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Research Article

Research Article Women's experience of maternity high-dependency care following a complicated birth: A cross-sectional study

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ABSTRACT

Objective: There is limited evidence around childbearing women's experience following a complicated birth requiring maternity high-dependency care. Our objective was to explore women's experience and wellbeing following a complicated birth within this context.
Research methodology/design: A cross-sectional study captured women's experience through a postal survey four weeks post birth.
Setting: A convenience sample of 112 women who received care in the first 24 hours of their stay in a Western Australian maternity high dependency unit.
Main outcome measures: A validated tool designed to explore patients' intensive care experience was modified and six items were added based upon the literature and in consultation with clinicians.
Results: Women felt they were given choice (78%; n = 86); were not glad to be transferred to a ward (62%; n = 68) and were in pain during the first 24 hours of their admission (70%; n = 78). Women who did not feel scared were more likely than those who felt scared to have a clinician explain what had happened (95% vs 78%, $P = 0.007$); were more likely to feel in control (94% vs 75%, $P = 0.006$); and were less likely to feel helpless (27% vs 62%, $P = <0.001$).
Conclusion: The transfer experience to a postpartum ward requires further investigation as does the management of pain for these childbearing women regardless of their birth mode.

Implications for clinical practice

- The majority of women confirmed that they were in pain during the first 24 hours of admission to maternity high-dependency unit implying that further investigation and improvement around pain management may be warranted for this vulnerable cohort of women.
- Being informed and feeling in control may ameliorate feeling scared. Strategies need to be implemented to facilitate informed choice around care decisions where possible for these women.
- Clinicians need to be sensitive around the transfer experience from a high-dependency unit to a traditional postnatal ward, as the majority of women confirmed they were not glad to be transferred.

Introduction

Although evidence is available on patient experience within a general Intensive Care Unit (ICU), there is limited and predominately qualitative evidence around childbearing women's experience of a complicated pregnancy or birth that required specialised care within a maternity high-dependency care unit,

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an intermediate care unit where women are not ventilated and receive 1:1 or 1:2 care. Childbearing women who experience a complex or traumatic birth represent a vulnerable group. Indeed a meta-synthesis of 13 qualitative studies on psychosocial implications of a traumatic birth on maternal wellbeing concluded that resulting emotions can have long term, negative repercussions on maternal self-identify and relationships (Fenech and Thomson, 2014).

One key concept described internationally around complicated birth is the 'maternal near-miss syndrome'. Described in Brazil a decade ago, this innovative study explored the narratives of 30 women who almost died during pregnancy and childbirth (Souza et al., 2009). The findings were the first to reflect on perceptions of women's critical health state and captured themes such as 'physical discomfort', 'the transitory nature of life', 'fear', 'frustration', 'alienation', dealing with 'memory gaps' and the 'need for information'. Souza's findings reflected the perceptions of women who had almost died in childbirth and must be considered within this particular context. A recent British study explored 35 childbearing women's experience of a maternal near-miss that required critical care within an ICU or high dependency unit (Hinton et al., 2015). Themes revealed women's shock at requiring critical care, the devastation of separation from their baby highlighting the importance of breastfeeding, challenges with being transferred and the need for support and follow-up. A Malaysian qualitative study with 30 obstetric or gynaecological women who experienced maternal near-miss events shared how perceptions were influenced by competency and promptness with care, interpersonal communication, the availability of information, and the quality of human and physical resources (Norhayati et al., 2017). A major theme suggested that these women viewed their experiences as frightening, in addition to reporting negative emotions and a sense of imminent death.

