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The hardware and software implications of hospital birth room design: A midwifery perspective

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ABSTRACT

Objective: to explore the impacts of physical and aesthetic design of hospital birth rooms on midwives.
Background: the design of a workplace, including architecture, equipment, furnishings and aesthetics, can influence the experience and performance of staff. Some research has explored the effects of workplace design in health care environments but very little research has examined the impact of design on midwives working in hospital birth rooms.
Methods: a video ethnographic study was undertaken and the labours of six women cared for by midwives were filmed. Filming took place in one birth centre and two labour wards within two Australian hospitals. Subsequently, eight midwives participated in video-reflexive interviews whilst viewing the filmed labour of the woman for whom they provided care. Thematic analysis of the midwife interviews was undertaken.
Findings: midwives were strongly affected by the design of the birth room. Four major themes were identified: finding a space amongst congestion and clutter; trying to work underwater; creating ambience in a clinical space and being equipped for flexible practice. Aesthetic features, room layout and the design of equipment and fixtures all impacted on the midwives and their practice in both birth centre and labour ward settings.
Conclusion and implications for practice: the current design of many hospital birth rooms challenges the provision of effective midwifery practice. Changes to the design and aesthetics of the hospital birth room may engender safer, more comfortable and more effective midwifery practice.

Introduction

The design of the workplace can affect many dimensions of staff experience and performance including stress, social interactions, effectiveness, productivity and job satisfaction (Westgaard and Aarås, 1985; Browning, 1997; Schwede et al., 2008; Simmons and Graves, 2009). Research focused on health care staff suggests that improved workplace design reduces stress, enhances safety, raises productivity, increases job satisfaction and improves quality of patient care (Ulrich et al., 2010). Considering this, it is not surprising that workplace design is described as imperative in settings where socially and cognitively complex work occurs (Chan et al., 2007).

In the health care setting, staff members including nurses, doctors, psychologists, social workers and occupational therapists are all affected by workplace design (Novotna et al., 2011; Mourshed and Zhao, 2012). For mental health care staff and general nurses design factors have high potential to impact practice, particularly affecting workplace errors, safety, efficiency, stress and fatigue (Cesario, 2009; Chaudhury et al., 2009; Simmons and Graves, 2009). Midwives have also reported that design factors such as crowding, temperature and air quality can affect their health and well-being (Symon et al., 2008b) and that they consider the layout and aesthetics of hospital birth rooms to be less than optimal (Sheehy et al., 2011).

Research into the maternity setting indicates that the physical (designed) environment plays a role in shaping practice (Lock and Gibb, 2003; Davis, 2010; Foureur et al., 2010; Blix, 2011; Bourgeault et al., 2012; Miller and Skinner, 2012) and may influence outcomes at birth (Freeman et al., 2006; Davis et al., 2011). This study is part of a wider project examining the design of birth units and was undertaken in order to understand more about the explicit effects of workplace design on midwives. The wider study, known as the Birth Unit Design (BUD) project, uses video ethnographic techniques to explore the impacts of design on the communication between childbearing women, their supporters and maternity staff. This paper explores the perspective of

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midwives in order to discover whether, and how, the design of hospital birth rooms impacts on their work. This study considers both the hardware (architectural, equipment design) and software (social, aesthetic) aspects of design (Chan et al., 2007).

Methods

The BUD project is a multidisciplinary study that uses video ethnography, video-reflexive interviews and field notes to assemble data for analysis. As part of the BUD project, six women, their birth companions (partners, family members, friends) and the maternity staff who cared for them consented and were filmed during labour. Ethical approval for the project was obtained from university and hospital human research ethics committees prior to filming. Four to six weeks after the labour had been filmed each woman, her companions and attending maternity staff participated in individual video-reflexive interviews, which were audio recorded and transcribed for analysis. This paper focuses on the interviews undertaken with midwives, during which they were shown edited video footage of the filmed labour they had attended.

