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The influence and meaning of the birth environment for nulliparous women at a hospital-based labour ward in Sweden: An ethnographic study

Lisa Goldkuhl[a,*], Lisen Dellenborg[a], Marie Berg[a,b], Helle Wijk[a,c,d], Christina Nilsson[e]

[a] Institute of Health and Care Sciences, Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden
[b] Department of Obstetrics and Gynaecology, Sahlgrenska University Hospital, Gothenburg, Region Västra Götaland, Sweden
[c] Department of Quality Assurance and Patient Safety, Sahlgrenska University Hospital, Region Västra Götaland, Gothenburg, Sweden
[d] Department of Architecture and Civil Engineering, Building Design, Chalmers University of Technology, Gothenburg, Sweden
[e] Faculty of Caring Science, Work Life and Social Welfare, University of Borås, Borås, Sweden

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ABSTRACT

Background: Labour and birth are sensitive physiological processes substantially influenced by environmental and psychosocial factors.
Aim: To explore the influence and meaning of the birth environment for nulliparous women giving birth in either one of two differently designed birthing rooms at a hospital-based labour ward.
Methods: Five months of ethnographic fieldwork was conducted at a labour ward in Sweden, consisting of participant observations of 16 nulliparous women giving birth in either a 'Regular' birthing room (n = 8) or a specially designed, 'New room' (n = 8). Data included field notes, informal interviews, reflective notes, and individual interviews with eight women after birth. The data was analysed through an ethnographic iterative hermeneutic analysis process.
Findings: The analysis identified the birth environment as consisting of the physical space, the human interaction within it, and the institutional context. The analytic concept; *Birth Manual* was conceived as an instrument for managing labour in accordance with institutional authority. Significant to the interpretation of the influence and meaning of the birth environment were two abstract rooms: an *Institutional room*, where birth was approached as a critical event, designating birthing women as passive; and a *Personal room*, where birth was approached as a physiological event in which women's agency was facilitated.
Conclusion: Institutional authority permeated the atmosphere within the birth environment, irrespective of the design of the room. A power imbalance between institutional demands and birthing women's needs was identified, emphasising the vital role the birth philosophy plays in creating safe birth environments that increase women's sense of agency.

Statement of significance

Problem or issue
The challenge in creating an optimal birth environment in a hospital setting involves not only meeting the needs for medico-technical safety, but also ensuring a physiologically and emotionally safe environment for women during labour and birth.

What is already known
The psychosocial environment has fundamental effects on women's childbirth experience, and aspects of birth room design indirectly influence maternal and neonatal outcomes.

What this paper adds
The study provides evidence-based knowledge on how a prevailing institutional authority can make birthing women into passive participants, but also how care providers can enable a birth environment signified by a permissive atmosphere where birthing women has a sense of agency, safety and satisfaction with childbirth.

* Corresponding author at: Arvid Wallgrens backe 11, Box 457, 40530 Gothenburg, Sweden.
E-mail address: lisa.goldkuhl@gu.se (L. Goldkuhl).

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Introduction

Labour and birth are highly sensitive physiological processes in women that can easily be affected by external environmental and psychosocial factors [1]. Birth environments perceived as secure and protected enable the release of endogenous neurohormones in birthing women, including oxytocin, which mediates labour contractions, reduces stress and pain levels, helps to promote positive emotions, and facilitates adaptation and maternal bonding with the neonate [1,2]. Therefore, it is important for women to give birth at a place they recognise as safe [3], and that ensures a physiologically safe birth as well as a positive childbirth experience [1,4].

The transfer of childbirth from home settings to hospitals has been criticised with the suggestion that it increases the risk orientation and medicalisation of childbirth. In the medical model of maternity care, incorporated in many conventional hospital birth settings, the view of labour has shifted from that of a physiological body process and social event to a condition that can be evaluated through measurements and treated through medical interventions [5,6]. In contrast, a social/midwifery model of woman-centred maternity care focuses on the necessity to maintain normalcy during childbirth and to prevent unnecessary disturbances to birthing women [7]. A safe space for birth has been described as a 'birth territory' where women's physiological ability to give birth is encouraged and where their needs and integrity are sheltered [3,8,9]. Such spaces are documented to be in contrast to technocratic birth environments, including increased surveillance of women and babies [5]. In a study on the influence of different birth environments, results revealed that women who gave birth in hospitals were generally more passive, compared to women in birth centre settings and at home, who were active and took ownership of the space [10]. As reported by Downe et al. regarding what matters to women during childbirth, the definition of a positive childbirth experience includes having a healthy baby and giving birth in a safe environment, with kind support from clinical care providers while still retaining a sense of self-control [11].

