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## **Friendliness, functionality and freedom: Design characteristics that support midwifery practice in the hospital setting.**

### ***Abstract***

*Objective:* To identify and describe the design characteristics of hospital birth rooms that support midwives and their practice.

*Design:* This study used a qualitative exploratory descriptive methodology underpinned by the theoretical approach of critical realism. Data was collected through 21 in-depth, face-to-face photo-elicitation interviews and a thematic analysis guided by study objectives and the aims of exploratory research was undertaken.

*Setting:* The study was set at a recently renovated tertiary hospital in a large Australian city.

*Participants:* Participants were 16 registered midwives working in a tertiary hospital; seven in delivery suite and nine in birth centre settings. Experience as a midwife ranged from three to 39 years and the sample included midwives in diverse roles such as educator, student support and unit manager.

*Findings:* Three design characteristics were identified that supported midwifery practice. They were friendliness, functionality and freedom. Friendly rooms reduced stress and increased midwives' feelings of safety. Functional rooms enabled choice and provided options to better meet the needs of labouring women. And freedom allowed for flexible, spontaneous and individually responsive midwifery practice.

*Conclusion:* Hospital birth rooms that possess the characteristics of friendliness, functionality and freedom offer enhanced support for midwives' social and functional needs and may therefore increase effective care provision.

*Implications for practice:* New and existing birth rooms can be designed or adapted to better support the wellbeing and effectiveness of midwives and may thereby enhance the quality of midwifery care delivered in the hospital. Quality midwifery care is associated with positive outcomes and experiences for labouring women. Further research is required to investigate the benefit that may be transmitted to women by implementing design intended to support and enhance midwifery practice.

### ***Introduction***

In Australia, maternity care is organised in a way that locates midwives as the primary professionals providing hands-on care during labour and birth in the public hospital system. The majority of Australian midwives practice in the hospital setting and previous research has shown that they are impacted upon by the design of hospital birth units (Foureur et al. 2010; Hammond, Foureur & Homer 2013; Hammond, Homer & Foureur 2014; Symon et al. 2008; Watson 2009). Midwives require a supportive environment to enable the provision of effective care (Carolan-Olah, Kruger & Garvey-Graham 2015) but little is known about the role of design and aesthetics in the development of a supportive working environment for midwives in the hospital.

Workplace design can influence staff across multiple domains including the physical, functional, psychological and social (Ruohomäki, Lahtinen & Reijula 2015; Vischer 2008). Supportive design has been shown to have positive effects on staff in offices, factories and healthcare settings including hospitals (Cesario 2009; Isobel, Foster & Edwards 2015; Parker, Eisen & Bell 2012; Roelofsen 2002; Ulrich et al. 2008). Design that is physically and functionally supportive has been shown to increase productivity and effectiveness whilst design that is psychosocially supportive reduces anxiety and promotes positive emotions (Chan, Beckman & Lawrence 2007; Clements-Croome 2015; Dilani 2009; Vischer 2008).

The influence of workplace design extends beyond task-related functionality and encompasses human health and wellbeing (Bluyssen 2010). Therefore, it has been suggested that a salutogenic approach - based on the work of Antonovsky (1987) -

may be applicable to the design of workplaces (Dilani 2009; Ruohomäki, Lahtinen & Reijula 2015). Antonovsky conceived salutogenesis as a framework to enable exploration of the factors that support and promote health and wellbeing (Lindstrom & Eriksson 2006). However at present, the majority of research investigating the influence of workplace design on staff is focused on negative outcomes such as sick leave, risk, accidents or problems (Bluyssen 2014).

Available research suggests that midwives are generally dissatisfied with the physical work environment and have specifically nominated lack of natural light, lack of privacy and lack of appropriate spaces for respite as negatively impacting upon them (Paul 2005). Midwives have also reported that the hospital is a challenging setting in which to provide care and that the physical environment is not socially appropriate for, or functionally supportive of, midwifery practice (Davis & Walker 2010b; Davis 2010; Hammond, Foureur & Homer 2013; O'Connell & Downe 2009; Watson 2009). However, some Australian researchers have suggested that the physical environment has little or no influence on midwives' experience of practice in the hospital setting (Seibold et al. 2010).