Consideration of ICU research findings is necessary despite the focus on the experiences of both genders and patients who have often been ventilated. The first study explored the psychological distress and memories four to six weeks post discharge of 255 Norwegian ICU patients who were ventilated for a mean of 11 days (Myhren et al., 2009). One quarter reported severe symptoms of post-traumatic stress with the strongest predictors of stress being memories about pain, lack of control and inability to express needs. The second mixed methods study explored the experiences and needs of 77 British ICU patients following discharge from critical care (Pattison et al., 2015). Quality of life, anxiety and depression scores improved between two weeks and six months post discharge but levelled off after six months with no change up to 12 months. Qualitative findings from this same study offered greater understanding of the patient ICU experience through a core theme of 'adjustment of normality' that captured emotional and psychological needs together with a subtheme revealing the importance of information needs and relocation anxiety (Pattison et al., 2015).

Systematic processes to collect consumer feedback are recommended to improve health care delivery (Finkelstein et al., 2015). Additionally, these processes can improve the patient experience by building trust in the health service and enhancing collaboration between health professionals and patients (Chatterjee et al., 2015). Empowering women to engage in critical appraisal by acknowledging positive and negative aspects of care provides a multifaceted, realistic picture of maternity care to guide improvements in care practices. As there is limited and predominately qualitative evidence around childbearing women's experience following a complicated pregnancy, the opportunity to gather data using a cross-sectional design from a larger sample of women post birth who received care in a maternity high-dependency unit provides an important step in building knowledge around this topic. Therefore, our study objective was to explore women's experience and well-being following a complicated birth within a maternity high-dependency unit.

Methods

A cross-sectional study was conducted over an eight month period in 2016/2017 at the tertiary maternity hospital in Western Australia (WA) with a maternity high-dependency unit. In 2016, this tertiary hospital had 5200 births. On the limited occasions where postpartum women require intensive care and ventilation, they are transferred to a local tertiary general hospital with an ICU. Inclusion criteria for this study included women who received care in the first 24 hours of their stay in the high-dependency unit having birthed a live baby at $\geq$28 weeks gestation. To ensure we captured the majority of women post birth who were admitted to the maternity high-dependency unit we focused upon the first 24 hours as the average length of stay for these women is between 24 and 36 hours. Based upon admission data, we anticipated that up to 250 women would be eligible within an eight month time period. A survey calculator was used to determine the sample size to provide statistical power to detect associations between variables: a sample of 95 women was recommended for a 5% margin of error and a 95% confidence level (Raosoft Inc., 2004). Using a cross-sectional design with a larger sample of childbearing women allowed use of inferential statistics to determine associations between variables (Schneider, et al., 2013). Although this design is appropriate for describing a phenomenon at a fixed point in time it did not allow for inferring changes over time (Polit and Beck, 2014).

Participants and setting

Convenience sampling was undertaken with eligible women identified from the unit admission book. Using individual hospital numbers the hospital's database was checked to confirm birth of a live baby. An information sheet describing the study, postal survey and a reply paid envelope were sent to women four weeks post birth. If a completed survey was not received within two weeks the woman was telephoned to prompt her to return the questionnaire and to assess if she needed a replacement.

Ethics approval

Ethical approval was granted from the hospital human research ethics committee (Approval number 2017036QK).

Data collection

The survey instrument was adapted from the validated tool (Rattray et al., 2004) to explore patients' intensive care experience within the Scottish context. Components of the intensive care experience were measured by 24 Likert items with acceptable Cronbach alpha scores (0.71–0.93). The maternity high-dependency unit is not an Intensive Care Unit as no woman requiring mechanical ventilation can be admitted: women are conscious and their infant is at their bedside unless admission to a Special Care Nursery (SCN) is required. Therefore, we removed four items: '*I have no recollection of being in ICU*', '*I saw strange things*', '*I seemed to have bad dreams*' and '*I thought I would die*'. We added six new items in consultation with clinical staff from the maternity high-dependency unit and from findings from a study addressing women's satisfaction and perceptions of maternity care (Lewis et al., 2016): '*I was given information I could understand', 'I was given choices about what was happening to me', 'I felt I did not need to be in*

the high-dependency care unit any longer', 'It was upsetting to see what happened to other patients', 'It was a restful environment' and *'I was not glad to be transferred out of the maternity high-dependency unit'.*

