into the NBAC clinic at 14 to 16 weeks' gestation. Time is allowed for women to talk through their last birth experience and express their feelings, thoughts and concerns. Women also receive an evidenced-based information package about birth after a previous CS. Women's care remains in the NBAC clinic, regardless of their choice to have a repeat elective CS or to pursue a VBAC, unless specialist medical care is indicated. NBAC women attend two medical reviews where options, such as CS and VBAC, are discussed and decisions around birth choice are recorded. To facilitate continuity of care, women's appointments are scheduled to facilitate exposure to the same team of two to three midwives throughout pregnancy.

Method

This study aimed to evaluate the NBAC antenatal service at three time points (booking visit, 36 weeks' gestation and six weeks postnatal) to determine if NBAC women demonstrate a change in childbirth fear, confidence, knowledge and intention to pursue VBAC in the current pregnancy, compared to women who received standard antenatal care. An electronic database search to obtain relevant literature for the background and methods included: CINAHL, PubMed, ScienceDirect, Medline and EBSCO. Terms used included: CS, VBAC, fear, satisfaction, knowledge, and confidence (within the childbirth context). Permission to conduct the study was granted from the study hospital human research ethics committee (1469/EW).

Pregnant women who had experienced one previous CS were eligible to participate. Sequential sampling was employed with the comparison group being recruited six to eight months prior to the establishment of the new NBAC service, in order to avoid any bias. Recruitment and data collection for the NBAC group began four months after the service had started.

The recruitment procedure was identical for both groups. Eligible women were conveniently recruited on arrival for their antenatal booking appointment. All women were offered an information letter and signed a consent form prior to receiving a data collection package with a reply paid envelope. The second data collection point was at the woman's 36-week antenatal appointment, where the same data collection package was distributed. Finally, at six weeks postnatal, all participants were contacted and data was collected verbally by telephone.

Prior to the NBAC service, 75% of women at the only tertiary maternity hospital in WA chose a repeat CS. The rationale behind the authors' sample size calculation focused upon whether the emotional and information support provided through the NBAC service could better inform women of all birth options, thereby increasing the percentage of women considering a VBAC option. To determine a 25% point increase in the number of women identifying an intention to consider vaginal birth in a subsequent pregnancy, which may be optimistic; a sample size of 58 women per group was recommended (two-sided test, alpha of 0.05, desired power of .80). The authors accounted for up to 20% for loss to follow-up and aimed for 70 per group.

Survey package

The survey package included a number of validated instruments. A demographic questionnaire collected information such as age, educational level, ethnicity, language spoken at home, income and marital status. At booking and 36 weeks' gestation, women were asked to record their intended or preferred mode of birth – VBAC, CS or unsure. Obstetric data relating to birth outcomes (mode of birth) were collected from medical records.

The Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ) was used to measure childbirth fear and administered across all time points (reliability ≥ 0.87) (Wijma et al, 1998). Confidence for birth was measured by the Childbirth Self-Efficacy Inventory (CBSEI) with reliability coefficients above 0.90 (Drummond and Rickwood, 1997). Finally, a 'satisfaction with service' survey developed by the NBAC midwives to determine women's satisfaction with care was piloted for validity with 15 pregnant women.

Data analysis

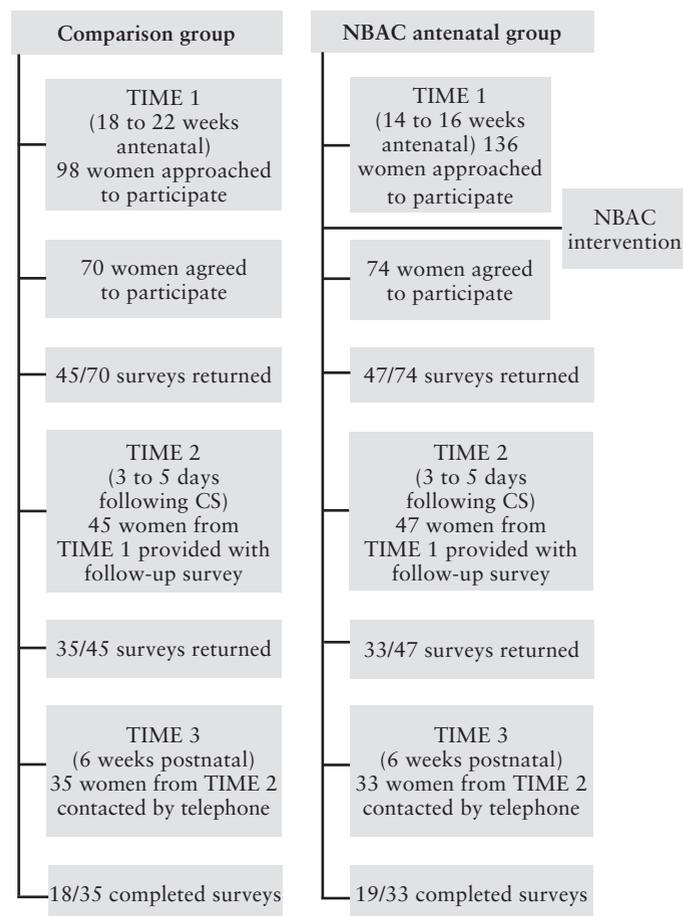
Descriptive statistics were computed for continuous data, such as age. Categorical post-intervention variables, such as childbirth fear (high/low), were compared using the chi-square test and Yates correction for small numbers, as appropriate. For continuous variables, independent samples student t-tests were used. Data analysis was conducted using SPSS (version 15). Statistical significance was determined to be a p-value of <0.05 . An open-ended question seeking women's preference or intention of birth mode was included. Qualitative comments provided by women on the questionnaires or during postnatal telephone follow-up at six weeks were recorded in field-notes and analysed using content analysis (Maltby et al, 2010).

Results

An initial 144 women were recruited, although retention across the three time periods was insufficient to achieve the desired power. A summary of the recruitment process with follow-up numbers is provided in Figure 1. At booking, the comparison and NBAC groups were comparable in terms of age, education, income level and place of birth.

At booking, 72.3% (n=34) of NBAC women indicated

Figure 1. Recruitment and follow-up



a preference for a VBAC, compared to 55.6% (n=25) in the comparison group (p=0.18). Similar numbers in both groups reported being unsure of their intended birth mode (17.7%; n=8 comparison and 14.9%; n=7 NBAC). At time two (36 weeks' gestation), 80% (n=24) of NBAC women, compared with 56.3% (n=18) of the comparison group wanted a VBAC at 36 weeks, whereas 12.9% (n=4) of NBAC women wanted a repeat CS, as opposed to 34.4% (n=11) of comparison women (p=0.21). Birth outcomes collected from the women's medical records revealed that for the 25 women in the comparison group who wanted a VBAC, 60% (n=15) were successful. Likewise for the 34 NBAC women who intended to have a VBAC, 58.8% (n=20) achieved their goal; (p=0.98).

One goal of the NBAC service was to increase women's knowledge and understanding of childbirth. At booking, both groups had similar levels of childbirth knowledge and similarities were found in how detailed women felt their knowledge was. However, by 36 weeks' gestation, there was a difference with NBAC women (81.8%; n=27) having more knowledge of behavioural techniques that may be used to help cope during labour or birth compared to comparison women (50%; n=17) (p=-0.00).

Women from both groups reported high levels of childbirth fear (defined as a score >60) at booking, 36 weeks' gestation and six weeks postnatally. Mean scores ranged between 70 and 81. Although there was a decrease

in the fear scores for the NBAC group at 36 weeks' gestation, this was not statistically significant (p=0.94). When fear scores were compared with other variables, such as age, place of birth, parity and birth intention, no significant relationships were found in either group. While there were some slight differences between the two groups; total mean self-efficacy (confidence) scores between groups and across time points revealed no significant differences. However, within the groups, there was a significant increase in childbirth self-efficacy (confidence) in the NBAC group (p=0.01) at 36 weeks' gestation compared to the comparison group (p=0.14). There was no difference within the groups in relation to outcome expectancy.

Comparison of satisfaction results revealed no significant differences between the two groups on levels of midwifery reassurance, helpfulness, confidence and support provided. However, women in the NBAC consistently scored these items as more favourable.

Perceptions of care

At 36 weeks' gestation, 29 women (31.5%) wrote unsolicited comments on the back, or in the margins of the questionnaires (14 comparison and 15 NBAC women). A further 18 women made comments to the researcher during the telephone follow-up six weeks postnatal (eight comparison and 10 NBAC women), which were captured in field-notes and analysed using content analysis.

Women from the comparison group at 36 weeks' gestation (n=14) stated that they often felt 'ignored' by care-givers during pregnancy. Women commonly used phrases including 'not being listened to', 'not being spoken to' or 'not acknowledged'.

They struggled to understand what was happening to them or why certain decisions were being made. Perceptions of being afforded 'no choice' or 'control' featured in these women's stories, with one woman writing that she felt 'dictated to'. Statements regarding labour and birth experience were generally negative. Women talked about being 'frightened', 'scared', 'anxious' or in a state of 'panic'. Terms such as 'petrified', 'unnerving' and 'freaked out' were common. Women wrote how distressing it was to be separated from their partner and/or baby if they had a CS.

At six weeks postnatal, the eight women from the comparison group who commented on their experience used terms such as 'let down', 'weak' (for having a CS), 'a failure', 'disappointed', 'ambivalent', 'ripped off', 'guilty' (for not succeeding at vaginal birth) and 'frustrated'. Two commented on feeling 'empowered' and having a 'good experience'. Another two indicated 'CS was not too bad' and would consider having another. Despite the concerning statements, six women commented on the care from midwives, which they called 'fantastic', 'great', 'wonderful' and 'brilliant'.

In contrast, comments from NBAC women at 36 weeks' gestation (n=15) suggested differences in their experience. Women mentioned how NBAC midwives were 'supportive' and 'on the same page', when describing their relationship.

At six weeks postnatal, 10 NBAC women said they noticed a change when admitted to the labour and birth suite. Women felt that some midwives had no confidence in women's ability to achieve a VBAC and believed the women would fail. Some felt they were being criticised and 'judged' by the midwives because they were attempting VBAC. Five NBAC women who achieved VBAC stated 'being proud', 'feeling ecstatic', having 'an amazing experience' and 'feeling clever'. The three who had a repeat CS described being 'in control' and 'having knowledge'.

Discussion

The results of the evaluation of the NBAC antenatal services to a comparison group revealed an increase in childbirth knowledge and confidence at 36 weeks' gestation. While the findings could not demonstrate the NBAC antenatal service made a difference to the birth intention of women who were unsure of their birth mode early in pregnancy; the findings support other research. Shorten et al (2005) conducted a randomised controlled trial of 227 (control group n=112, intervention group n=115) pregnant women conducted in Australia. Intervention women were given a decision-aid booklet at 28 weeks' gestation, describing the risks and benefits of elective repeat CS and VBAC. Results indicated that women in the control group who were unsure of their birth intention remained unsure at 36 weeks' gestation. However, despite the reduction in decisional conflict for the intervention group and the increased VBAC intent at 36 weeks, the women's birth intent was not consistent with actual birth outcomes for many women. These same results are reflected in our findings, with similar numbers of women from both groups achieving a VBAC.