The physical environment has been shown to have significance for the health and wellbeing of persons admitted to hospitals. Physical features that have demonstrated positive effects are ventilation, windows, views of nature, and design that promotes orientation and distraction, as well as comfortable furnishings [12]. Yet, how the physical birth environment affects women during labour is an area that is insufficiently explored. Two systematic literature reviews have analysed research on different impacts of the birth environment [13,14]. The first offers knowledge on how the physical, psychological, and physiological effects of the birth environment can indirectly impact intervention rates during labour and birth [14]. The latter found that different kinds of distraction, comfort, and relaxation, a higher room temperature, a familiar atmosphere, and a less technocratic environment may positively influence maternal and neonatal outcomes [13]. Still, these findings are not sufficient to provide knowledge about the complexity of the design of birth environments.

The phenomenon of sensing the atmosphere in a room goes beyond the physical aspects, and is of importance when studying experiential aspects of spatial environments [15]. The character of an atmosphere communicates interactions between people and environmental constellations. Human senses and moods co-create a vague and rather inexpressible feeling about a room that is apprehended by human experience [15].

Considering that the majority of births in high- and middle-income countries take place in hospital settings, the limited knowledge on how birth environments may affect the health of birthing women and neonates is surprising [13]. In the design and building of maternity units, healthcare architecture has traditionally used the principles of a techno-rational design with a mechanistic view on the birth process [16]. Birthing women have primarily been regarded as consumers of these units and are thereby not involved in the planning process. In the forming of birth environments there needs to be an understanding of the complexity of birth, considering that it is influenced by an intertwined combination of physiological, social, spiritual, biological, psychological, and cultural factors [17]. The design of birth environments in hospital settings needs a new way of thinking, a paradigm shift that includes a woman-centred approach based on women's lived experiences of giving birth [16].

This study is part of a multidisciplinary research project called 'Room4Birth', which aims to extend the evidence-based knowledge about the design of birthing rooms and their influence on labour, birth, and childbirth experiences [18]. Our research questions for this ethnographic study were: how does the birth environment in two differently designed birthing rooms influence nulliparous women's practices, interactions, experiences, perceptions and conceptions and what meaning does the birth environment have for nulliparous women during labour and birth? The aim was to explore the influence and meaning of the birth environment for nulliparous women giving birth in either one of two differently designed birthing rooms at a hospital-based labour ward in Sweden. People giving birth are referred to as 'women', although we are aware that not all birthing people identify as women. For healthcare professionals working at the labour ward of our study, including midwives, obstetricians, and nurse assistants, we use the term 'care providers'.

Methods

Study design

An ethnographical study design was used, as this can provide detailed descriptions of experiences, interactions, and situations within a studied context from the insider's point of view as well as from the outsider perspective in the interpretation and analysis [19–21]. The methodology strives for an understanding of local meaning from a relativistic stance [22]. Participant observation is particularly suitable for a study of non-verbal interactions, aiming at building an understanding of the cultural and organisational behaviours in a complex setting [21], such as a hospital birth environment. Previous research has used the study design of ethnographic fieldwork to explore different aspects of the birth environment [23–25]. When conducting participant observation, the researcher goes beyond seeing and listening, using the full range of senses, interacting with the field and providing personal reflection with analytic attention. Thus, ethnographic fieldwork, including participant observation, informal interviews and in-depth interviews with participating women, was chosen in order to get an understanding of the influence and meaning of the birth environment from the perspective of the birthing women [26].

Study setting

Swedish maternity care is publicly funded, including care during childbirth, which is primarily offered at hospital-based labour wards. Midwives have an autonomous role as primary care providers for women with uncomplicated pregnancy, labour, and birth, and obstetricians are consulted and responsible if complications arise.

This study was conducted at a labour ward at a university hospital in Sweden. The ward did not apply continuous one-to-one care, and midwives could be responsible for more than one woman in active labour. As central electronic fetal monitoring was used, all

Table 1
Main differences between the new and regular birthing rooms.[a]

Content	New room	Regular room
Size	23.8 m^2	19 m^2
Entrance hall	Yes, 3 m^2. Separated by a green-coloured curtain protecting the room from being seen from the hospital corridor outside.	No
Ensuite bathroom	Yes	Yes
Bathtub	Yes	No. Possible to use from another room.
Window	Yes. Hidden if media installation in use.	Yes
Lighting	Yes. Several options with dimming function.	Yes. Several options, no dimming.
Silencer	Yes. A 40 mm sound absorber suspended from the ceiling.	No
Media installation	Yes. Installation covers one or two walls. Offers choice of seven programmed nature scenes (stormy ocean, sunny beach, winter landscape, forest in spring, summer or autumn, and nature at dawn) with light, sound effects, or music.	No
Birth bed, ordinary	Yes. Covered with a bedspread. Located with its long side facing one of the walls.	Yes. No bedspread. Centrally located in the room.
Medico-technical equipment	Yes. Hidden behind a wood-panelled wall, which is rolled up when needed.	Yes. Fully visible.
Rounded corners on furniture	Yes, a few.	No
Sofa	Yes. Can be converted into an extra bed for companion.	No
Chair for companion	Yes. Designed for comfort, adjustable height.	Yes. Ordinary model.
Mirror	Yes	Yes
Pilates ball, trolley walker	Yes	No, but available to get from storage.
Birth support rope	Yes	No
Cabinet for personal belongings	Yes. With ability to recharge electronic devices.	No