The aim of this study was to explore midwives' perceptions and beliefs about hospital birth rooms - the area of the birth unit where direct labour and birth care is most likely to take place - in order to identify design characteristics that support midwifery practice in the hospital setting. The study responded to an explicit call for research that takes a positive approach to workplace design in order to better support the productivity, health and wellbeing of staff (Ruohomäki, Lahtinen & Reijula 2015).

### ***Design and methods***

The study utilised a qualitative exploratory descriptive design as described by Reiter (2013) and Sandelowski (2010). As such, our findings are intended to increase knowledge of little known phenomena, raise questions and identify issues for further research. Ethical approval for this study was granted by the Human Research Ethics Committee of the University of Technology Sydney, and by the State Health Directorate governing the study site.

### *Theoretical approach*

The theoretical approach of critical realism was chosen to underpin this study. As critical realists believe every individual develops a unique construct of the world, this approach supports the exploration of multiple experiences and understandings of reality (Maxwell 2012). Critical realism acknowledges that non-physical mechanisms and structures such as thoughts, feelings, memories, social structures and ideologies are just as real as physical phenomena. These structures and mechanisms, as well as tangible objects, can influence events that take place in the world (Bhaskar 1975). Therefore, causal relationships are an accepted aspect of critical realist theory - some things can cause other things to happen and the process by which this occurs can be investigated.

### *Setting*

The study took place at a major metropolitan tertiary hospital in a large Australian city. The hospital was undergoing substantial renovation including the demolition and rebuilding of the maternity unit. This provided opportunity to interview midwives with recent experience of working in multiple differently designed birth rooms. These included old, transition (temporary) and new spaces.

### *Sample and recruitment*

The participants were registered midwives working at the study site. Sixteen participants were recruited using snowball sampling, chosen to counteract challenges associated with high workloads, unpredictable rosters and on-call work. Starting with one key informant, each participant nominated another colleague who verbally consented to be contacted by researchers. All nominated participants agreed to take part after receiving written and verbal information about the study. Written consent was obtained from each participant.

Seven of the midwives worked in delivery suite and nine worked in birth centre but all midwives were familiar with both settings. Experience as a midwife ranged from three to 39 years and the sample included midwives in diverse roles such as educator, student support and unit manager.

### *Data collection*

Data were collected using face-to-face photo-elicitation interviews. A total of 21 interviews were conducted with the sample of 16 midwives. Five of the midwives were interviewed twice in order to collect data regarding their experiences working in old, transition and new spaces. The first three interviews were conducted in midwives' workplaces and the remaining 18 in midwives' homes. All interviews were audio recorded, de-identified and transcribed verbatim for analysis purposes. Pseudonyms were allocated by the researchers and used throughout.

Photo-elicitation interviews (PEI) use photographic images to promote discussion and elicit information. Developed by Collier (1957), PEI are premised on the concept that photographs encourage more detailed recollection and reflective responses than verbal techniques alone. Although more common in social sciences and education, PEI has previously been used with midwives to explore views on labour and birth (Copeland, Dahlen & Homer 2014; Regan & Liaschenko 2007). In our interviews, midwives were given photos of their own workplaces as well as a series of photos showing differently designed hospital birth rooms. These were purposively selected to showcase a wide variety of aesthetic and design features.

### *Analysis*

A thematic analysis of qualitative data was undertaken using techniques described by Bazely (2013). Reading, reflection and note taking were followed by emergent coding to describe and organise data. Second level coding explored connectivity and relational patterns in the data and resulted in development of themes including 'a place to do the work of birth', 'developing a relationship with the room' and 'allowing labour to unfold'.

Development of higher-level themes was driven by our objective of identifying design characteristics that supported midwifery practice. Aligning project objectives with analysis is a legitimate approach to ensure that thematic analysis actually addresses the questions it is intended to answer (Bazely 2013). Using a specific objective increased the likelihood of the authors approaching analysis with similar

conceptual frameworks and thus remaining ‘on the same page’ when interpreting the significance of data.