Other factors, such as the professional discourses around VBAC, can influence women's intention to pursue VBAC (Fenwick et al, 2007). While more women in the NBAC group intended to have a VBAC, similar numbers from both groups changed their mind from VBAC, or being unsure to CS, after the 36-week obstetric visit. Medical advice remains a key factor for many women in relation to influencing their childbirth choices. The amount and type of information doctors provide to pregnant women can significantly impact the CS rate (Landon, 2008). In a study by Dodd et al (2004), 40% of women indicated they would make their decision about mode of birth after considering the opinion of their doctor. McGrath et al (2010) support this view and suggest that if the health professional providing care to the women is hesitant in recommending VBAC, the women will opt for repeat elective CS.

It was hoped, as others have suggested (McGrath et al, 2010; Frost et al, 2009; Farnworth et al, 2007; Shorten et al, 2005), that by providing women with structured evidence-based information and increasing their knowledge about childbirth, the NBAC service could counteract the negativity around VBAC. While NBAC women demonstrated increased childbirth knowledge at 36 weeks' gestation, this did not translate into improved VBAC rates.

Antenatal continuity of care also did not appear to make a difference, which contrasts with the work of Farnworth et al (2007). In Farnworth et al's study (2007), 32 women in the intervention group received standard care plus a DVD at 12 weeks and a visit at home by a known midwife at 30 weeks' gestation. Women in the intervention group felt able to work through their previous birth experiences with the midwife, which increased their birth knowledge about choices. They also described positive effects in relation to deciding mode of birth, particularly in terms of emotional support, knowledge and confidence.

While the NBAC women demonstrated an increase in childbirth knowledge, this knowledge was not associated with decreasing fear levels. In fact, results from both groups in this study revealed high levels of fear with no women recording low levels, suggesting that knowledge alone may not reduce fear. Childbirth fear has been recognised in numerous studies (Rouhe et al, 2009; Farnworth and Pearson, 2007; Fenwick et al, 2007; Lobel and DeLuca, 2007; Nilsson and Lundgren, 2007) as a consequence of a traumatic birth experience which includes emergency CS (Koo et al, 2003). A strong association between previous birth experiences and fear of childbirth in subsequent pregnancies was reported in Sweden and Finland (Rouhe et al, 2009).

One possible reason why the NBAC evaluation differs from other evidence around childbirth fear interventions, could be that the NBAC midwives were not adequately prepared to assess or counsel women who were fearful of childbirth and may have had a previous traumatic birth experience. It has been suggested that Norwegian women with fear of childbirth and associated request for CS did not really want to be delivered by CS, but rather wanted assistance to become mentally prepared to give birth vaginally (Nerum et al, 2006). In fact, 86% of the women changed their mind from CS to vaginal birth following counselling and talking through their experiences with trained midwives and psychologists. The request for CS by women who have fear of childbirth may be a crisis reaction to a previous unresolved traumatic experience and, while the NBAC evaluation did not reveal any difference in the levels of fear based on birth intention, further research is needed to explore potential associations between fear of childbirth and feelings of control and self-efficacy.

The impact of a woman's birthing experience on her level of childbirth confidence has not been well researched. Much of the research centres on childbirth fear, with limited reference made to confidence and satisfaction (Nilsson and Lundgren, 2007; Lundgren, 2005). Findings from a phenomenological study of women who experienced severe fear of childbirth suggest that women's confidence in giving birth may be lost because of their attitude to childbirth (Nilsson and Lundgren, 2007) as these women felt the need to meet their own expectations and those of other people. If they were not able to meet the expectations, they felt they had failed. However, the NBAC evaluation only took into account continuity of care during pregnancy rather than across the continuum of care. What was not known was the amount of control, level

of support and type of relationship the woman had during her birth experience. Nonetheless, NBAC women were still more confident at 36 weeks' gestation and highly satisfied with their antenatal care.

Limitations

This study only evaluated a service in a model providing continuity of antenatal care, rather than care across the pregnancy and birthing continuum. Our recruitment and retention of women across the three data collection periods would suggest our results need to be interpreted with

caution. Future researchers should consider participant burden, such as the number of questionnaires women are asked to complete. The NBAC antenatal package consisted of multiple surveys, which could have been overwhelming plus it may not have been convenient or practical.

Conclusion

Our results suggest that pregnant women who had experienced a previous CS and received care through the NBAC antenatal service demonstrated increased childbirth knowledge and confidence at 36 weeks' gestation.

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Organisational culture in maternity care: a scoping review

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Abstract

Aim. To present the results of a scoping review of the research literature addressing the influence of organisational culture on the quality of maternity care.

Background. Organisational culture is increasingly seen as key in both healthcare system operations and quality of care.

Design. A scoping review using a modified version of Askey and O'Malley's (2005) framework to identify: key concepts, gaps in the research and types and sources of evidence to inform practice, policymaking and research. Research databases used were: PubMed, Med Medic, MEDPILOT, Medline, CINAHL, PsycINFO, Cochrane, Social Sciences Abstracts, Web of Knowledge and Scopus.

Method. Development of a protocol specifying search terms and inclusion and exclusion criteria.

Results. A total of 3521 papers were identified in the search. Following application of the inclusion criteria, 16 papers were eligible for full review. There was a focus on the organisational and cultural barriers to the practice of good maternity care. Most of the studies included consideration of how organisational culture could be influenced or changed and four of the studies evaluated some form of change of practice to find ways of enabling a 'midwifery culture of practice'.

Conclusion. This scoping review shows midwives and maternity nurses perceived organisational factors to be important determinants affecting practice. It highlights time pressures, procedural imperatives and professional conflicts to be the main organisational barriers to the practice of good maternity care.

Key words: Organisational culture, organisational behaviour, maternity care, scoping review, evidence-based midwifery

Introduction

Within medical sociology and health policy there have been recent calls for greater attention to be paid to the organisational aspects of healthcare (Currie et al, 2012). Organisational culture is an important part of this organisational focus and is increasingly seen as a key determinant in both how healthcare systems operate and the quality of the care provided (Davies et al, 2009). In the UK, the recent report by Francis (2013), which investigated cases of sub-standard care at a large teaching hospital, recommended a 'fundamental culture change' in order to improve the safety of services – making a clear link between organisational culture and the performance of the organisation.

Academic interest in organisational culture is growing in health services research (Braithwaite et al, 2010), with an increasing number of studies in different areas – how organisational culture affects research utilisation (Scott-Findlay and Estabrooks, 2006), how it affects performance of organisations (Jacobs et al, 2013) and how clinicians utilise clinical information systems (Callen et al, 2007). The purpose of this scoping review was to map the research conducted on organisational culture in maternity care.

How organisational culture should be defined has been extensively debated (Hatch, 2006; Martin, 2002). A common element of many definitions is that it is something shared

between members. For example, Davis defines organisational culture as 'a pattern of shared beliefs and values that gives members of an institution meaning, and provides them with the rules for behaviour in their organisation' (Davis, 1984: 1). However, not all researchers take this view. Meyerson (1991) argues that seeing organisational culture as something shared misses out on important aspects: 'For some cultures to dismiss the ambiguities in favour of strictly what is clear and shared is to exclude some of the most central aspects of the members' cultural experiences and to ignore the essence of their cultural community' (Meyerson, 1991: 132).

These debates over the meaning of organisational culture stem from researchers grounding themselves in different theoretical traditions, such as a modernist or symbolic interpretative approach (Smircich, 1983), that produce different definitions and approaches to the study of organisational culture.

A further conceptual ambiguity in organisational culture research (Martin, 2002) is that researchers often define organisational culture formally in one way, but operationalise it in another when they come to actually studying organisations. In this vein, Martin categorises the approaches found in the research on organisational culture into three main theoretical perspectives: the integration perspective, which focuses on aspects of culture that have mutually consistent interpretations; the differentiation

perspective, which focuses on inconsistent interpretations; and the fragmentation perspective, which focuses on ambiguity rather than clarity. This review presents a critical analysis of the research literature using Martin's three perspective approach to categorise different research studies by conceptualising their working definition of organisational culture to see how these concepts are actually used in the studies. This approach allows a focus on all levels of culture and incorporates a range of perspectives so that studies are not ruled out on definitional or doctrinaire grounds.

This paper considers organisational culture in one specific area – maternity care – an important area of health care that can be used as a marker to measure the quality of the system as a whole (de Vries et al, 2001). There has been a longstanding debate over how to optimally deliver maternity care, with an international movement to 'normalise' birth (Downe, 2008), that moves from the medical model (Tew, 1998) towards more woman-centred care (Leap, 2009). It has been argued that a midwifery model of care, with its low intervention rates for low-risk or moderate-risk women, can produce as good, if not better, outcomes than those of a biomedical model (Hatem et al, 2008; Cragin and Kennedy, 2006). Hence, there is a growing evidence base that, for the majority of women, a midwifery model is the optimal way of delivering maternity care. The organisational setting and culture arguably directly affect maternal and newborn health (Hrešánová, 2008) and rates of medical intervention (Brocklehurst et al, 2012) and also play an important part in facilitating good maternity practice.

The review

The purpose of this paper is to present the results of a scoping review of the research literature addressing the influence of organisational culture on the quality of maternity care.

Aims

Evidence on how particular organisational cultures can act as facilitators or barriers to good practice in maternity care was sought to determine how care could be improved. It became clear that there was relatively little research in this area and a subsidiary aim became to establish what areas needed further research and to consider how that research might be approached. The review was designed in order to answer the following questions:

- What professional groups, topics and themes have been studied and what do they tell us about the organisational aspects of maternity care culture?
- What tools have been used to measure organisational culture and/or its effects?
- How does organisational culture act as a facilitator or barrier to good practice and how can practice be improved?
- How has the concept of organisational culture been used in research into maternity care?
- How have the studies defined organisational culture (if such a definition is articulated)?
- How have they been operationalised (using Martin's three perspective approach)?

Design

Organisational culture has been studied from a number of perspectives and a scoping review methodology was chosen as it allowed this multiplicity to be reflected. The studies in this area tend to be characterised by a diversity of methods and approaches, a wide range of research questions, different settings and study populations, and are generally not designed to test interventions or treatments. Systematic review and meta-analysis require a clearly defined research question and study design to be specified in advance and this presupposes a certain amount of prior knowledge. Scoping reviews can also be used to determine the value of undertaking a systematic review (Anderson et al, 2008). In this area, there was no such prior knowledge to build on and there was a need for a more exploratory review that could begin to chart the territory. Hence, a scoping review method was chosen as the appropriate methodology to meet the aims of this review.