[a] Table from the study protocol, p.5 [18].

monitoring of fetuses was electronically visible through centrally located monitors at the labour ward offices. The study was directed at nulliparous women classified as Robson 1; i.e., women in gestational week 37 + 0 to 41 + 6, with a single, live fetus in cephalic presentation and with a spontaneous start of labour [27]. In 2019 there were 4010 births at the ward, 32% of which belonged to the Robson 1 group. Of these, 58% were provided epidural analgesia, 52% received synthetic oxytocin infusion for augmentation of labour, 82% had a spontaneous vaginal birth, and 7.5% gave birth through an emergency caesarean birth [28].

The labour ward had seven regular birthing rooms (labelled Regular room) with similar physical design, and one furbished birthing room, designed to increase its potential to be adapted to birthing women's personal wishes and needs (labelled New room). Details of these two room designs are listed in Table 1. All women received care from the same group of care providers, regardless of room type.

Study participants and data collection

Ethnographic fieldwork with participant observations and informal interviews was conducted from September 2019 to February 2020 by two researchers: LG, registered midwife and PhD student; and CN, registered midwife and experienced researcher. In-depth interviews were subsequently conducted two to seven months after birth.

Study participants were asked to participate after being enrolled in a randomised controlled trial (RCT) within the Room4Birth research project, in which consenting Robson 1 women were randomly allocated to care in either a Regular room or the New room. To participate in this ethnographic study, the women should be ≥18 years of age; understand and speak either Swedish or English or have an interpreter in Somali or Arabic available; and be in an active stage of labour with the ability to give informed consent. Women participating in a follow-up in-depth interview should understand and speak either Swedish or English.

During the five-month period of fieldwork, the researchers attended the labour ward for approximately two to three days a week, across all shifts. When a researcher was available for observation, the midwife responsible for a study participant in the RCT gave verbal and written information and obtained written consent to participate in the ethnographic observational study. The consenting women received additional information from the researcher, including that participation was voluntary and that they could withdraw from the study at any time. They were also informed that the researcher was an experienced midwife, but that her role during the observations was not as a clinician. Twenty women were invited to participate, of which four declined because they disapproved of having an unknown researcher present in the room. Of the 16 participating women, nine were of Swedish origin and seven originated from either an African, Asian, Middle-east, or other European country. The women's age varied between 25 and 38 years, with a mean of 30 years. The participating women's birth outcomes are shown in Table 2. Data collection was ended when the data had reached such high quality and variation of findings that the purpose of the study could be answered.

Written consent was obtained from the midwives and nurse assistants responsible for the participating women, as they were also present in the birthing room. Care providers who entered the room for shorter moments received information and gave verbal consent afterwards. All involved care providers were informed that the focus of the study was from the perspective of the birthing women.

Seventeen observations were conducted during labour: eight in a Regular room and nine in the New room. One of the women giving birth in the New room was observed on two occasions. The observations lasted 2.5–9 h, with a total of 90 observing hours. The focus for the observations and informal interviews entailed the influence and meaning of the birth environment, and the women's adaptability, sense of safety, security, integrity, and familiarity within the room. The researcher took on the role of observer in order not to conduct or influence the care of the women. In practice, though, some of the women came to rely on the support of the researcher who was there.

Handwritten field notes were taken during the observations and were transcribed afterwards. The notes comprised descriptions of labour process events, human interactions, performed practices, spontaneous interviews with participating women and companions, and the observing researcher's reflective memos on events, atmosphere, and emotions. Short, informal interviews with participating women focusing on their experiences of the birthing room were conducted when possible during childbirth and one to two days after during their stay at the postpartum ward. Eight of the women participated in a subsequent in-depth interview

Table 2
Birth details of included study participants (n).