Although some expectation exists that coding should be replicable to demonstrate reliability, we have adopted the perspective of Morse (1997) who argues that where one researcher was responsible for collecting data – as is the case in this study - they should maintain primary responsibility for analysis. The first author took primary responsibility for analysis and themes were checked for consistency, clarity and appropriateness by the two other authors. Consensus between all authors was reached regarding the higher-level themes, which were expressed as three supportive design characteristics.

## **Results**

Three design characteristics were identified that supported midwifery practice. They were friendliness, functionality and freedom. Each characteristic is described below with participant quotes from photo elicitation interviews indicated in italics with single inverted commas.

### *Friendliness*

A *friendly* room was described as welcoming, private, normal and non-threatening. Rooms that displayed friendly characteristics promoted positive expectations, thoughts and beliefs about the activities and experiences that would occur within. One explanation for this was given by Anousha, who said, *‘I think on a subconscious level I have much more faith that things will go well because everything around me is saying normal – the space is saying normal’*. The characteristic of friendliness was frequently conflated with a sense of normalcy. When describing a friendly space Ashley said it was *‘a warm, inviting space, a calm space – you know, a normal space where we’re going to have a normal experience’*.

The provision of a friendly, normal seeming space engendered midwives positive feelings, which were directed towards, or projected onto the space. June explained her relationship with one space: *‘I had lots of emotional connection to the place because it was cosy and close and there had been so many beautiful births there’*.

Friendliness was not always an inherent characteristic; it could also be produced by human activity. However, even if developed through activity, the attributes of friendliness were ultimately transferred onto the physical space so that the room became a representation of the activities that had occurred within it. Despite her resistance, *'I didn't want to move'*, June went through this process after relocating to a new unit. At first June experienced the new unit as *'cold and unfriendly'* but then *'I had (attended) a birth in one of these rooms, she was doing really well and we were supporting her and watching the mist rise and the sun streaming in gently and it felt like a holy place again – a beautiful place to be in'*. During this experience June *'made friends'* with the new space and her warm feelings towards it continued to grow thereafter.

However *'making friends'* with the room is harder if design does not predispose one to feel warmly toward the room or design inhibits activity that leads to positive events and feelings. This became clear when midwives examined and discussed a series of photographs of differently designed birth rooms. Andrea compared the photographs. About one she said, *'it looks like torture or something like that; it looks like a really scary place. I have no good feelings about that at all – it looks hard and cold and unpleasant'*. About another she commented, *'this doesn't look like it would be a hard place to work. Everything is a lot softer and there's colour and it's sort of smoother and there's no harshness about it.'* Rachel interpreted the same photo in a more pragmatic way, *'So this one feels really nice – it's got lots of options which is nice, lots of movement, different positions to be in'*. Despite their different modes of expression, Andrea and Rachel were both describing aspects of the friendliness characteristic. Friendliness encompassed the look, feel and emotional tone of a space as well as the imagined positive events that would occur within.

Midwives associated friendly rooms with lower levels of stress and increased feelings of safety. In a friendly room Ellen thought that she could *'relax, just relax'* as opposed to her own workplace, which had *'a goldfish feel – there's this bright light and it's like a theatre, it's a place of observation'*. Ellen found it hard to relax and had to consciously *'tell myself to slow down and centre'* because there was *'no quiet space anywhere'*. Kate noted that a friendly room helped her to relax and take her

time at a point during birth when she was susceptible to feelings of fear. Instead of working in a *'room that creates more adrenaline'* and fighting a panicked feeling that she had to *'get the baby out, get the baby out'* she thought that a friendlier room allowed her to *'take a deep breath and go "everything's alright, we're okay"'*. Ashley also thought that a friendly room helped her stay relaxed *'because it's a calmer environment and there's decreased levels of stress'*.