There are many different definitions of scoping reviews (Davis et al, 2009) and the definition adopted here builds on the work of Arskey and O'Malley (2005), further developed by Levec et al (2010) and Daudt et al (2013). 'Scoping studies aim to map the literature on a particular topic or research area and provide an opportunity to identify key concepts; gaps in the research; and types and sources of evidence to inform practice, policymaking, and research' (Daudt et al, 2013: 8). Arskey and O'Malley (2005) set out five main stages of a scoping review: identify the research question; identify relevant studies; study selection; chart data; collating, summarising and reporting results. These stages were employed iteratively so that each stage was engaged with in a reflexive way to ensure good coverage of the literature and concepts (Arskey and O'Malley, 2005).

Search methods

After an initial search of the literature, the review questions and search terms were developed. The searching (and review) was performed by a large, multidisciplinary team from a number of countries. Based on the international composition of the research team, the review was conducted in English, French, German and Finnish.

The following databases were searched: PubMed (articles retrieved in French), Med Medic (a Finnish database), MEDPILOT (a German database), Medline, CINAHL, PsycINFO, Cochrane, Social Sciences Abstracts, Web of Knowledge and Scopus. There were no date restrictions set for the search and studies published up until the end of December 2011 were included. Inclusive search terms, listed on Table 1, were used to generate hits to get the full breadth of literature necessary for a scoping review (Arskey and O'Malley, 2005). The team searched their allocated databases with the same terms and these were translated into German and Finnish. The first search generated 3521 hits. 'Grey literature', such as conference proceedings or dissertation abstracts, was excluded due to quality concerns. The expertise of an information retrieval expert from the library at the University of Ulster was used to ensure a robust literature search.

Table 1. Search terms

1. Midwifery/
2. Exp pregnancy/ or exp parturition/
3. Perinatal care/ or postnatal care/ or preconception care/ or prenatal care
4. Exp Maternal health services/
5. Nurse midwives/ or nurse practitioners/
6. Obstetrics/
7. Exp delivery, obstetric/
8. Obstetrical nursing/
9. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8
10. (organization\$ adj2 (culture\$ or climate or context\$ or trait\$ or environment\$)).tw
11. Organizational culture/
12. (work \$ or practice) adj2 (culture\$ or environment or climate)).tw
13. 10 or 11 or 12
14. 9 and 13

Search outcome

The review focused on empirical research carried out in the area of maternity care and organisational culture. Studies that explicitly addressed organisation culture and those that used organisational culture in their analysis were included. The search also included the different groups of healthcare professionals that could contribute to maternity care: doctors (obstetricians, GPs), midwives, nurses, health visitors, and family counsellors. This was important because the professional groups involved in maternity care differ between different national and regional healthcare systems. There were no exclusions on the basis of research methodology or design.

Studies that did not address or give any indication of organisation culture in their analysis were excluded. With the contested nature of the definition of organisational cultural and a wide variety of elements that could be said to influence an organisation's culture, exclusion of studies on these grounds was not straightforward. To address this, exclusions were agreed by the research team and all papers were reviewed initially by two researchers and disagreements discussed by the team. Studies that focused on organisational structure rather than culture (for example: Walker et al, 2004) were excluded, as were those that examined perceptions of organisational change (for example: Lindberg et al, 2005).

Studies on midwifery culture (for example: Kirkham, 1999) were excluded as they did not consider the culture of the organisational setting, but focused solely on the culture of the midwifery profession. The search produced numerous studies on safety culture (for example: Allen et al, 2010) and these were excluded on the grounds that the construction of safety culture, although closely linked with the organisational culture, is a distinctive subset with its own measurement tools and criteria and this area would have merited a separate review.

The databases were searched and a preliminary review of the abstracts was undertaken. This was done by one primary

reviewer and then checked by a second reviewer. The intention was to remove papers that were not related to the topic (such as articles about cross-cultural maternity care, maternity policy and general place of birth literature). A second more indepth screening of the abstracts was then performed, again with two reviewers. This left 77 abstracts and, once duplicates were removed, 67 papers remained and the full text of these papers was retrieved. The full text of two articles could not be found, leaving 65 papers. This review of the research was done against the criteria outlined above and 49 papers were excluded (nine did not report empirical findings; 35 did not present any indications of organisational culture; five were not conducted in a maternity setting), leaving 16 papers.

The data were synthesised by conducting a thematic analysis of findings, akin to qualitative content analysis (Levec et al, 2010). This was done by a team approach, with all reviewers contributing to developing the themes and coding the studies. Levec et al's three stages of analysis were employed:

- A descriptive numerical summary and thematic analysis
- Presenting the outcome of the study (referring to the overall purpose or research question)
- Consider the meaning of the findings in a broader context (related to the overall study purpose).

The following analytic frame was used for each study, based on Debono et al (2013): year of publication; year study was conducted; country of study; study setting; study objective; participants; methods; main findings and conclusions in relation to organisational culture; definition of organisational culture; organisational culture that is supportive of good maternity care; organisational culture that prevents good maternity care; suggestions for change.

Quality appraisal

Scoping reviews have been criticised for not including any quality assessment of the reviewed studies, thus reducing their usefulness (Brien et al, 2010). Arskey and O'Malley (2005) recognise that their model has the limitation of not including any guidelines for quality appraisal. The research team recognised that some form of quality appraisal was important for the robustness of the scoping review, so the studies were assessed for quality as well as relevance. The majority of the studies included in this review used qualitative methodologies and, recognising the complexities of assessing quality in this context (Downe, 2008), the team adopted the following quality criteria:

- Database: studies should be peer reviewed in a journal with an abstract presented in an electronic database
- Selection of participants: study participants should be clearly defined and rationale given for inclusion
- Outcome measures: the outcome measurements should be described, preferably including reliability and validity coefficient for quantitative studies and the research questions for qualitative studies
- Study methodology: this should be described in sufficient detail including the recruitment of participants, sampling strategy and description of participants, method and outcome measurements, and theoretical underpinning, based on Purewal and van der Akker (2009).

Results

Key study features

A total of 16 full papers were reviewed. The studies took place in four countries: England (eight papers), Australia (three papers), the US (three papers) and Canada (two papers). All the research included in this review, except Khokher et al (2009), focused on midwives and/or maternity nurses. Midwives were the subject of the studies conducted in England and Australia; the US papers (Sleutel et al, 2007; Gifford et al, 2002) studied maternity nurses and Kennedy and Lyndon (2008) the relationship between midwives and nurses. In Canada, Collin et al (2000) examined the introduction of midwives into maternity care, and Khokher et al (2009) investigated a maternity ward and included midwives, doctors and nurse.

Areas and themes studied

A number of papers considered the organisational culture of environments where some form of change of practice was being undertaken, or had just occurred. Change in the organisational structure of care provision was the focus of four studies (McKeller et al, 2009; Deery and Hughes, 2004; Collin et al, 2000; Wilson, 2000). Hughes et al (2002) considered policies designed to encourage midwives to become more involved in strategic planning. Halliday (2002) and Lavender and Chapple (2004) examined midwives' views of the changing context of midwifery care.

Traditionally, the organisation of maternity care in a certain setting involves at least two different professional groups, as well as the women in their care. A common theme was midwives' relationships with other professionals working in maternity care: doctors (Hastie and Fahy, 2011; Khokher et al, 2009; Sleutel et al, 2007; Deery and Hughes, 2004; Collin et al, 2000) and nurses (Khokher et al, 2009; Kennedy and Lyndon, 2008; Collin et al 2000). Five studies included midwives' relationships with the women under their care. Dykes (2005) examined women's views of their encounters with midwives when giving breastfeeding support; Halliday (2002) examined women's views of whether customer-orientated care was employed and their relationship with their midwife; McKeller et al (2009) investigated mothers' and fathers' views of postnatal education and support; Sheridan (2010) examined women's views of mother-baby contact on the labour ward; and Walsh (2006, 2007) examined women's experiences of giving birth in a freestanding midwifery unit.

A further area was organisational barriers or facilitators to midwives being able to practise their midwifery skills, specifically in the following areas: promoting breastfeeding (Dykes, 2005); in the delivery suite (Hastie and Fahy, 2011; Sleutel et al, 2007); in postnatal education (McKeller et al, 2009); and in early mother and baby contact (Sheridan, 2010). Most of the studies addressed or touched on midwives and maternity nurses' job satisfaction and nine studies were about temporal pressures that organisational arrangements put midwives under and how this prevented them practising good midwifery care. Walsh (2006, 2007) provided a theoretical explanation for the differences in care provided

in a freestanding midwifery unit and a hospital setting. He argued that 'production line' orthodoxies promoted a form of maternity assembly line in hospitals where women are 'processed', rather than cared for (Walsh, 2006). In the midwifery unit, care was less process driven and more women centred. In general, the findings from this review took these processes and associated temporal pressures to be antithetical to good midwifery practice.

A key determining factor for individual practitioner behaviour was the organisational culture of the unit or hospital. Hastie and Fahy summed this up when they stated: 'The local culture and organisational context at the time of the interaction are more important than the specific individuals in predicting how midwives and doctors will interact in a particular maternity setting' (2011: 77). Deery and Hughes (2004) and Dykes (2005) are the exceptions to this view. Dykes states that 'despite the organisational culture, there are different styles of caring' (2005: 249). Deery and Hughes stated: 'There were many models of midwifery-led care operating, with the result that women's experiences were dependent on the values and practices of the midwife on duty' (2004: 56). Thus, in the midwifery-led unit they studied, there was no single model of care in operation and it was defined more by the practical aspects (such as booking criteria and geography, for example) than any cohesive culture of practice.

Tools used to measure organisational culture

The majority of the studies were qualitative. There was only one quantitative study, Gifford et al (2002), and this was based on the Competing Values Framework (CVF) to assess the impact of organisational culture on labour and delivery suite nurses' quality of work life. As noted by Scott-Findlay and Eastbrooks (2006), a key element in the study of organisational culture is the unit of analysis studied – the individual or the ward or unit and they stated: 'The dilemma is that the variable of interest, culture, is often measured at individual level' (2006: 510). The majority of the studies used individual interviews to infer conclusions about the organisational culture of the care setting and eight studies used some form of observation to draw conclusions about the setting usually in conjunction with interviews and/or focus groups. The approaches used to aggregate data from an individual level to a higher unit level were not made explicit in any of the papers.