Birth details	Observed participants (16)		In-depth interviewed participants (8)	
	New room (8)	Regular room (8)	New room (5)	Regular room (3)
Epidural analgesia	6	7	3	3
Oxytocin for augmentation of labour	5	7	3	2
Spontaneous vaginal birth	8	6	5	3
Instrumental vaginal birth	0	2	0	0
Caesarean birth	0	0	0	0

conducted by the researcher that had been present during their birth. Of these women, three had given birth in a Regular room and five in the New room. The interviews were based on preliminary analysis from observations, and were conducted at a location of the participants' choosing (home, outside in a park, or via phone or video link). The initial open-ended question for the interview was '*How did you experience the birthing room?',* followed by questions that had been raised during the observation. A woman's partner participated in one interview, and in another a woman's mother (who had been present during labour) participated. The interviews lasted 45–90 min, were recorded and subsequently transcribed verbatim by the first author or an independent agency.

Reflexivity and data analysis

When doing ethnography, the researcher is the instrument for data collection, which requires careful attention to preunderstandings [20]. The data-producing researchers (LG and CN) are experienced clinical midwives, who view childbirth as a physiological process that has substantial life-long impacts on women and their families. Both researchers also have personal experiences of giving birth in hospital-based birthing rooms. The designation of 'insider' in a studied field means that the researcher shares experiences similar to those of the study subjects [29]. Of the two observing researchers, particularly LG was positioned as an insider, having worked as a clinical midwife at the study labour ward prior to the fieldwork. Both observers had an awareness that being a researcher in a familiar field could have methodological and analytical implications.

The ethnographic analysis began as soon as the observing researchers entered the field. The analysis followed the principles of ethnographic iterative hermeneutic analysis process, which means alternating between closeness in the field and distance when writing up and reflecting [19]. Initial interpretations, analysed in continuous discussions between LG and CN during fieldwork, could be formulated into questions that were followed up in new observations. To enable the identification of potential personal biases and influences on the findings, critical self-reflection was managed through reflective journaling throughout the fieldwork and analysis process. This included repeatedly returning to the transcribed interviews and detailed field notes. In addition, several meetings, both during data collection and in the analysis process, were held with another researcher (LD), a social anthropologist specialised in ethnographic methodology, with experience in Swedish healthcare study settings. Her position enabled an 'outsider' perspective on the generated data as well as on methodological considerations.

With the aim of creating thick description, as described by Geertz [22], events, actions, and interactions within the studied context as well as data from in-depth interviews were interpreted and described in detail. The analysis focused on the women's practices, experiences, perceptions, and conceptions in the birthing room. LG conducted the majority of the analysis, mainly supervised by CN but also by LD. Initially, the transcribed data material, including in-depth interviews, field notes and reflective memos from the data-producing researchers, was collected and organised. With a focus on understanding the study context and the birthing women's inner perspective of it, the generated data was examined for patterns categorised into meaningful units, noting similarities and comparisons in order to gain a deeper understanding of the phenomenon. The interpretations and understandings behind the complexity of the practices and interactions in the field were further abstracted. The formulation of final key concepts and themes was performed in numerous discussions within the whole research team (LG, LD, MB, HW, CN). For confidentiality in reporting findings and reflections, the participating women, care providers, companions, and neonates are given pseudonyms.

Findings and reflections

The analysis identified the birth environment as consisting of the physical birthing room, the human interaction within it, and the institutional context in which birth took place. It was evident that the atmosphere in the birth environment was affected by an institutional authority that was incorporated into the birthplace. This authority included institutional demands and surveillance based on standardised, documented, and tacit regulations on birth processes and procedures to ensure a medically safe birth. The analytic interpretation conceptualised the *Birth Manual* as an overarching and ubiquitous instrument for managing labour and birth in accordance with institutional authority.

The design of the New room contributed to a sense of familiarity and calmness for the birthing women. However, when their personal needs were disregarded in favour of the management and control regulated by the *Birth Manual*, the significance of the spatial design was decreased. The *Birth Manual* thereby seemed to have a strong influence on the birthing women, irrespective of whether they were cared for in a Regular room or the New room.

The analysis identified two prominent abstract rooms to be significant for the influence and meaning of the birth environment for the women: The *Institutional room* and the *Personal room.* The *Institutional room* characterises birth as a critical and uncertain event, designating the birthing woman's role as passive and controlled and the care provider's role as authoritative, primarily in accordance with the regulations of the *Birth Manual.* The *Institutional room* is described in the following three themes:

- Authoritative guidance through the *Birth Manual* and its influence on the birth environment
- A birth environment denoted by its distance from physiological birth
- Women undertaking a passive disposition within the birth environment

The *Personal room* is characterised by the woman's active involvement, agency, and autonomy; the care provider's permissive role; and a unanimous (woman, companion, and care provider's) trust in the woman's ability to give birth. The *Personal room* is described in the following three themes:

- A birth environment signified by the birthing women's agency
- The New room facilitating the *Personal room*
- Care providers enabling or counteracting the *Personal room*