Our survey also collected maternal age, birth mode, reason for admission from the woman's perspective and who provided support and information. Additional infant data was collected such as SCN admission, first visit to SCN, infant feeding method and support with infant feeding, as well as perception of support from midwifery and nursing staff in the unit, and readiness for maternal transfer. This data selection was informed by previous research exploring childbearing women's perception of care (Lewis et al., 2016). Prior to commencing the survey, the instrument was piloted with ten postpartum women for clarity and ease in interpreting the questions. Piloting highlighted suggestions in relation to reordering of question presentation and also the need to clarify which clinicians answered the participants' questions during their stay in the maternity high-dependency unit. It was also suggested that an open-ended question inviting further comments be included at the end of the questionnaire.

Data analysis

Quantitative

Descriptive statistics were based on means, medians, interquartile ranges and ranges for continuous data (such as maternal age) and frequency distributions for categorical data (such as parity). Univariate comparisons between the groups (such as vaginal and caesarean birth) were performed using Chi-square tests. P-values <0.05 were considered statistically significant. Statistical Package for the Social Sciences (SPSS V24) statistical software was used for analysis.

Qualitative

Two members of the research team independently used content analysis (Vaismoradi et al, 2013) to group the words women used to describe their experience. The researchers shared their preliminary analyses based upon the women's responses and negotiation within the full research team occurred to determine the final groups of words. These words were then entered into an NVivo database for analysis.

Results

Of the 240 women eligible to be included, 112 (47%) returned a questionnaire, with 31 (28%, 31 of 112) returning a questionnaire following the first postal survey and 81 (72%, 81 of 112) requiring a telephone prompt.

Quantitative results

Women's characteristics and demographic details are grouped according to birth mode (Table 1). Women having a vaginal birth were younger than those having a caesarean birth (median 31 vs 34 years of age, $P = 0.05$) and reached a higher gestation of pregnancy (39 vs 37 weeks gestation, $P = <0.001$). Babies of women with a caesarean birth were more likely to be admitted to SCN (59% vs 37%, $P = 0.023$). The majority (55%) perceived they were admitted to the maternity high-dependency unit due to a postpartum haemorrhage. Those who had a vaginal birth were more likely than those who had a caesarean birth to perceive they had a postpartum haemorrhage (69% vs 33%, $P = <0.001$) and less likely to believe they were admitted due to pregnancy induced hypertension (12% vs 31%, $P = 0.022$). The majority (80%) felt they received breastfeeding support from staff, with 70% (63 of 90) who were given breastfeeding support confirming that their baby actually received breast milk – remembering that 49% (54 of 112) of babies were admitted to SCN.

Women's experiences and wellbeing in the unit are described in Table 2 for 111 complete datasets. Women who knew about their condition were more likely to remember what was happening to them (93% vs 67%, $P = <0.001$) than those who did not know enough about their condition. The majority of women did remember what was happening (83%), felt they were given choice (78%), but were not glad to be transferred out of the unit (62%).

Women who did not feel scared during their admission were more likely than those who felt scared to have a member of staff explain what had happened to them (95% vs 78%, $P = 0.007$) and were more likely to feel in control (94% vs 75%, $P = 0.006$). They were also less likely to feel helpless (27% vs 62%, $P = <0.001$). The majority (70%) confirmed that they were in pain during the first 24 hours of their admission to the unit.

Qualitative results

Primary word women used to describe their experience

Fig. 1 graphically displays the primary word used by women to describe their experience of maternity high-dependency care. The top seven words offered were positive: caring, safe, excellent, supportive, helpful, good, and professional.

Discussion

The aim of this study was to explore women's experience and wellbeing following a complicated birth within an Australian tertiary maternity high-dependency unit. The majority of women remembered what was happening to them, felt they were given

Table 1
Women's characteristics and demographic details.