Facilitators or barriers to good practice and improvement

Deery and Hughes (2004) used an action research methodology to develop support for midwife-led care in a maternity unit which was moving alongside an obstetrician-led unit. After the first phase of their research, they generated an action plan with the participants: 'The development of a common philosophy alongside shared learning experiences, led to a culture of active physiological birth that all participating midwives could own' (2004: 57). McKeller et al (2009) also used action research to develop educational material for parents in the postnatal ward and then evaluate their success. They found that, due to the culture of the

postnatal ward, some midwives were negative towards the innovation. However, those involved in the research and implementing these new educational materials were more positive. Hughes et al (2002) and Kennedy and Lyndon (2008) both implemented changes in practice designed to address the organisational barriers they found to good practice during their studies. Hughes et al (2002) talked of a 'cultural shift' towards developing midwifery care effectively by creating more senior midwifery posts; improving the skill mix; starting a midwifery forum; and having meetings with the midwives and doctors to improve communication. Kennedy and Lyndon's study (2008) encouraged midwives and nurses to engage with each other more by forming a joint monthly journal club; midwives becoming part of the formal orientation for new nurses; increasing the numbers of midwives during busy periods to cover postpartum care; and debating key issues, such as pain assessment.

There was the only one explicit recommendation for a type of organisational culture to facilitate good practice. Gifford et al (2002) examined what kind of organisational culture best promoted a good quality of work life for nurses in labour and delivery suites using a CVF framework. They found that a 'human relations model' (this is a form of organisational culture that focuses on group cohesion, aims to build trust and is characterised by openness and honesty) was positively correlated with increased job satisfaction, involvement and empowerment and a lower staff turnover. Other findings included recommendations for ways that the organisation of practice could be changed to remove the barriers and facilitate a midwifery model of care that was driven by a philosophy of normal birth. Ways of facilitating this were: improving inter-professional communication and understanding; reinforcing the skill base of midwives (for example, active birth workshops); changing the organisation of routines to give more time to be 'with woman'; and involving midwives in strategic planning. Elements of an organisation's culture that were seen as a barrier to this were: lack of time and a culture of busyness; assembly line care; a dominant medical model of birth; inter-professional conflicts; and organisational priorities taking precedence over supporting women.

Operationalisation of the organisational culture

One important aspect of this review considered how researchers had defined and operationalised concepts of organisational culture. Sheridan (2010), Khokher et al (2009), Walsh (2007), Halliday (2002) and Wilson (2000) provided an explicit definition of organisational culture. Some studies explicitly took a 'shared assumption' approach, which could be seen as adopting an integrationalist perspective (Sheridan, 2010; Halliday, 2002; Wilson, 2000). Sheridan (2010) examined how there was a difference between the espoused culture (that early skin-to-skin contact was encouraged for mother and baby) and the culture in practice (that early contact was often interrupted). Wilson (2000) discussed the different sub-unit cultures and the importance of becoming 'bi-cultural' to manage change before the 'painful transition to a new culture' can be completed. Other studies implicitly

took an integrationalist approach. For example, Hughes et al (2002) conceived the general culture in the NHS as being a barrier to the development of effective midwifery care – hence this general culture was conceived in integrationalist terms with midwifery sitting outside that. McKeller et al (2009) and Dykes (2005) conceived the culture of the postnatal ward in integrationalist terms – having one, largely negative, culture. Khokher et al (2009), Kennedy and Lyndon (2008), Gifford (2002) and Halliday (2002) operationalised organisational culture in differentiativist terms. Gifford et al (2002) took a definition of organisational culture based on a CVF approach, which sees organisations as having a number of sub-cultures and hence can be seen as a form of the differentiation perspective. Walsh (2006, 2007) took a postmodern perspective on culture as one of contested dimensions and inherently fluid, an example of the fragmentation perspective.

Organisational culture was seen as being closely related to the professional groups that work in maternity care – creating distinctive sub-cultures along professional lines (Hastie and Fahy, 2011; Khokher et al, 2009; Kennedy and Lyndon, 2008; Sleutel et al, 2007; Lavender and Chapple, 2004; Collin et al, 2000). Khokher et al (2009) explicitly addressed this and also sought to delineate how the two exist concurrently.

Discussion

General characteristics of the studies

Despite this review considering organisational culture and maternity care in its widest definition, all the research included in this review, with exception of Khokher et al (2009), was about midwives and/or maternity nurses. None of the studies included leaders or those in management roles, but focused on the perspectives of those working at the 'coal face'. The research was generally conducted from an 'insider' perspective – the 'emic'. The researchers were often midwives or nurses who had been involved as practitioners in the clinical setting they were studying. Thus, none of the research teams constructed a classic integrationalist analysis of organisational culture where the perspective of the leadership and/or management is seen to encompass the whole organisation.

The dominance of qualitative research methods in the studies included in this review contrast with the findings of Scott-Findlay and Estabrooks' (2006) review of research on organisational culture in nursing more generally. They found that 76% of their studies sought to 'measure' culture and used quantitative methods. Thus, research in this review can be seen to have a different profile from research on organisational culture in nursing and in organisational studies more generally.

Organisational culture and improving practice

The majority of studies were designed to explore the role of the midwife and the perceptions they had of their practice and, from this, consider how midwifery and maternity practice could be improved. The majority of the authors took the view that facilitating a midwifery model of maternity practice was a desirable end, as this was the

most appropriate form of care for low-risk women. The overarching aim of the research projects was to find ways of enabling a 'midwifery culture of practice' to become predominant in the maternity setting, suggesting ways of influencing and changing the organisational culture of that setting. There was a common theme running through the research findings that there were significant organisational barriers to practising 'proper' midwifery care. For instance, the problem of 'busyness' in nine of the studies was seen as at odds with a midwifery model of care.

The implicit goal of the researchers was to use the findings to create an integrated culture for the unit; one which embraced a midwifery model of care. For example, Deery and Hughes (2004) found a fragmented culture in the unit they studied and they sought to change this to develop 'a culture of active birth' for the whole unit. Thus, fragmentation and differentiation forms of organisational culture were seen as problematic, as it was usually felt midwives were part of a less powerful sub-culture and that prevented them from being able to practise according to their philosophy of care. Whether the goal of an organisational culture that conforms to an integrationalist perspective is possible could be contested (Martin, 2002). However, to enable a midwifery model of care there needs to be an organisational culture that does not subjugate midwifery (for example: a culture of highly medicalised births), and allows different cultures of practice to work alongside each other as equal partners.

Directions for future research

Methodologically, there was only one quantitative study and it could be argued that this focus on qualitative research may leave aspects of organisational culture under researched. Therefore, a greater use of mixed methods in the study of organisational culture in maternity settings could also provide fruitful area for development. To add to the richness of organisation culture research, Martin's three perspective approach could be utilised to focus on different levels of cultural manifestations. This has been used in a comparative study of two hospitals which 'tested Martin's

typology empirically and found it to be a useful heuristic device for examining the cultural attributes of organisations' (Braithwaite et al, 2005: 1160). Few conclusions can be drawn about measurement tools for organisational culture, as only one study used such tools (Gifford et al, 2002).

Strengths and weaknesses

This review had a number of strengths. Due to the international composition of the research team, databases in languages other than English could be searched. The benefits of using a multidisciplinary team are well noted in the literature on scoping reviews (Daudt et al, 2013; Levec et al, 2010).

Furthermore, this review drew on the wider recourses of the grant in which this project was a part. Although this review was not a systematic review, due to the nature of the material, the review was approached systematically with clearly defined steps and criteria for search terms and inclusion/exclusion criteria.

There are also, arguably, a number of weaknesses of this review. The subject matter of organisational culture presented challenges when deciding which papers to include or exclude, as many papers did not explicitly define organisational culture and many discussions in the literature could be said to have an impact on an organization's culture. Furthermore, given there is no widely accepted definition of organisational culture papers could not be excluded solely on definitional grounds. This was partly ameliorated by having two reviewers examining each paper and any difficult cases were discussed by the team.

Implications for research and practice

This scoping review demonstrates that organisational culture in maternity care is complex and difficult to define and conceptualise. It shows midwives and maternity nurses perceived organisational factors to be important determinants affecting practice. It highlights time pressures, procedural imperatives and professional conflicts to be the main organisational barriers to the practice of good maternity care.

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The use of negative pressure wound therapy dressing in obese women undergoing caesarean section: a pilot study

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Abstract

Background. Obese women undergoing caesarean section (CS) are at increased risk of surgical site infection (SSI). Negative pressure wound therapy (NPWT) is growing in use as a prophylactic approach to prevent wound complications such as SSI, yet there is little evidence regarding its benefits. The aim of this pilot study was to evaluate the feasibility of undertaking a randomised controlled trial using NPWT in obese women undergoing elective CS.

Method. Obese women undergoing elective CS were recruited from the antenatal clinic in a metropolitan hospital in Queensland, Australia, between 2012 and 2013. Using parallel 1:1 randomisation, 18 of these women received the intervention following closure of their wound in operating room (NPWT, PICO™ dressing) and 17 women received standard care (Comfeel Plus® dressing). Pre-defined criteria used to assess feasibility included: recruitment (>75% participation), loss to follow-up (<10%), intervention fidelity (≥95%), and interrater reliability (kappa ≥0.8). Ethics approval was granted by the hospital and university human research ethics committees.

Results. Of the 55 women approached, 48 (87%) consented to participate, 35 (63.6%) were randomised and 33 (94%) women completed post-discharge follow-up. All women received the intended dressing with the exception of one (2.8%) who later crossed over during dressing change. A kappa score of 0.87 (p<.0001) for SSI (yes/no) and an intraclass correlation coefficient score of 0.95 (p<.0001) for type of SSI were achieved.

Conclusion. As shown in this study, careful planning and study site selection is critical to the success of the overall study. The results indicate that women with newborns are willing to participate in trials involving interventions and short-term follow-up.

Key words: Obesity, surgical site infection, caesarean section, feasibility, pilot study, evidence-based midwifery

Introduction

The proportion of people who are overweight or obese is increasing. Worldwide, 1.6 billion adults are overweight with a further 400 million more classified as obese (WHO, 2006). In Australia, the population's weight, indicated by body mass index (BMI), has also been steadily increasing (Australian Bureau of Statistics, 2007). BMI, a calculation of weight (kg) divided by height (m²) is the internationally recommended measurement for obesity and classifies adult body weight as: underweight <18.5; normal range 18.5 to 24.9; overweight ≥25; and obese ≥30 (WHO, 2006). According to the Australian Bureau of Statistics, 68% of males and 55% of females over the age of 18 years are overweight or obese – an increase of 4% and 6%, respectively, since 2001.

Although in general the rates of overweight and obesity are higher in older age groups, there has been a greater increase in the childbearing women (Women's Health Australia, 2009). The association between rising levels of obesity in pregnant women, adverse maternal and neonatal outcomes and increased interventions such, as caesarean section (CS), has also been reported in several studies worldwide (Callaway et al, 2006; Weiss et al, 2004; Rode et al, 2005).

Recent meta-analyses have shown an overall increased risk of CS and repeat elective CS in obese women (Poobalan et al, 2009; MacDorman et al, 2008; Chu et al, 2007).

While elective CS is considered a 'clean' and relatively safe surgical technique in resource-rich countries, such as Australia, surgical delivery is still associated with increase morbidity (Liu et al, 2007). For example, obese women undergoing CS are at greater risk of developing postoperative infections than non-obese women (Tran et al, 2000).