Setting

The study was set at two public tertiary level teaching hospitals in Sydney, Australia (Hospital A and Hospital B). Video-reflexive interviews with midwives took place at the same two hospitals. Interviews were conducted in quiet, private locations chosen by midwives including unoccupied clinic rooms and education spaces.

Participants

Participants were seven registered midwives and one student midwife (to protect anonymity, they are collectively referred to as midwives). The midwives ($n=8$) worked in varying models of care: two in a caseloading group practice, one in a team model and five in standard care models. One worked in a hospital birth centre, and all others in hospital labour wards.

Video-reflexive interviews for data collection

The technique of video-reflexive interviewing has rarely been used in midwifery; it is more common in the fields of education and training (Colestock and Sherin, 2009). During the interview, the video footage served as a tool to stimulate reflection and discussion, which focused on how the midwife interacted with the physical (designed) environment.

Interviews were unstructured, guided predominately by events as they unfolded on the video. Open ended questions such as 'What's happening for you here?' 'How does that work for you?' and 'What would make that easier for you?' were used to generate discussion about design features and the activities of the midwife. Interviews were conducted by BUD team members, including two of the authors. A laptop computer was used to view the video footage, which could be paused to allow discussion. Interviews were audio recorded and transcribed verbatim.

Analysis

In this study, thematic analysis was used to analyse data collected through the methodological approach of video-ethnography. Using thematic analysis as a tool within an overarching methodology is an accepted approach to qualitative data analysis and can be effective for identifying data-driven patterns, codes and themes or investigating particular aspects of data guided by analytic interest (Braun and Clarke, 2006; Bazely, 2013). Both these approaches were relevant in this study. Codes and themes were derived directly from the data and were therefore data-driven. However, coding was guided by the need to meet the aim of our study and therefore focused on items of data that related directly to midwives' use of the physical environment.

Initial codes were taken verbatim from the data, for example 'the bed annoys me most days' and 'it would be nice if there was a little spot for me'. Initial codes (approximately 18) were reviewed and collated, collapsed or discarded to generate eight working codes. These codes were developed into four themes using a process of repeated reading and constant comparison between coded extracts and the whole data set. All three authors reviewed and refined themes, checking the relevance of coded data extracts included in each theme, as well as checking the coherence of each theme against the entire data set. The four themes identified through this process will be described in the findings, using illustrative quotes from the data.

Findings

Midwives were strongly affected by the design of birth rooms. The four themes identified were finding a space amongst congestion and clutter; trying to work underwater; creating ambience in a clinical space and being equipped for flexible practice.

Finding a space amongst congestion and clutter

Finding a space for themselves amongst the clutter and congestion of the birth room was challenging for midwives. Midwives felt that birth rooms were crowded, not only with people but with *things*. Midwives seemed less concerned by the size of rooms, as by the inflexible and impractical layout. The bed was identified as a major contributor to this inflexibility:

> Well there isn't anywhere to move it (*the bed*) out of the way because then you're blocking off some other thing you might need all of a sudden. Everything has got a spot and so if you move the bed over here you've blocked off the oxygen or you've blocked off the sink – it's not flexible. That is how it is and it is very difficult. Annie p13

Similar difficulties were described in ensuite (attached to the birth room) bathrooms, with one midwife clearly describing the challenge of facilitating birth in these spaces:

> It's really squashy – it's so much shuffling. There's no room and most of the time I'm squashed into the corner trying to do the delivery. So it's awkward, really awkward. But we manage. I manage it because I don't see another better option. Annie p14

The congestion and clutter experienced by midwives was exacerbated by poorly designed or inadequate storage for equipment and women's belongings. Midwives expressed concerns about the security of women's belongings and the potential implications in an emergency scenario:

> If something did happen and you needed ten people in there, it's the worst! You think, 'Oh my God, I hope nothing goes wrong in here' – because you can't even walk! There needs to be somewhere to store things. Zadie p8

Amongst this congestion, and with limited storage options, midwives found it difficult to find space for themselves. They reported difficulties positioning themselves comfortably in the room or finding a space to undertake tasks such as writing notes,