Outcome	Vaginal birth n = 51 (46%) n (%)	Caesarean birth n = 61 (54%) n (%)	P Value	Total n = 112 n (%)
Age (years)	32/31(28–35) [22–43]	34/34(30–37) [23–53]	0.050	33/33(29–36) [22–53]
Gestation (completed weeks)	38/39(37–40) [34–42]	37/37(35–38) [32–41]	<0.001	37/38(35–39) [32–42]
Primiparous	28(55)	28(45)	0.448	56(50)
[#]Mother's explanation for admission. Postpartum haemorrhage	35(69)	20(33)	<0.001	55(49)
Pregnancy induced hypertension	6(12)	19(31)	0.022	25(22)
[α]Baby admitted to Special Care Nursery	19(37)	35(59)	0.023	54(49)
[*]Baby receiving breast milk	36(70)	34(56)	0.120	70(63)
Supported by staff in the maternity high-dependency care unit to breastfeed	42(82)	48(79)	0.812	90(80)

Variables may not add up to 100 due to missing values for some outcomes.
[*] n = 35(50%) of women whose baby received breast milk were using expressed breast milk.
Mean/median (interquartile range) [range].
[#] Top two reasons given by women for why they were admitted to the maternity high-dependency unit.
[α] Of these women n = 31 (57%) saw baby as soon as wanted to and n = 26 (48%) received a photo.

Table 2
Women's experiences and wellbeing in the maternity high-dependency care unit.

Women's experiences	Knew about condition n = 71 (64%) n (%)	Did not know enough about condition n = 40 (36%) n (%)	P Value	Total n = 111n (%)
First admission to a high-dependency care unit	66(93)	34(85)	0.199	100(90)
I remembered what was happening	65(93)	26(67)	<0.001	91(83)
I did not sleep too much	59(84)	30(75)	0.313	89(81)
I was given choices about what was happening to me	58(83)	28(70)	0.116	86(78)
I felt I did not need to be in the high-dependency care unit any longer	62(87)	29(73)	0.051	91 (82)
I was not glad to be transferred out of the maternity high-dependency care unit	48 (68)	20 (53)	0.149	68 (62)
Women's wellbeing	Did not feel scared n = 79 (71%) n (%)	Felt scared n = 32 (29) n (%)		n = 111n (%)
Member of staff explained what happened	75(95)	25(78)	0.007	100(90)
Midwife explained what happened	58(74)	17(53)	0.039	75(68)
Doctor explained what happened	51(65)	20(63)	0.838	71(64)
I felt in control	74(94)	24(75)	0.006	98(88)
I felt helpless	21(27)	20(62)	<0.001	41(37)
I was in pain	53(61)	25(78)	0.249	78(70)

Note: Variables may not add up to 100 due to missing values for some outcomes; n = 111 as one survey contained incomplete data.

Fig. 1. Primary word used by women to describe their experience of maternity high-dependency care.

choice, but were not glad to be transferred out of the unit. Women who did not feel scared during their admission were more likely to have had a member of staff explain what had happened and were more likely to feel in control. They were also less likely to feel helpless. The majority confirmed that they were in pain during the first 24 hours of their admission. Encouragingly, the majority were supported to breastfeed. Additionally, the most frequently cited words offered by the women to describe their experience were positive. Our discussion will focus on women's experiences and wellbeing including being informed and supported in addition to their transfer experience to a hospital ward.