Surgical site infections (SSI) are defined as occurring after surgery in the part of the body where the surgery took place (Horan et al, 2008). SSIs are classified as: 1a) superficial incisional primary; 1b) superficial incisional secondary; 2a) deep incisional primary; 2b) deep incisional secondary and; 3) organ/space infection. All three classifications include infections diagnosed within 30 days without implant and/or one year including implant following operation (Horan et al, 2008). Factors associated with SSI in women undergoing CS include: type of abdominal incision, subcutaneous thickness and closure, preoperative antibiotic use, use of subcutaneous drains, and patient temperature regulation (Tipton et al, 2011). A study by Olsen et al (2008) involving a large cohort of women (n=1605) identified subcutaneous

haematoma, use of staples for closure, increased surgery time and the operation performed by a university teaching facility as significant independent risk factors for SSI. Comorbidities, such as diabetes, and prolonged use of steroids also contributed significantly to poorer wound healing following this type of surgery (de Vivo et al, 2010).

Wound management is also thought to play a role in rates of SSI (National Collaborating Centre for Women's and Children's Health, 2008). It is assumed that sterile dressings applied to the wound in the operating room (OR) act as a barrier and protect the surgical incision from environmental factors, such as skin contamination, irritation from external clothing and/or equipment. In addition, dressings contain exudate and thus provide comfort for the patient. More recently, there has been an increase in the use of vacuum-assisted dressing which is referred to as negative pressure wound therapy (NPWT). This type of closure is thought to aid healing (Kanakaris et al, 2007; Molnar et al, 2005) by increasing local blood flow and granulation of tissue, as well as reducing bacterial contamination, wound area, oedema, exudate, and changes to the micro-environment of the wound (Banwell and Téot, 2003). The use of NPWT has been recommended for a diverse range of chronic lesions or difficult-to-heal wounds (Stannard et al, 2012; Bovill et al, 2008), and, more recently, for clean surgery in obese patients (Dragu et al, 2011) with prophylactic intent.

The evidence around wound dressing or management practices, however, remains somewhat problematic. A Cochrane review concluded that there was no evidence to suggest covering of surgical wounds healing by primary intention with wound dressings reduces the risk of SSI (Dumville et al, 2011). Conversely, the trials included in this review were small and of poor quality and were, therefore, at high or unclear risk of bias. Given the lack of scientific evidence supporting the plethora of dressings available, which include those that use NPWT, Webster et al (2012) suggest that high-quality trials are needed. A recent integrative review supports this recommendation, noting that there remains minimal high-quality evidence addressing wound management practices in obese women undergoing CS (Anderson et al, 2013). Before large scale trials can be undertaken that demonstrate the effectiveness of various dressings, pilot studies are required.

Aim and objectives

To evaluate the feasibility of undertaking a randomised controlled trial (RCT) using prophylactic NPWT in obese women undergoing an elective surgical delivery.

Feasibility was assessed against four pre-defined criteria: 1) Recruitment: at least 75% of eligible women would agree to participate; 2) Loss to follow-up of those women randomised (no more than 10%); 3) Fidelity: at least 95% of participants will receive the treatment they were allocated; 4) Interrater reliability: a kappa score of at least 0.8 between two clinicians experienced in recognising SSI.

Method

Pilot studies are synonymous with feasibility, and thus are intended as a pre-requisite to a larger trial to test methods and

procedures involving issues around recruitment, retention, missing data and fidelity (Conn et al, 2010; Thabane et al, 2010). As such, the purpose of a pilot study is not to test hypotheses (Thabane et al, 2010).

The pilot was conducted in accordance with the *Good clinical practice* guidelines (Mathieu, 2011) and the *Consort statement* (Schulz et al, 2010) at a single site using a parallel 1:1 randomised controlled design (Schultz et al, 2010). Study participants received either NPWT PICO™ (Smith and Nephew, Victoria Australia) (intervention) or Comfeel® Plus (Coloplast, Denmark) (usual care) following closure of their wound in the OR. Ethics approval was granted by the hospital and university human research ethics committees.

Sample and setting

The setting for this pilot study was a 450-bed metropolitan hospital in Queensland, Australia. The hospital's maternity unit included labour ward, postnatal ward and antenatal clinic. At the time of study inception, approximately 27% of women had an elective CS (Perinatal Data Collection Queensland Health, 2012). Women were recruited if they met the following inclusion criteria: 1) pre-pregnancy BMI $\geq 30\text{kg/m}^2$ at booking visit; 2) booked for elective CS; 3) able to provide written informed consent. Exclusion criteria were: 1) previous participation in this trial; 2) existing infection; 3) unable to speak or understand English with no interpreter.

Women were approached following triage by midwives and obstetricians in the antenatal clinic. Women received a participant information sheet and were provided with an opportunity to ask questions and seek further clarification. The majority of women consented to the study at this time. Women who requested further discussion with family members prior to consenting were only contacted prior to the pre-admission anaesthetic visit if verbal consent was provided to do so.

Following informed consent, study identification numbers were allocated to women who agreed to participate. This number was used to randomise the woman to either the intervention or control arm on the day of surgery.

Women who consented to participate were subsequently excluded prior to randomisation if they spontaneously went into labour (for example: ruptured membranes), required emergency CS or if they were being treated at time of surgery for a concurrent infection.

A block randomisation technique (blocks of four) was utilised to allocate the women to either the intervention (NPWT, PICO™) and or usual care (Comfeel®) groups in the OR via a central web-based service prior to the start of elective CS surgery by the research team member. To ensure allocation concealment, OR staff including medical and nursing staff were blinded to type of dressing until wound closure. On completion of wound closure, the PICO™ or Comfeel® dressing was applied as per manufacturer recommendations and under sterile conditions.

Intervention

The intervention used in this study was NPWT also known as vacuum-assisted closure. The NPWT device used in this

study was a single use PICO™ dressing consisting of a small pump, two lithium batteries, two gauze-based dressings and 10 fixation strips (Smith and Nephew, Victoria, Australia). The wound surface was covered with a gauze-based dressing and sealed with fixation strips applied to the dressing borders under sterile conditions in the OR by a member of the surgical team. Once the dressing was fixed in place, the battery-operated device was attached to the tubing and continuous negative pressure was delivered at 80mmHg. This single unit device has a seven-day battery life and a secondary dressing available for dressing change if required such as excessive oozing at wound site.

Education and training on the NPWT device and study protocol was provided to medical staff, OR nurses and midwives involved in the care of these women prior to the start of the study. Ongoing education continued throughout the study to address staff turnover. This ensured consistency in application and care of dressing in situ. The control group received usual care and the application of a Comfeel Plus® (Coloplast) dressing at the completion of surgery following wound closure by OR staff under sterile conditions.

Data collection

A specifically designed data collection tool was developed and modified in the initial phase of data collection. This tool comprised of five components: 1) screening; 2) recruitment and baseline; 3) OR surgery; 4) post-operative daily wound data; and 5) weekly telephone follow-up. At time of consent, baseline data were collected including, contact details, height, weight, BMI, co-morbidities, and recent infections.

Data on CS surgical technique, type of anaesthetic and score were collected in the OR during the CS by the research team member. Daily visits to the postnatal ward were necessary to collect post-operative wound data for all outcomes. Following discharge, the women from both groups were contacted weekly for four weeks via telephone to collect outcome data on evidence of SSI. These data were collected using hard copy and were entered into an electronic database. The dressings of both groups were removed by the community midwives ranging from days five to seven post discharge depending on the availability of human resources.

Due to the nature of the intervention used, blinding of patients and clinical staff involved in their care was not possible. The education and training of staff on application of dressings used promoted consistency throughout the study and reinforced standardised practice. Performance bias is always a possibility when staff or study participants cannot be blinded (Kearney and Simonelli, 2006), however, use of an ongoing education programme minimised the risk of this occurring. It was impossible to blind the research team members collecting the data, but the laboratory staff assessing any wound swabs and the two clinicians analysing the data to determine SSI were blinded to group allocation.

Data analysis

Raw data entered into the Predictive Analysis Software Package (Version 21, IBM Chicago, IL) were checked for accuracy. The types of statistics used were based on the level

and the distribution of the data. Descriptive statistics were used to describe sample characteristics using absolute (n) and relative (%) frequencies for the following variables; co-morbidities, gestational diabetes (GDM), type two diabetes, hypertension (HTN), anaemia and number of previous CS within two groups.

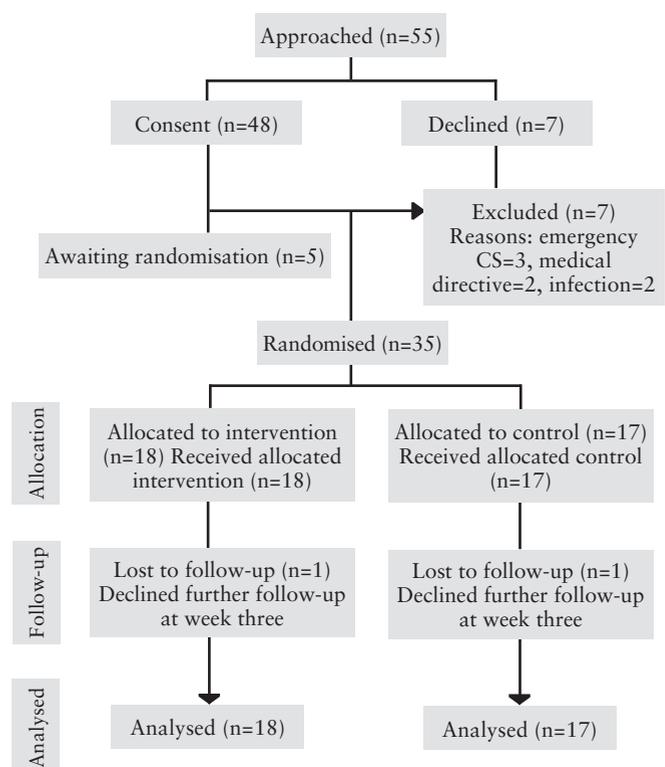
Inferential statistics, including chi-square and Mann-Whitney U tests, were chosen as the most suitable non-parametric measures to detect group differences and explore the relationships between the variables age, BMI, length of surgery in minutes, and hospital length of stay in days. A p-value of <0.05 was considered significant. An interrater reliability analysis using the kappa statistic was performed for SSI (yes/no) and intraclass correlation coefficient (ICC) score was calculated for type of SSI (superficial, deep, organ space) to determine consistency among raters (ordinal data). A kappa value of 0.81 to 1.00 indicates very good agreement (Altman, 1991), while an ICC coefficient of ≥0.70 is considered acceptable (Polit, 2010).

Results

The process from enrolment, intervention allocation, and follow-up and data analysis of this pilot trial with two groups of women is described in Figure 1.