The care providers seemed to have a strong impact on the women's practices and experiences of the birth environment. One woman giving birth in the New room captured how the midwives' approach could influence an atmosphere of the *Personal room*, but also that of the *Institutional room*:

> *The midwife belongs to the room as well. She's like a tool for the room. When the first two midwives came into the room [the New room], they acclimatised and adopted a certain approach. They utilised the room, explained and followed the rhythm of the room. They worked together in symmetry. Inside the room: calm, no stress. They took their time and used the room. Like when I sat on the birth stool and the midwife on the birth ball and [she] could still perform her job. Appropriate to the harmony and environment that existed in there. There was a distinct difference with midwife number three. She acclimatised to the room as if it were just an ordinary room: "This is an ordinary day at work; this and this should be done." Just like, there's nothing extra to this room, or not an experience. She was more focused on the job being done. I didn't feel like she took me seriously.* (Interview, Felicia, New room)

Fig. 1 illustrates the birth environment with its constituting elements.

Institutional room

The *Institutional room* was permeated by a perception of birth as a critical and uncertain event, demanding management performed by care providers in the role of medical professionals. Care providers in the *Institutional room* conveyed a primary focus on practical assignments and interventions, considered necessary in order for a healthy baby to be safely born. The focus on the birthing women and their personal experience thereby seemed secondary. However, contributing to the atmosphere of the *Institutional room* was not only the care providers' approach and authoritative guidance of birth procedures, but also the physical room denoting a clinical environment and the women undertaking the role of passive participants due to preconceived understandings that they lacked the fundamental knowledge of birth.

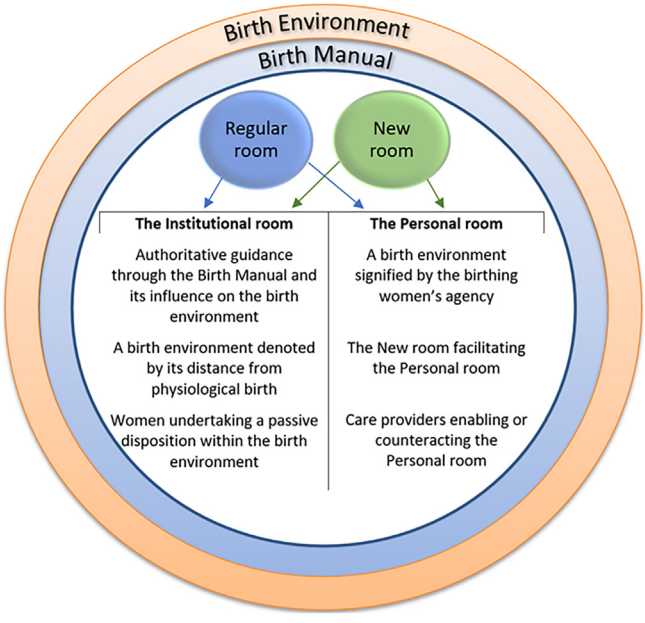

Fig. 1. Key findings of the influence and meaning of the birth environment for nulliparous women giving birth in either one of two differently designed birthing rooms at a hospital-based labour ward.

Authoritative guidance through the Birth Manual and its influence on the birth environment

The *Birth Manual* consisted of documented guidelines, checklists, risk assessments, and tacit rules that were incorporated into the hospital birthplace setting. It controlled the standard duration of birth stages through the use of a partograph (a graphical record used for monitoring standard cervical dilation and the descent of the baby's head), which was regularly updated in the medical records to gain knowledge of any assessed prolonged progress. The Manual also consisted of tacit standard practices, such as routinely dressing women in hospital gowns at admission and, in the second stage of labour guiding them to give birth in lithotomy, supine, or side position in a hospital bed through coached pushing. According to the *Birth Manual*, women also tended to need approval from care providers before they could actively start pushing, despite their inevitable physiological signals of a strong urge to bear down. The view of birth as an uncertain event, was exemplified in a quote from an obstetrician receiving reports from a midwife on morning rounds about a woman with assessed prolonged progress of birth – '*The birth process might be investigated in the future, whereby this management could be questioned*' (Field note, during medical ward rounds). With this approach, the care providers seemed dependent on controlling the birth, strictly following guidelines, reporting and documenting every step of the progress in the medical records. An awareness of the institutional surveillance of the care providers' work, as well as a fear of future mistakes, seemed to make them prioritise practical assignments in the birthing room to justify the management of labour rather than primarily meeting the woman's individual needs. Women acknowledged this authoritative guidance in terms of: '*It was as if you weren't allowed to decide for yourself what to do*' (Interview, Nina, New room).