Friendly rooms used colour, lighting and texture to create warmth, they minimised a clinical aesthetic but were not necessarily defined by homelike features or the complete absence of medical equipment. Instead friendly rooms incorporated clinical features in a way that reduced the dominance of these objects through thoughtful placement or concealment and the provision of alternate foci. Friendly rooms were described as being *warm, inviting, welcoming*, and as having *heart and personality*. Also, and importantly, friendly rooms were perceived as authentic places that engendered a realistic representation of the work of birth. Looking at one photo Maeve said, *'this is modern but it doesn't look like a motel room. It looks sort of like you would walk into that room and think, "Wow, I'm going to have my baby in here – I've got some work to do". It looks like a birthing room'*.

A birth room that successfully captured the characteristic of friendliness was highly valued by midwives for its intrinsic ability to support positive experiences for women. Maggie summed this up saying, *'I love it; you set the room up and you turn the lights down and make it look really cosy and welcoming and comfortable and you see the woman labouring really well and there's that sort of calm excitement that you're going to see baby soon and it's really lovely. She's really comfortable and so then you're more comfortable as well'*. The characteristic of friendliness was very important to midwives, as was the characteristic of functionality, which is discussed in the next section of our findings.

### *Functionality*

The design characteristic of *functionality* was pivotal in supporting midwifery practice. Major considerations of functionality included room layout, storage, seating, comfort, supporter accommodation, equipment and the provision of work



surfaces. Midwives spent much more time describing rooms that were not functional than those that were. This indicated that most midwives were familiar with lack of functionality and interpreted it as a design deficit in birth rooms.

Working in rooms that were not functional was difficult and demoralising. Shanti described this in detail saying, *'So the room actually just isn't even big enough and then if you've got a drip you can't move a drip stand over a mat on the floor so it's just – all that is really complicated and I feel like sometimes you take a lot of time and effort to try and facilitate those things like getting mats and balls and things like that and you just end up fighting with them almost and then women get on the bed anyway and you think, 'Well, what was the point of all that?'* As Shanti implies, midwives interpreted one aspect of functionality as the capacity of the room to facilitate active labour and birth. However, birth rooms also needed to function effectively when care was being delivered to women experiencing medically complex pregnancy and birth.

Unfortunately, although offering aesthetic improvements, even newly designed rooms did not appear to support complex care effectively. Looking at a photo of her own workplace, Emma said, *'This is one of the better rooms in that the baby resus (drop-down neonatal resuscitator unit) doesn't open out onto the end of the bed – there's been a few design problems I think in putting together the rooms – the same things as before, the functionality, the space thing'*. This was difficult for Emma, *'I guess the frustration now is that okay, we've moved and this is it'*. Disappointment and frustration were feelings strongly associated with rooms that lacked functionality.

Individual items could substantially inhibit the functionality of a space. Carolyn explained, *'these chairs are a pain, I'm always shoving them up against the wall'* and Ellen described how, in a room where space was at a premium, a *'big cumbersome'* piece of equipment meant *'that the whole corner (of the room) is condemned – you can't use it for anything else'*. Effective use of space was an issue for Maggie, *'we had all the stuff in the rooms but it got too cluttered; there was a birth stool and gym ball and birth mats and wedge pillows and bean bags and it took up so much space there*

*was hardly any left for the woman*'. As space in rooms was often restricted, adequate storage was a functional necessity for equipment as well as for women's belongings. As Joanie pointed out, *'people come in with enough equipment to live for a year – bags and bags of stuff'* which exacerbated the need for secure storage.

Rooms that *were* functional enabled choice and provided options; they were not prescriptive in their design and layout. Certainly the most contentious and inflexible item that was perceived to compromise functionality was what Ellen called, *'that wretched bed'*. All five of the birth rooms had the bed positioned as the central feature on entering the room, which midwives particularly disliked. Joanie said, *'what I hate about that is that the door opens right onto the bed'*. Mary agreed saying, *'we have to have them but the first thing you see when you walk in is the bed – it's right in your face!'* Hanna described the bed as *'a central focus of practice'* and Maeve said of her new workspace, *'I don't particularly like the rooms because there is still a big focus on the bed'*.