A total of 55 potential participants received study information in the antenatal clinic between the end of June 2012 and January 2013 (a nine-month period). Seven (14.5%) women declined to participate. The most common reasons given for non-participation were: too busy, anxiety about the birth, and unsure of intervention. A total of 48 (87%) women provided written consent to participate, thus

Figure 1. Participant enrolment flow diagram



the recruitment target was exceeded. Seven (12%) women were excluded prior to randomisation due to a change in their medical status, which placed them into one of three exclusion criteria categories; 1) emergency, 2) concurrent infection and 3) medical directive. One woman withdrew from the study on the day of surgery.

A total of 35 (57%) women were randomised. Of these, 18 (51%) women received the intervention (PICO™) and 17 (48.5%) women received the control (Comfeel®), as per randomisation in the OR. A 100% fidelity was achieved in the OR. During an unplanned dressing change, one woman ‘crossed over’ into the control group following NPWT. Two (5.7%) women dropped out of the study at week three phone follow-up (one from each group) without a reason.

Of the 18 women who were allocated and received the PICO™ device, 12 (66.6%) NPWT dressings were applied by the registrar, four (22.2%) by the surgeon, one (5%) by the scrub nurse and one (5%) jointly by the scrub nurse and resident doctor. In the control group (Comfeel®), 10 (62.5%) were applied by the registrar, three (17.6%) by the surgeon and four (23.5%) by the scrub nurse-resident. The registrar was the most likely member of the team in both intervention and control group to apply the dressing in the OR.

The age range of the women was 18 to 40 years and the BMI ranged from 30 to 56kg/m² using pre-pregnancy measurements. Table 1 displays further demographic and

Table 1. Sample demographic and clinical data

Demographic characteristic	Intervention n=18		Control n=17		p-value
	Median	IQR	Median	IQR	Mann-Whitney U
Age	30.0	10.0	34.0	8.0	0.145
BMI	34.3	7.6	34.0	7.5	0.765
Length of surgery (mins)	45.5	19.0	53.0	16.0	0.026
Hospital length of stay (days)	3.00	1.00	3.00	1.0	0.957
	Frequency	Percentage	Frequency	Percentage	Chi-square
No of co-morbidities					
Gestational diabetes	3	16.7	3	17.6	0.939
Type 2 diabetes	0	0	2	11.8	0.134
HTN	1	5.6	2	11.8	0.512
Anaemia	3	16.7	1	5.9	0.316
No of previous CS					0.499
0	3	16.7	2	11.8	
1	9	50.0	11	64.7	
2	4	22.2	4	23.5	
3	2	11.1	0	0	

clinical data on the sample. Non-parametric tests, Mann-Whitney U test and chi-square were chosen to compare the two groups to assess differences in these characteristics. The only significant difference found between the two groups was length of surgery (p=0.026).

The kappa score was calculated as 0.87 (p<0.001) for the chart audits for the assessment of SSI (yes/no). ICC was calculated for the type of SSI, and was 0.95 (p<0.001). Both results suggest a high level of agreement between the two raters in determining the presence and the type of SSI.

Discussion

This pilot study addressed four main feasibility criteria prior to undertaking a larger randomised controlled study: 1) recruitment; 2) loss to follow-up; 3) fidelity; 4) interrater reliability. Important lessons can be learned from undertaking pilot studies, which may lead to an improvement in the design and execution of a larger trial (Thabane et al, 2010). This pilot study allowed the researchers to refine some of our processes, including making modifications to the data collection tool. Only minor changes to the data collection tool were necessary during the conduct of the study. These changes mainly involved refinement of the surgical technique questions, but the design of the chart audit tool was also adjusted to reduce confusion surrounding SSI indicators. Summary of the enablers and barriers to recruitment, loss to follow-up and fidelity are presented in Table 2.

Recruitment

The recruitment process proved to be time-consuming and subsequently expensive at the chosen site. Over the nine months of the study, the elective CS rate decreased by one third, which impacted heavily on the number of eligible women available. The environmental aspects, such as the confined physical workspace, and the existing processes created barriers to accessing potential women. The medical clinics were ‘themed’ to promote a more streamlined service but, despite this, women would be transferred in and out of clinics. This prevented a more selective targeting of potential participants. As others have noted, these issues only became evident once recruitment strategies were actually implemented (Jairath et al, 2000). Uncovering organisational change issues, such as the loss of the triage midwife role, using feasibility criteria which may impact on the progress of the study can only strengthen the larger trial (van Teijlingen and Hundley, 2002).

Ongoing education seminars and product training was provided to midwives, medical staff and OR nurses at the start, and for the duration of, the study, as staff regularly rotated through the hospital. Thus, through this pilot, the researchers identified the need for ongoing training resources to be allocated for the duration of the trial.

Table 2. Discussion summary

	Enablers	Barriers
Recruitment	Continuity with one research assistant (RA); RA – a trained health professional; education seminars for all staff	Environment – confined physical workspace; existing processes – reliant on midwife and doctor referrals; loss of triage midwife; rotating medical trainees; lack of support from delivery suite; organisation – midwifery model of care; participants – anxiety re treatment; clinicians’ concerns
Loss to follow-up	Establishing positive relationships; home visiting; team education	Exclusion criteria; post discharge phone contact; GP follow-up of wound
Fidelity	Presence of RA in the OR; rapport with OR staff	Application of dressing – variety of medical trainees

The reduction in the elective CS rate from 27.0% to 19.5% during the study impacted on recruitment rates. The unexpected reduction in elective CS was an important finding in this study for the future larger trial and supports the rationale for undertaking pilot studies. The study revealed a specific maternity unit strategy that has the potential to impede or facilitate sample acquisition in a larger study (Levine et al, 2002).

Some of the barriers to participation were: perceived additional demands on the woman following birth, preference for a particular treatment, worry about the uncertainty of intervention, and clinicians’ concerns about treatment. Similar barriers were uncovered in a systematic review of RCTs/feasibility studies by Ross et al (1999).

Loss to follow-up

In this group, the researchers managed to achieve less than 10% loss to follow-up, which is considered acceptable (Hertzog, 2008). The 5.7% drop-out rate in the combined groups can be explained by the research assistant’s (RA) effort in establishing positive relationships with these women. Continuity assists with engagement and is vital to achieving such a high retention rate following randomisation. Similar findings have been demonstrated in studies of childbearing women by Gamble et al (2005).

Inclusion criteria also affected the number of women randomised, as women could only remain in the study if they were booked for an elective CS and, at the time of randomisation, were not medically treated for a concurrent infection. The unpredictable nature of the study population presented some retention issues. Weekly telephone calls for four weeks following discharge of women was necessary to obtain information regarding SSI. It was not always possible to obtain this information on day seven each week, due to difficulties in contacting the women.

The researchers’ reliance on the home visiting team to

collect wound data following dressing removal proved challenging. It was only clarified during the study, that those women who did not receive a second home visit by their midwife, were referred to their GP for removal of the dressing. Similar issues were identified during the piloting of a Scottish national births survey and their solution was to engage midwives early in the process and sustain support through ongoing collaboration (van Teijlingen and Hundley, 2002).

Fidelity

The presence of the RA in the OR undertaking the central web-based randomisation process reduced the risk of incorrect group allocation of dressing at skin closure. Close monitoring of the application of intervention in the OR maintained treatment integrity, an important step in the research process (Kearney and Simonelli, 2006). Although there was a high success rate in the receipt of allocated dressing, variability did occur among the personnel applying the dressing. These are some of the inherent challenges of undertaking a study in a training facility. This study reflects the real-world setting and clinical practice variation, as opposed to the rigidity and sterility of RCTs in an artificial environment. Arguably, it may be that having more than one person applying the dressing affected the final outcome. However it was not uncommon for two persons to apply the NPWT (PICO™) dressing due to the apparent difficulties associated with surgical procedures in the obese client.

Conclusion

This systematic approach to the analysis of feasibility revealed significant issues with recruitment in the study site. Recruitment was time-intensive and costly due to the difficulties in identifying eligible women in the antenatal clinic. The unanticipated reduction in the number of elective CS during the conduct of the study led to a slower recruitment rate. Despite this, the researchers managed to maintain a relatively low attrition rate during follow-up (<10%). It is unknown whether these difficulties would have been faced in other sites, but it indicates the need for a comprehensive assessment of each setting for a multi-site trial.

A different approach to education and training of clinical personnel needs to be considered, due to busy ward schedules and a high turnover of rotating medical staff. Consideration should be given to identifying resource persons in the wards and antenatal clinic to act as study champions and conduits of communication. These persons could assist unfamiliar staff with any issues surrounding study protocol during the post-operative period and the antenatal clinic during the women’s health assessment for eligibility into the study. The provision of educational DVDs and DVD players for midwives and medical personnel would result in improved access to training resources. Developing a strong rapport with specialist and trainee doctors is essential to gaining access to eligible women. Building strong collaborative relationships between researchers and clinicians is vital for the success of the study. In conclusion, undertaking pilot studies is a necessary prerequisite to a larger RCT, as demonstrated in this study.

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Early pregnancy loss: perceptions of healthcare professionals

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Abstract

Objective. The aim of this study was to explore the perceptions of healthcare professionals within one health and social care trust in caring for women and their families with early pregnancy loss.

Method. A qualitative approach was chosen as the most appropriate method to explore the perceptions of healthcare professionals caring for women and their families who have experienced early pregnancy loss. Swanson's theory of caring was used as a framework for the study.

Ethics. Ethical approval was sought and obtained from University of Ulster Research Governance Filter Committee, the NHS Research and Development Office and the Office for Research Ethics Committees Northern Ireland (ORECNI).

Data analysis. Data were analysed using Newell and Burnard's (2011) six-stage approach to thematic content analysis.

Participants. A purposive sample of 39 healthcare professionals from midwifery, nursing and medicine who had cared for women and their families in the previous six months was recruited.

Findings. Although healthcare professionals consider a miscarriage as the loss of a baby, they acknowledge there are 'different gradients of loss', which is influenced by various factors including 'visualisation' of a baby. Ectopic pregnancies were recognised as an area in which a woman's loss may not be acknowledged. Due to a lack of resources and cultural understanding, caring for women from ethnic minorities was deemed as challenging.

Conclusions. Healthcare professionals value the care they give to women and families experiencing early pregnancy loss, acknowledging the care they provide may be influenced not only by environmental and institutional factors, but also by their own perceptions. The provision of care by the most appropriate professional – in essence, the person with the relevant clinical skills and knowledge – in an early pregnancy unit may positively impact on the care women receive. Further research into the perceptions of healthcare professionals and the needs of women from ethnic minorities is warranted.

Key words: Miscarriage, early pregnancy loss, ectopic pregnancies, perceptions, qualitative, healthcare professionals, evidence-based midwifery

Introduction

Miscarriage is not just a statistical occurrence, it is a human phenomenon. Research has revealed an increasing awareness and understanding of the psychological impact of miscarriage on women. Depression, anxiety, grief, self-blame and anger are common emotions reported by women (Sejourne et al, 2010; Adolfsson et al, 2004).