Experiences and wellbeing

The importance of capturing the voices of women within maternity care reinforces the value of qualitative research as a complement to quantitative measurement (Renshaw, 2008). Given the nature of obstetric intermediate care, it is unsurprising that the majority of women (83%) in our Australian study did remember what was happening, reinforcing the importance of giving voice to their care experiences during this momentous and unanticipated introduction to parenting. Although we cannot assert our Australian participants would categorise their birth as negative or traumatic, the findings from a study which explored 2192 Dutch women's perceptions of how to prevent a traumatic birth are interesting (Hollander et al., 2017). Dutch women self-reported a traumatic birth experience with 79.8% being primiparous, 57.7% experiencing either an assisted vaginal birth (26.5%) or a caesarean birth (31.2%) with an obstetrician (51.1%) or obstetrician and midwife (43.2%) as their primary intrapartum caregivers. However, no information was presented to suggest these 'traumatic experiences' involved complicated births requiring specialised care. Four frequently cited responses by these Dutch women were supportive of our findings: lack and/or loss of control (54.6%), communicate/explain (39.1%), listen to me (more) (36.9%) and support me (more/better) emotionally/practically (29.8%) (Hollander et al., 2017).

The words offered by Australian women to qualitatively describe their experience were encouraging and appear not to represent a negative birth experience. However, assumptions suggesting a positive experience must be cautious as the 47% of women who did participate in this survey may not represent all women admitted following a complicated birth. Although the majority of women (78%) in this study confirmed that they were given choice, our findings suggest an association with being scared and feelings of being helpless. The importance of informed choice and shared decision-making between health professionals and consumers during maternity care is acknowledge in the National Institute for Health Care Excellence (NICE) intrapartum care guidelines (NICE, 2017). In fact, recognition of the importance of a women's autonomy in decision-making has resulted in development of a scale to evaluate involvement in maternity care decisions (Vedam et al., 2017).

Knowledge of the impact of a potential negative birth experience is imperative for health professionals due to its association with childbirth fear (Henriksen et al., 2017) and is a risk factor for post-traumatic stress disorder (Ayers et al., 2016). Conclusions from a meta-synthesis on psychosocial implication of traumatic birth highlighted that health professionals must have awareness, education, and skills to prevent trauma and enable them to identify

and respond to women's psychosocial concerns following a traumatic birth (Fenech and Thomson, 2014). One variable not explored in our study was around women's social history. Therefore findings from a Norwegian study that found 21% of women who perceived they had a negative birth had a history of abuse (Henriksen et al., 2017) introduces a result that cannot be supported or refuted in this study. Nonetheless, findings from our WA study do align with key themes reported in this Norwegian study such as the 'experience of pain and loss of control', with women sharing how not been treated with respect or included in decisions contributed to negative perceptions (Henriksen et al., 2017).

The majority of these WA women confirmed they were in pain during the first 24 hours of their admission although just over half experienced a caesarean birth. Conclusions from a review examining regional anaesthesia and analgesia after surgery in ICU suggested that regional anaesthesia decreases postoperative pain and opioid use compared with general anaesthesia and intravenous opiates (Capdevila et al., 2017). Data on anaesthesia or analgesia was not collected however the prevalence of pain regardless of birth mode suggests pain management is an area requiring further investigation.

Being informed and supported

Our WA findings highlight how receiving explanations and being kept informed was associated with feeling in control whilst reducing feelings of being scared. The impact of an extended role of the midwife in the critical care of the women, baby and family has been recognised as contributing to an increase in patient satisfaction at one Australian hospital following development of a critical care team of midwives (Simpson and Barker, 2008). Unfortunately, a systematic review found no evidence-based midwifery interventions that could be recommended to address post-traumatic stress in women following childbirth (Cunen et al., 2014). One consistent finding offered from the six studies and eight reviews examined was the opportunity to discuss their birth experience being beneficial to women (Cunen et al., 2014). However, a Cochrane review on debriefing interventions concluded there is no evidence to support routine postnatal debriefing for women who perceive birth as psychologically traumatic (Bastos et al., 2015). Addressing the potential of psychological trauma during the antenatal period is also challenging, as a clinical trial with a midwife-led telephone psycho-education session administered to highly fearful women during pregnancy found no differences in postnatal depression scores, parenting confidence or satisfaction with care compared to a control group (Fenwick et al., 2015).