A photo of a birth room with a de-centralised bed was very attractive to midwives. Looking at that image Carolyn said, *'the bed is shoved in the corner which is good, she's just got this massive room to use'*. Ellen said, *'I like the fact there is a bed but I have to look for it – it's way off there'* and Emma agreed, *'the bed's sort of tucked right over in the corner so it encourages an active labour'*. In a functional room, objects and equipment were adaptable and flexible and provided multiple resources for the midwife to offer labouring women. A functional room offered relief from what Joanie called *'the great crowdedness'*, which occurred in small or poorly designed rooms that were centred around the bed. In the next section we describe the characteristic of freedom, which also supported midwives' practice.

### *Freedom*

The third design characteristic that supported midwifery practice was *freedom*. The freedom that midwives described consisted of multiple, interrelated aspects that had both physical and psychological manifestations. These included: freedom of movement; freedom to focus on the woman; freedom from fear; freedom from surveillance and the freedom to stay physically and emotionally present in the room.

In order for these freedoms to be supported, rooms needed to be spacious, uncluttered, private, comfortable and free from distractions.

The benefits of freedom midwives were afforded by the room were transmitted to the women for whom they provided care. In a room that provided freedom for the midwife – the midwife in turn was more able to offer freedom to women. Hanna explained this saying, *'The windows open so you can get fresh air, the curtains close so you can create ambience, there is plenty of move-ability around the room. I've had babies in many corners and been able to get a really good position for the woman. This room lends itself to the mother finding a space where she wants to be and me being able to monitor her wellbeing and that of her baby'*.

Like Hanna, other midwives frequently described rooms that engendered freedom as *allowing* or *enabling* them to practice in a flexible and spontaneous way. Joanie could *'follow women around'* as the room *'enables me to monitor her (the woman's) wellbeing no matter where she is'*. Maggie described freedom by saying *'it has an open sort of feel, that the room can be whatever the woman wants it to be – anything can be moved, anything is possible'*. This idea of a space of possibilities was important to midwives who wanted to provide optimal care to women even when active labour was not an option. Rooms that did not display the characteristic of freedom made complex care difficult. Andrea described a complex birth at which *'there was a neonatologist, there was three support people, there was a doctor and the registrar, there was me and a student midwife all in that room with resus trolleys, a CTG machine, a woman on the bed and a delivery trolley. It was just chaos – there was no space to do anything'*. It is critical that room design considers the free movement not just of active labouring women and the midwives who support them but all other staff who use the room, particularly when complex care is required.

In rooms that allowed freedom, midwifery practice was easier. When midwives were not caught up in the stress and frustration of *'battling'* or *'fighting'* a room, they were free to relax and focus on the woman. Spaces that allowed freedom had ample unstructured space; engendered a sense of multiple possibilities; were uncluttered and gave midwives opportunity to stay close by without imposing upon women.

## ***Discussion***

The decision to undertake this research was motivated by a cultural climate where the complexity of the physical, functional and psychological influences of workplace design is increasingly acknowledged as significant (Clements-Croome 2015; Marlow & Egan 2013; Schwede, Davies & Purdey 2008; Vischer 2008). In this climate, we believe a salutogenic approach, as described by Ruohomäki et al (2015) is a meaningful and relevant perspective from which to reconsider the design of hospital birth rooms. By taking a salutogenic approach we ask, how could birth room design support and enhance the wellbeing of midwives whilst also providing a functional space in which to carry out the complex tasks associated with their work?

Ruohomäki et al (2015) propose that wellbeing in the workplace can be supported and promoted across a total of four dimensions: healthiness and safety; the psychological dimension; the social dimension; and the functional dimension. Healthiness and safety is focused on the quality of the indoor environment and includes factors such as acoustics, lighting, ventilation and air quality. Our study did not investigate this dimension. Our findings align more strongly with the remaining three dimensions of Ruohomäki et al's (2015) framework; the psychological, social and functional dimensions.