The following field note excerpt illustrates a care provider authoritatively guiding the woman's activities, as her labour was not progressing in accordance with the *Birth Manual*. The woman and her needs seemed subordinated to the *Birth Manual*, and she tended to be a passive participant in her own labour:

> *The woman had been fully dilated for two hours. The whole team discussed the slow [according to the guidelines] progress of birth and the plans forward within the limited time frame. The midwife recommended that the woman lie down in bed on her back and to keep pushing, but the woman wanted to stand up; said it was easier to bear with the pressure and pain in that position. The midwife insisted, and the woman started to cry. The midwife kindly supported her, but referred to the words of the doctor. The woman agreed to come over to the bed, lying in supine position. The midwife performed levator pressure [pressing vaginally with her fingers, aiming to make the pushing more effective] at every contraction.* (Field note, Regular room with Tessa)

The prospective complication due to prolonged labour made the midwife direct the woman into apparently uncomfortable positions, ignoring her needs and feelings. The environment was permeated by the priority of completing the birth within a strict timeframe. When the woman was made aware of the risks and complications that the prolonged labour progress could cause, her dependence on the care provider's expertise seemed to increase.

Women could also be the directors of their own birth, and some made efforts to oppose the authoritative directions they were given. In the *Institutional room*, however, their resistance tended to be ignored. For a woman to keep her agency, she had to protest against the demands of the institution:

The woman was very relaxed, happy and calm. Her contractions were not very frequent, but painful, which was obvious from the sounds she was making. The pain seemed not to be a problem to her. She bathed for a long time and enjoyed it.
Later, she was kindly asked by the midwife to come out of the bath for routine electronic fetal heart monitoring. The woman returned to bed, but said that she wanted to go back to the bath as soon as possible. Thereafter, several interventions (vaginal exam, IV line, amniotomy, scalp electrode) were performed; hence, the woman stayed in bed for a long time. She reminded the midwife that she wanted to go back to the bath, but the midwife hesitated; wanted to check guidelines regarding water birth, and didn't return to the woman's question. Later, the woman said, "Now, I want to do this according to my own list", though without a response from the midwife. (Field note, New room with Nina)

A birth environment denoted by its distance from physiological birth

The spatial design of the birthing room could convey that birth demanded substantial technical and medical control. For instance, women allocated to the Regular room described how the visible medico-technical equipment could increase their awareness of the potential risks to themselves and their unborn babies. As care providers in the *Institutional room* seemed to rely and focus on the technical equipment, they also signalled that it was a prerequisite for childbirth, and thus the women's role was designated as submissive, adapting to a passive 'hospital patient' role. In the *Institutional room*, the birth bed was signified as the main location from where women could be monitored, observed, and cared for. As the use of technical equipment was facilitated from bed position, women were encouraged to come out of the bath or limit their spatial mobility when check-ups or examinations were required. The care providers' reliance on technical solutions could create a distance from the actual physiology of birth. This was observed when they were focusing on the frequency of labour contractions based on the electronic fetal monitoring screen (CTG) in the room or at a distance from the care providers' office, instead of being emotionally and physically present in the room assessing signals from the women's birthing bodies. A care provider's comment on labour contractions as not effective enough, or the need for interventions in order for the birth to finish, tended to communicate the women's bodies as failing and unable to give birth without monitors and interventions. The following quote reflects how a remark from a care provider on a prolonged labour progress made the woman blame herself for not being able to give birth in accordance with institutional demands:

It was traumatising for me. I cried a lot when I thought about it afterwards. I thought it was tough with all these people. And it was very forced, because I felt stressed since I hadn't progressed faster like that person said. And then it felt like I didn't push as I should do; I was sure that now there will be a rupture. There was so much going on. I managed to continuously think about what I should do to make it right. (Interview, Sara, Regular room)

The atmosphere in a birthing room could rapidly change from calm and peaceful to stressful and critical. For instance, this transition was signified by stressful activities, unmet needs to deal with women's severe pain, or expressions of anxiety from companions or care providers. It was also observed that these stressors could affect women's physiological labour progresses. In one observation, a woman was coping with powerful contractions while receiving active support from her partner and midwife. Just as she had full cervical dilation and a strong urge to bear down, a shift of care providers occurred. The new care providers had a significantly different approach to the situation than the previous midwife, and a cascade of interventions were performed. The sudden transition of atmosphere, combined with the building of new relationships in the sensitive state the woman appeared to be in, seemed to affect her labour progress negatively:

The woman, the previous midwife and the partner had a flow. However, the atmosphere changed. The new midwife directed the woman into side position in bed, performed several procedures and interventions. A doctor entered the room, performed vaginal exam and ultrasound to assess the head position of the baby. The woman seemed exhausted. Before the shift her contractions were strong and intense, the labour progress was rapid, and her urge to bear down was strong. And then – the contractions were all gone and she was told that she needed synthetic oxytocin to make the contractions more effective. (Field note, Regular room with Norah)