In the UK, miscarriage (the terms 'early pregnancy loss' and 'miscarriage' are often used interchangeably in the literature) is defined as the premature expulsion of an embryo or fetus from the uterus before 23 completed weeks of pregnancy (RCOG, 2006a). Occurring in 10% to 20% of pregnancies, miscarriage accounts for 50,000 inpatient admissions to hospital within the UK annually (RCOG, 2006b).

Although there is no universal response to early pregnancy loss, the emotional reaction may be transient for some and prolonged for others (Sun et al, 2011; Rowlands and Lee, 2010). Guidelines published by the RCOG (2006b) suggest that appropriate support may have significant beneficial effects and further studies highlight the value women place on professional and social support at this time (Mander, 2006; Moulder, 2001). There is increasing recognition of the distress experienced by women which is associated and exacerbated by unsatisfactory aspects of professional care (Geller et al, 2010).

Although research has been completed in regards to the attitudes of midwives and nurses towards perinatal bereavement care (Chan and Arthur, 2009; Chan et al,

2007, 2004) and the effects of an educational programme on healthcare professionals' perceptions of perinatal loss (DiMarco et al, 2002), there is minimal literature on healthcare professionals' perceptions of early pregnancy loss and how they feel about the care they provide or would wish to provide to women and their families.

Method

A qualitative approach was chosen as the most appropriate method to explore the perceptions of healthcare professionals caring for women and their families who have experienced early pregnancy loss. These were deemed to be the most appropriate participants due to their ability to provide data relevant to the phenomenon of interest and to inform the emerging theory (Kisely and Kendall, 2011). Qualitative research methods involve the detailed examination of individuals' experiences, allowing the respondent to tell the story in their own way (Newell and Burnard, 2011).

A letter was sent to the head of midwifery and the clinical director, informing them of the proposed research and to negotiate access to staff within working hours. A letter was sent to the midwifery managers and the obstetric and gynaecological consultants regarding the research project along with participant information sheets and reply slips. All focus groups except one were uni-professional (an MSW joined a midwives' focus group); as homogenous groups may facilitate more open discussion due to the absence of hierarchy imbalances (Redmond and Curtis, 2009).

Ethical considerations and access

Ethical approval was sought and obtained from the University of Ulster Research Governance Filter Committee, the NHS Research and Development Office and the Office for Research Ethics Committees Northern Ireland (ORECNI).

Participants

A purposive sample of healthcare professionals from one large health and social care (HSC) trust in Northern Ireland caring for patients and their families experiencing early pregnancy loss in the previous six months were recruited for the focus groups or one-to-one interviews. In recognition of the clinical demands on participants, they were given the option of taking part in a one-to-one interview or a focus group. All participants gave written consent prior to the study and there were no difficulties in recruiting participants, despite the sensitive nature of the study. A total of 39 healthcare professionals from several disciplines participated in seven focus groups and 10 one-to-one interviews. The interviews and focus groups were completed within the workplace, many participating in their own time.

Data collection

Focus groups and one-to-one semi-structured interviews were used to facilitate data collection. The questions were pilot-tested by three healthcare professionals who had clinical experience of caring for families experiencing early pregnancy loss, but were not involved in the study. The duration of the interviews and focus groups ranged from 17 minutes to 65 minutes. The duration was dependent on clinical experience and the individual's verbosity, but all participants were asked the same questions.

Data analysis

The focus group and one-to-one interviews were audio recorded and later transcribed verbatim. A sample of the transcripts was returned to individual participants for comment; having reviewed them independently, they confirmed their content.

They were analysed using Newell and Burnard's (2011) six-stage approach to thematic content analysis. This involved reading and re-reading the transcripts and the general notes from the interviews. Emerging themes were derived from the data and explored in subsequent interviews until saturation occurred. A sample of the transcripts was independently reviewed by the academic supervisor, who confirmed the emerging themes.

Theoretical framework

Swanson's Theory of Caring, which comprises of five processes: knowing, being with, doing for, enabling and maintaining belief was the theoretical framework for this study (Swanson, 1991) was adopted as the theoretical framework for this study. This theory was developed from empirical phenomenological studies and has previously been used to frame research into a range of clinical subject areas

including miscarriage (Adolfsson, 2011; Swanson et al, 2007). Andershed and Olsen (2009) describe it as a theory with a human-universe-health process, which may be used to support families through difficult transitions.

Discussion of findings

Knowing

Different gradients of loss

The first theme identified from the data was 'different gradients of loss' with participants reflecting on 'taking the lead from the woman' and 'visualisation'.

Taking the lead from the woman

Many of the healthcare professionals reflected on how they try to take their lead from the woman. The women's reactions range from relief to absolute devastation and participants' acknowledge their care is influenced by these varying reactions:

"It depends on the woman's reaction; a lot of it depends on how she is whenever you are speaking to her" (M1).

However, they also discussed how the woman's history may affect their perceptions of the woman's loss as they strive to provide care that meets her individual needs:

"You have also got to take into account how long have they been trying for this pregnancy. Is this their first miscarriage? [...] is it an IVF pregnancy?" (FFCM2).

Participants across all disciplines describe an early pregnancy loss, regardless of gestation, as the loss of a baby:

"Because as a midwife this was a baby, this was not just a clinical procedure, it was a baby" (DS1).

However, on further discussion they reveal how they may not give a miscarriage the same amount of recognition as a stillbirth or neonatal death:

"It's easy to be a bit, slightly more flippant with a very early pregnancy loss and you can be guilty of using 'oh it was just a miscarriage'. When it's stillborn, for me personally, it's a whole different level of grief" (RG2D).

Healthcare professionals disclosed how their own personal and professional experiences may affect their perceptions of this loss and how they sometimes fail to fully comprehend a woman's sense of loss. For example, they felt more sympathetic towards a woman who had no children or a history of infertility:

"Because I have been through infertility treatment, I would think if I see someone who has had fertility treatment I can totally empathise with them." (RG2D).

Healthcare professionals also acknowledge how they may become complacent because they see it so often:

"This sounds so sad, but the more of it I see, the less meaning it has for me" (1A).

Visualisation

The participants described 'different gradients of loss', which were influenced by various factors. However, reflecting on the delivery of a 'discernable baby', healthcare professionals frequently described how this visualisation of a 'baby' not only reinforced the magnitude of the loss, but also had a greater psychological impact on them:

"I find it much more emotionally challenging if there is an identifiable fetus involved in the loss" (1A).

Some of the participants reflected on their struggle to acknowledge the significance of the loss for a woman diagnosed with an ectopic pregnancy, as the focus was on a potentially life-threatening situation:

"I think it is really hard. You have to consciously say, 'I am sorry you have lost your baby', because there are times I know I have forgotten to do it because you are so caught up with the fact that it is a potentially life-threatening situation" (FGMA2).

Being with

The need for time

Reflecting on how they take their lead from the woman, participants highlighted the difficulties that they may also have in building a rapport or developing a relationship in the time they have available. Professionals recognise the need for psychological care, enabling the woman to discuss her emotions, but describe their struggle to be emotionally present for various reasons. Working within a busy environment, which is not always conducive to breaking bad news, was cited as the principle reason for not being emotionally present on an ongoing basis:

"There simply isn't the time to sit and talk to women and that's pretty awful, you literally tell them they have had a miscarriage, give them the details and off they go" (RG2D).

There were contrasting views on their ongoing availability to provide this care, particularly in the immediate aftermath of the diagnosis of a miscarriage. A lack of confidence in dealing with the variant responses of each individual, exacerbated by a lack of training in counselling and a fear of saying the wrong thing, were highlighted as additional factors in failing to encourage women to discuss feelings:

"But you don't know the right thing to say. We are not confident in it yet" (FGGA).

Professionals also emphasised the need for women to have time to absorb the news; acknowledging it may not be the right time for some women to discuss their feelings, as they are in shock and want to get out of the hospital environment:

"But they need time themselves, not time with us, they need time for themselves to get used to the idea. They need time to internalise that" (FGC2).

If the woman was admitted to the hospital for delivery or further management, staff valued this as an opportunity to engage with the woman, enabling her to discuss her emotions and answering the questions she may have:

"I think in delivery suite when you have more time to spend with people, when they are an in-patient and you get to know them personally, you probably do because you have more time with the person" (FG1E).

More experienced staff welcomed this opportunity and described themselves as comfortable in expressing their emotions with the woman, revealing how on occasions they have become emotional with the woman and her partner:

"You know I have become emotional in front of a lot of patients" (GSN1).

Ethnic minorities

Caring for women and their families whose first language is not English was discussed during the interviews and focus group discussions. Time delays in acquiring interpreters for emergency situations were highlighted:

"There are times when I know they have difficulty finding interpreters, especially when you are on night shift" (M2).

This participant revealed how she felt this affected care, limiting the information and support given to the woman and her family; restricting their ability to engage:

"But then we weren't able to get any information or tell her anything for at least, maybe an hour, until the interpreter got there" (M2).

Doing for

Physical aspects of care

The theme identified under the concept of 'doing for' was carrying out 'the physical aspects of care'. There was agreement within all disciplines that the physical wellbeing of the woman took precedence particularly in the initial stages of care. Ensuring the woman was haemodynamically stable was their overriding priority and the provision of emotional care may take place later:

"We are much more focused on how unwell she is and what management we are going to do rather than the emotional needs" (M1).

Expert knowledge

Senior medical staff acknowledged that less experienced staff may delay diagnosis, resulting in the woman returning for a repeat scan with unrealistic expectations:

"You are 99.9% sure of the diagnosis but, as an SHO, you might not have enough experience to really have that confidence" (FGMA2).

Staff highlighted the improvement in care with the establishment of the early pregnancy unit, describing a more woman-centred environment with the provision of continuity of care.

Enabling

Creating memories

'Creating memories' was a recurring theme in the interviews, highlighted primarily by midwifery and nursing staff.

Although emotionally challenging for all healthcare professionals, midwives and nursing staff discussed how this provided them with the opportunity to care for a family unit, as opposed to caring for a woman or surgical patient:

"I always feel whenever you are looking after them in room X and they have delivered vaginally, you are still looking after the family and the baby" (FGDSA).

More experienced staff recognised this as an opportunity to help parents become involved in caring for their baby by obtaining photographs, footprints and handprints, if appropriate. It was evident from the discussions that participants felt these 'rituals' were a very important part of giving the baby an identity, explaining how they felt this acknowledged the pregnancy loss as the loss of a baby:

"In a late pregnancy loss, this baby... is given an identity" (1A).

However, less experienced staff acknowledged this as a difficult aspect of caring for women experiencing miscarriage. They described their concerns of doing it correctly and ensuring the baby or the tissue was handled and stored with dignity and respect:

"It might sound easy to scoop it into a dish but I would probably be afraid. Do I do it gently? Do I do it quick? I don't know" (FGGA1).