An environment that offers support across multiple dimensions is critical for the health, wellbeing and effectiveness of staff (Ashkanasy & Daus 2002; Chan, Beckman & Lawrence 2007; Ruohomäki, Lahtinen & Reijula 2015; Vischer 2008). When workplace design successfully achieves multi-dimensional support it can offer what Clements-Croome (2015, p. 164) called a 'wholesome experience for body and spirit' and can ultimately provide individuals the opportunity to engage with their work in a creative, fulfilling and pleasurable way (Clements-Croome 2015; Dilani 2009). Conversely, an unsupportive workplace environment creates stress and reduces motivation as staff expend energy in their efforts to deal with or resolve design related barriers and problems (Vischer 2008).

In this study, we identified three characteristics that supported midwifery practice: friendliness, functionality and freedom. From a salutogenic perspective we could say

that when the three characteristics were present midwives were more likely to experience an enhanced 'sense of coherence', which Antonovsky (1987) identified as a key contributor to wellbeing. Sense of coherence is dependent on the environment being perceived as comprehensible, manageable and meaningful (Dilani 2009). When sense of coherence is high, individuals feel they have the resources and resilience to cope with stressful situations, including those engendered by the environment itself (Lindstrom & Eriksson 2006). As midwives in hospitals throughout the developed world report significant work related stress and burnout (Leinweber et al. 2017; Pezaro et al. 2015; Sato & Adachi 2013; Wahlberg et al. 2016) we believe the consideration of supportive workplace design is increasingly important.

However, questions have been raised about the significance of workplace design for midwives. In an exploratory descriptive study, Seibold et al (2010) concluded that the physical environment had minimal impact on midwifery practice. Seibold et al suggested that midwives who moved to a warmer feeling, more spacious and private unit experienced no change in their role perception or practice. This directly conflicts with our findings. We attribute these differences partially to the dissimilar aims of the two studies. Seibold et al's study was primarily focused on understanding the effects of clinical risk management on midwifery practice during labour and birth whilst we were more explicitly interested in the effects of design upon individual midwives.

Undoubtedly, design is not the only influence on the experiences and activities of midwives working in hospital birth rooms. Factors including organisational culture and model of care have also been acknowledged as having significant influence on midwives and their work practices (Davis & Walker 2010a; Keating & Fleming 2009; Miller & Skinner 2012; Seibold et al. 2010). It is likely that interconnected factors including design, culture and model of care all contribute to the creation of the birth environment and shape the experiences of women and midwives in it (Hodnett et al 2012, Jenkinson et al 2013, O'Connell & Downe 2009). However, our findings highlight that the designed environment has a significant role to play in supporting midwives and their practice in the hospital setting.

### **Limitations**

This study had a small sample size and took place at a single study site. Therefore its generalisability may be limited. Although some diversity was purposively built in to the study sample, the use of snowball recruiting techniques may result in sample bias whereby participants share traits and characteristics, or over-emphasise the cohesiveness of the community or population within which they are situated (Atkinson & Flint 2001). We believe in this study those concerns were balanced by the capacity of snowball sampling to build trust with participants and produce in-depth results (Sadler et al. 2010).

### **Conclusion**

In this study, we identified design characteristics that can support midwives in the hospital setting. Developing and implementing supportive design at work is one way of enhancing the physical, mental and emotional wellbeing of staff (Dilani 2009; Ruohomäki, Lahtinen & Reijula 2015; Vischer 2008). Considering the wellbeing of midwives is important due to the direct influence that midwives have on the experiences and clinical outcomes of labouring women (Fleming 1998; Foureur et al. 2010; Hall 2011; Hallsdorsdottir & Karlsdottir 2011; MacLellan 2011). We propose that if midwives feel supported by the physical environment – and therefore have enhanced wellbeing - a benefit will be transmitted to women in their care. We suggest that the design characteristics of friendliness, functionality and freedom have a salutogenic effect on midwives and should therefore be considered when undertaking the design or refurbishment of any birth unit. Further research is needed to investigate the potential benefits that may be transmitted to childbearing women by using design to enhance the wellbeing of midwives.

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