A meta-ethnographic synthesis of 11 studies addressing midwives' and nurses' experiences of adverse events during childbirth confirmed how witnessing and repeated exposure to adverse events affected their professional identity and ability to adjust, with some never overcoming the trauma (Elmir et al., 2017). These implications on workforce is substantial, and organisational support together with a compassionate workplace culture are essential to ensure women have access to health professionals who are able to provide safe and effective care. A Swedish qualitative study with 13 critical care nurses caring for women following a complicated childbirth highlighted how the women and her vital functions were the priority, how the child and father were not their responsibility, the unsuitability of ICU for the new family, and the value of collaborating with staff from the neonatal nursery and postpartum wards (Engstrom and Lindberg, 2013).

Family-centred, non-judgemental guidance is recommended to support women in their efforts to achieve successful breastfeeding (Harrison et al., 2018). Although family caregiver involvement may improve family experiences in an ICU, a qualitative study with critical care nurses in the United States found that care demands, the practice environment and challenges with resources could hinder this involvement (Hetland et al., 2018). American nurses were more likely to endorse family caregiver involvement with a culture that supported strong patient and family engagement. Ideally, family-centred care engages the partner and midwives have acknowledged their role in engaging fathers across the childbirth continuum (Rominov et al., 2017). Swedish women also shared experiences of being admitted to an ICU after a complicated childbirth and reinforced not only the desire to be in control but to be together as a family (Engstrom and Lindberg, 2011).

Women in a maternity high-dependency unit with their infant at their bedside are at the beginning of their parenting journey and this setting offers an ideal environment to promote and demonstrate family-centred care. The majority of WA women (80%) shared how they were supported by staff to breastfeed although only 63% confirmed that their baby received breast milk, possibly as their baby was unwell and in the SCN. Breastfeeding was also acknowledged by British women who required critical care as one of their greatest concerns as a new mother (Hinton et al., 2015). The most commonly cited concerns of postpartum women relate to infant care and breastfeeding (Almalik, 2017).

Transfer out of maternity special care

The majority of WA women were not glad to be transferred out of the high-dependency unit. The concept of ICU transfer anxiety has been recognised with family members resulting in development of a relocation stress scale for families (Oh et al., 2015). Baseline moderate-state anxiety levels have also been reported with general ICU patients on the day of transfer (Elliott et al., 2016). The timing of the transfer has been explored using an anxiety scale with critically ill patients and found that transfer at night was more anxiety-provoking than daytime transfers (McCairn and Jones, 2014). In contrast, an Australian study examined anxiety levels with ICU patients just before transfer to a ward and twice after transfer and found mean anxiety levels remained low and did not change over time (Gustad et al., 2008). Further research is warranted to explore the transfer experience and factors that influence potential transfer anxiety for women with a complicated birth from a specialised care unit to a hospital ward.

Limitations

This cross-sectional study included a convenience sample of women admitted to one maternity high-dependency unit following a complicated birth in one Australian state. Caution must be considered around the generalisability of the findings to obstetric patients from intermediate care units or intensive care units or women who receive specialised care during pregnancy. Using content analysis with the qualitative component of responses from one question is a limitation as this data does not represent rich description of a phenomenon and can reflect the frequency of words rather than interpretation gathered from narratives (Vaismoradi et al., 2013). Further research with childbearing women admitted to a maternity high-dependency until following the birth of a preterm infant (<28 weeks gestation) or whose infant was either stillborn or born live but did not survive is warranted although this was beyond the scope of this study.

Conclusion

Further investigation in relation to pain management for these vulnerable women is warranted, in addition to their transfer experience from high-dependency care to a hospital ward. It is unclear

whether this cohort of women who experienced a complicated birth can escape feelings of helplessness and not being in control. However, what is clear is that being informed and feeling in control may ameliorate feeling scared. Finally, our limited qualitative findings highlighted how women's words to describe maternity high-dependency care were generally positive but further research is necessary to build knowledge around this area.

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Conflict of interest

The authors declare that they have no conflicting or competing interests.

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