Metaphorically, this field note excerpt illustrates how this woman was transferred from the *Personal room* into the *Institutional room*. That her labour contractions seemed to have decreased in combination with these changes in atmosphere could not be verified by the woman herself in a follow-up interview seven months later. Her experiences from the *Personal room* were signified by the importance of the support and strong memory of the first midwife, and descriptions from the *Institutional room* were influenced by intense pain, prolonged labour progress, and memory loss:

I remember that there were quite a few people in the room, it felt like. There were moments when I felt quite off, actually (. . .) The doctor also came in a couple of times, I think. There was something about the baby towards the end, that they were a little worried about. I don't even remember what it was exactly. If it was lack of oxygen or a heart attack. I didn't understand that. I needed to start pushing, I think they said. (Interview, Norah, Regular room)

Women undertaking a passive disposition within the birth environment

As most of the women described, giving birth for the first time meant being in a vulnerable position, dependent on the care providers' expertise, and the hospital was considered the safest place to give birth. Women also described that knowledge of birth belonged to the care providers and not themselves, which may have contributed to their surrender to the authoritative directions and passive disposition within the birth environment. Characteristic of the *Institutional room* were the women's difficulties in initiating their own activities, or asking for permission to change their body position as if the care provider had ownership over their choice to move freely. Similar to the care providers' mediation of distance from physiological birth as they were monitoring the birth based on data monitoring screens instead of the women's birthing bodies, some of the women also distanced themselves from the physiologic and intuitive sensations. Women described that they wanted to manage and control the birth without losing their normal selves. '*Hysterical or demonic*' outlets could make them feel ashamed. Strong, unknown signals from their birthing bodies, such as pushing reflexes, were experienced as hard to cope with or understand. It was expressed as a primordial power that they had never experienced before, which could leave them with feelings of shock and a loss of control. Interventions and repeated checks could be experienced as providing a sense of safety. They accepted the procedures as 'normal management' of labour, and relied on the care providers' expertise. The role disposition of the birthing women as passive within the birth environment thereby seemed to be influenced by their preconceived understandings of birth as being a critical event in need of advanced medical control:

The room was just a place where I was supposed to be in when giving birth. It wasn't more than that for me. A safe place where I knew that I had all the help I could get, with all the midwives, doctors and assistant nurses in one place. So that was as I had expected, and it reflected that (. . .) When I was in intense pain, then it felt good having someone there to check up on you – since it was also my first time, meaning that you don't know, am I doing it right now or not? Or what am I supposed to do now? (Interview, Linda, Regular room)

The Personal room

The *Personal room* was signified by the birthing women's active involvement and agency, enabled by the unanimous approach to birth as being a physiological and sensitive body process. Agency was defined as the women's self-determination and ownership over the room, the birth process, embodied knowledge, and informed decisions. The *Personal room* seemed dependent on the care providers' resistance to prioritising the standardised *Birth Manual*. The care providers could enable the *Personal room* through an approach and care that conveyed a calm, equal, and trusting atmosphere based on the woman's individual needs and resources. The *Personal room* could also be facilitated by the devoted involvement of a birth companion, as well as physical features in the room enabling the women's adaptability, spatial mobility, and feelings of familiarity.

A birth environment signified by the birthing women's agency

Expressions of the women's ownership over the birthing room included using the room with ease, wearing their own private clothes, unpacking their private belongings, and modifying the room to make it more familiar according to their personal preferences. Taking initiative, such as showering or bathing, reading a book, or watching a movie, could also express their ownership over the room. The women described that feeling comfortable enough to take ownership correlated with having a permissive, warm welcome by the care providers upon their arrival at the labour ward, and receiving information and reassurance that their labour had progressed normally. The women's agency was enabled when they experienced a sense of control over the situation and the room, but also when their intuitive bodily sensations were allowed to guide the birth practices and activities.

Generally, birth companions initially took on a passive and cautious role in the birthing room. Being a bystander, not finding one's place until invited or approved by care providers, contributed to an atmosphere of the *Institutional room*. However, some care providers facilitated the companions' participation by inviting them to take part in birth support activities, thereby enabling them to find their place in the room. This active, supportive role seemed to strengthen the connection between the woman and her companion, which contributed to an atmosphere of the *Personal room*, as illustrated in this field note excerpt:

She was seven centimetres dilated and had strong contractions. After a CTG monitoring sequence, she got out of bed. Smiled, laughed, and chatted between the contractions. She gave instructions to her partner on how she wanted him to massage her back. She was in control of her body. Told her partner "you have to listen to my breathing." They had found a way to work together. She walked around with ease. Once the contraction started, she leant towards the edge of the bed and made sounds, finished the contraction with a sigh, and then the partner was told to stop massaging. (Field note, Regular room with Linda)