Terminology

There were differing views in relation to the appropriate terminology to use. However, staff were in agreement that they use the more clinical terms of embryo or products of conception when completing the histopathology forms, legal documents that must be completed using the correct medical terminology:

"I find it easier for me to refer to it as tissue or pregnancy sac" (RG2A).

Acknowledging the woman and her family may find these clinical terms insensitive, staff revealed how they attempted to explain these terms to the woman, but recognised this took place within a challenging environment. Reflecting on the use of clinical terminology as a form of protection for themselves, staff acknowledged how using these terms may help to reduce emotional overload:

"It's very difficult to keep referring to that, they are going to remove your baby, they are going to do this with your baby" (FG2A).

Concerns were raised, particularly by midwives in the delivery suite, in relation to completing the documentation when the miscarriage was more advanced:

"I personally don't have a problem looking after the patient, it doesn't bother me. It is the paperwork afterwards" (FGDS1).

They recognised how the failure to complete the documentation correctly may affect the investigations that are to be completed and, as a result, the information families will receive.

Maintaining belief

Enabling parents to face the future was acknowledged as very difficult. The main themes identified were 'follow-up' and 'the impact on future pregnancies'.

Follow-up

There were varying views across all disciplines in relation to the provision of follow-up care. The availability, location, content, and the professional deemed most appropriate to provide this care were all discussed. Different professionals across the multidisciplinary team, from a bereavement counsellor to the woman's GP, were recommended:

"If it is a definite confirmed miscarriage then they don't need any more follow-up from a medical point of view and you can't expect them to process the news whilst they are there. It may kick-in, in an hour, a day, a week later and you've just got to think about what kind of support they would have if they went home in that situation" (FGM3).

However, another participant questioned if the provision

of follow-up care was appropriate for every woman saying:

"Miscarriage is unfortunately part of the reproductive cycle and if you were to see every single person that has one miscarriage, think of the amount of time that you are going to have to spend. It is unfortunate, it does happen but I don't think that all these women need counselling" (FGDSA).

Impact on future pregnancies

The impact on future pregnancies was discussed across all disciplines, but especially by the community midwives and healthcare professionals in the admissions department.

Participants commented that more appropriate management of the current miscarriage may positively affect future pregnancies:

"I just feel that maybe if the miscarriage had been dealt with appropriately the first time round maybe they would be enjoying this pregnancy a bit more" (1A).

Women frequently attend the admissions department requesting reassurance scans or contact their community midwives with concerns in subsequent pregnancies. While staff understood their anxieties, their opinions varied on the provision of reassurance scans:

"I can see the argument for not doing it... we are not a scanning service... but, as clinicians, you have to look after the patient's physical and emotional wellbeing... I think it is neglecting her emotional wellbeing to not scan her" (FGMA2).

Information booklets

A recurring theme within all the interviews and focus groups was the availability of information booklets. While valued as an important resource, staff reported these were only available within some departments:

"Rather than referring people to the internet or other leaflets, even if we had our own leaflet, that sort of went through the key points" (MSR1).

Several participants were unaware of their existence and all participants stated that they were only available in English.

Training

All disciplines discussed how a lack of experience and appropriate training impacted on their ability to care for women and their families experiencing early pregnancy loss:

"And it is not nice as a professional to feel that you don't have the right knowledge" (FGGA).

"We didn't receive any training, we were just presumed to know how to deal with it" (FGG1).

Impact on staff

Healthcare professionals value the role they play in caring for women and their families who have experienced early pregnancy loss. While accepting it as part of their professional responsibility, the emotions they described were many and varied. While some participants found it difficult, frustrating and emotionally draining, others described it as a privilege to care for women and their families at this difficult time. Conversely, one participant described it as unfulfilling, exacerbated by time constraints and an unsuitable

environment. Staff acknowledged the support they got from other colleagues, which was vital in providing ongoing care. The overall consensus of staff can be summed up as follows:

“Because you are giving some of yourself every time; you can’t look after somebody in that situation and not be sharing to a certain extent” (FGDSA).

Discussion

The recruitment of healthcare professionals from only one HSC trust is a limitation of this study; therefore, the findings may not be generalised. However, the results compliment previous research findings within the literature and highlight several areas, which may warrant further exploration.

Swanson’s Theory of Caring underpinned this study and was used to formulate the questions; and provided a framework for the thematic analysis (Swanson, 1991).

It is clear that healthcare professionals recognise the psychological impact miscarriage can have on women and their families (Geller et al, 2010; Schott et al, 2007) and acknowledge the difficulties in delivering holistic women-centred care due to environmental and institutional constraints (Mulvihill and Walsh, 2013; Fenwick et al, 2007).

Participants within this study recognise that, while they strive to take their lead from the woman, their perceptions of miscarriage are influenced by the woman’s reaction, her history and the gestation of the pregnancy (Murphy and Merrell, 2009). The healthcare professionals in this study discussed how their personal and professional experiences may also impact on the care they provide. This was particularly evident with women diagnosed with an ectopic pregnancy. The professionals admitted that they focused on the woman’s physical wellbeing and that psychological needs were not given the same priority.

Healthcare professionals’ perceptions of the emotional needs of families experiencing perinatal loss has been noted to be positively influenced by attending a bereavement programme. However, following the programme, participants still viewed miscarriage as not as significant a loss as stillbirth and neonatal death (DiMarco et al, 2002). This concurs with the views of the participants in this study and Swanson’s (1991) concept of ‘knowing’; striving to understand the meaning and significance of a miscarriage while endeavouring to care for patients as individuals.

Women and their families need time to assimilate ‘bad news’ and staff identified the need for more time to develop a rapport with the women enabling them to meet their emotional needs (Evans, 2012; Wong et al, 2003). This reflects the findings of Hunter (2001) who posits that the quality of the relationship between midwife and woman is significant in determining the quality of the birth experience.

Organisational issues may restrict the time that the professionals in this study perceived that they can make available to women, and they also acknowledged that a lack of skills and confidence in bereavement care may prevent them from engaging with families following a miscarriage. This is supported by the findings of Chan and Arthur (2009). Further studies undertaken by McCreight (2005) and Bolton (2000) highlight the emotional needs of nurses working in

gynaecological units. Nurses describe how they are unable to truly share their grief with patients in order to present the detached face of a professional carer while striving to provide authentic care (Bolton, 2000). Emotional work may not be fully visible, however, the importance of managed emotion in the construction of professional knowledge is a valuable aspect of nursing practice (McCreight, 2005), reflecting the views of more experienced staff within this study.

Language, cultural barriers and the absence of written information were recognised as factors within this study that may negatively impact on the care provided to women from ethnic minority backgrounds; an area in which there is minimal research (Abboud and Liamputtong, 2005). Spending time with the woman, facilitating the vocalisation of her feelings and emotions in relation to her miscarriage reflects the process of ‘being with’ (Swanson, 1991). St John et al (2006) note the silence that surrounds miscarriage, which is further exacerbated when professionals are unable to communicate effectively due to language barriers.

Participants in this study identified that their priority was often the physical aspects of care, reflecting the process of ‘doing for’. This concurs with a study by Zavotsky et al (2013) in which women recognised that the staff caring for them often saw safety rather than psychological care as paramount.

The use of insensitive language has been identified as an unsatisfactory aspect of care by women following miscarriage (Gold, 2007). Participants highlighted how they have to try to balance the legal requirements of their role, including the use of appropriate medical terms, with sensitivity towards the woman who may find some terms such as ‘abortion’ or ‘termination’ as insensitive.

Helping families to create memories may assist in their grieving process. Women describe how painful it is when the loss of their baby is trivialised. Following a miscarriage there are few physical markers to observe that a loss has occurred, but for many women it is the loss of their baby, hopes and dreams (Schott et al, 2007). By trivialising their loss, parents may negate their right to grieve leading to long-lasting emotional distress (Swanson et al, 2007). Creating memories reflects the process of ‘enabling’, assisting parents through unfamiliar events (Swanson, 1991). In completing the documentation, healthcare professionals are also ‘enabling’ families to receive all the relevant information, which may help them to make informed decisions for future care.

The desire for follow-up care is a recurring theme in previous studies and a major topic within the interviews and focus group discussion in this study. Varying views persist about the timing, location, structure and the professional deemed most appropriate to carry out the follow-up care (Sejourne et al, 2010; Adolfsson et al, 2006; Prettyman and Cordle, 1992). By ‘maintaining belief’, healthcare professionals empower women to face the future with meaning (Swanson, 1991). To give effective support, professionals must validate the uniqueness of the experience and empower the woman to seek ownership of that experience. It is evident from the above that Swanson’s Theory of Caring offers healthcare professionals a framework to help them provide woman-centred holistic care (Swanson, 1991). Professionals recognise miscarriage as

a complex and significant life event while striving to provide effective physical and psychological care within a challenging environment (Gerber-Epstein et al, 2008). The need for specific training is highlighted.

Implications

This small study has aimed to improve knowledge and understanding of healthcare professionals' perceptions of

early pregnancy loss. In particular, a lack of knowledge and understanding of the needs of women from ethnic minority backgrounds and those experiencing an ectopic pregnancy were identified.

This study has provided a critical foundation for further research and has the potential to motivate and guide research scholars in the pursuit of further studies to improve family-centred care following a miscarriage.

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Information for authors

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News and resources

Scholarships are open for applications

Three scholarships from the charity Wellbeing of Women and the RCM are open for midwife applications until 31 March. A research training fellowship is for midwifery graduates to embark on a PhD in the UK. The award is for a maximum of £60,000. An international fellowship is open to experienced or new researchers, either individual midwives or a team. It consists of a single payment up to a maximum of £20,000 to contribute to costs incurred, including salary, research and travel costs. An entry-level scholarship is aimed at enabling midwives to train in basic science, clinical or translational research. This is a single payment up to a maximum of £20,000, which should go towards salary and laboratory costs. For more information, visit: wellbeingofwomen.org.uk/research/apply-for-funding/

ICM congress 2014

Pre-registration for the 30th ICM congress, which will be held in Prague on 1 to 5 June, closes on 9 May. There are also still tickets available for a number of social events at the congress, including the opening ceremony, held on 1 June. However, other events, such as the Czech gala night in 3 June, have now sold out. A record number of delegates have already registered to attend the congress, the theme for which is 'Midwives: improving women's health globally'. For more information, visit: midwives2014.org

Cochrane to work with Wikipedia

An initiative to improve the reliability and accessibility of Wikipedia medical information has been launched. It has come from a new partnership between the independent healthcare research network Cochrane Collaboration and Wikipedia, which is an online space to debate health issues on Wikipedia. Articles relating to medicine are viewed more than 180 million times per month on Wikipedia, yet less than 1% of these have passed a formal peer-review process. Cochrane will share expertise and work with Wikipedia editors to transform the quality and content of health evidence available online.

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