The New room facilitating the Personal room

Even though the women unanimously regarded the hospital as the safest place to give birth, they described preconceived notions of the environment as negatively charged and unfamiliar. As women described it as a place otherwise associated with illness and disease, those who were allocated to the New room emphasised the importance of its familiar and comfortable spatial design. The room's atmosphere was described as giving the women a welcoming feeling, as if the room itself symbolised tenderness and care in the otherwise unfamiliar hospital environment. The furniture, natural-coloured fabrics, lighting, and nature scenes projected on the walls, combined with nature sounds, reminded some of the women of their home or of previous experiences. This contributed to a positive impression of the space and affected the overall birth experience positively:

The overall effect you have. I think, right from the beginning, that it's the VIP treatment you're getting (. . .) It was more like a hotel or something, rather than getting the feeling of a hospital. I think your perception about things changes your, some sort of psychology, once we came over there; it was so nice and we got so happy and from there everything started to change automatically. Just calmed down a bit, then you relaxed, the pain is easier to handle and once the pain is easier to handle it started to go beyond your expectations and you feel like, okay, I'm so happy! I was so scared of it, but it's not that scary. It [the New room] just shapes the whole experience that you have. (Interview, Anne, New room)

The New room facilitated the birthing women's spatial mobility due to the availability of furniture promoting upright positions, such as the birth ball and the trolley walker. In addition, the secluded position of the birth bed made several of the women use the bath for water immersion as their initial activity rather than a bedbound position, as was typically seen in the Regular rooms.

Care providers enabling or counteracting the Personal room

As the labour pain intensified, the women described that, irrespective of the New room's spatial design, it was the support they received from their care providers and companions that predominantly affected their experience of the birth environment:

And then losing control, I couldn't lie down on my back, because it hurt so much (. . .) Then it wouldn't have mattered if I was standing in a puddle of mud. (Interview, Felicia, New room)

The influence of the care providers' approach to birth, focus on care, and permissive interaction gradually increased as the women depended on the support given when they were in intense labour pain. Several of them described that the sometimes uncontrollable labour pain left them with a feeling of lost time and place, not remembering where they had been for the last hours of birth. In these situations, their dependence on the care providers' resistance to the *Institutional room* and enabling of the *Personal room* seemed to increase in order to maintain their agency.

In the *Personal room*, care providers conveyed that birthing women themselves possessed the knowledge about their own birth. When care providers focused on supporting and permitting women's bodily sensations to guide their practices rather than primarily following the regulations of the *Birth Manual*, it was communicated that the birth belonged to the women's birthing bodies. In one of the observations, signified as the *Personal room*, a midwife actively supported a woman in synergy with her contractions, not leaving her side. Examinations and checks were performed, but the midwife primarily focused on the woman's individual needs. In this situation it appeared as if a trusting

relationship was built, and the woman coped with labour pain through relaxation:

> *The midwife gave body contact. She was there, physically and mentally close. The woman was introverted during the intense labour contractions, smiled and gave eye contact in between. She confirmed the support from the midwife; said she thought it felt good when she pressed her fingers on her forehead, when she pressed her knees to ease the pain. The midwife made sounds together with her. Manually opened up her jaws. Told the woman to relax. Wrapped her up in blankets, gave her a heating pad for the pain. She stroked her legs, from feet to hips. The woman took the midwife's hand and said, "Thank you, you're so warm".* (Field note, Regular room with Norah)

Care providers could enable the *Personal room* by respecting birth as the life transitional event the women sometimes described it as. A respect for the birth environment as a place for an existential event was observed, with care providers protecting the women's integrity by maintaining a private and calm atmosphere. This was also observed when they left the curtain in the hallway closed in the New room, or when a screen was placed outside the Regular room to shield the room from view and from stressful activities outside. Other protective activities included the care providers guarding the room from unnecessary practices performed by others unknown to the women, or the protection of the women's exposed bodies during examinations. The *Personal room* was facilitated when the care provider respected the environment as the women's and not the institution's.

Several of the care providers mentioned that the atmosphere in the New room affected their working environment positively, changing the way they walked and talked, and made them feel relaxed and separated from the stress outside. However, some of them felt uncomfortable in the room as they had a well-established way of working in the Regular room. Working in the New room could cause feelings of uncertainty, mainly due to that they were unaccustomed to the room and felt unprofessional when they could not find the things they needed. Maintaining the *Personal room* seemed dependent on the care providers' sensitivity to the effects that the New room could possibly have. Even though care providers initially seemed to be affected by the relaxing atmosphere in the New room, the institutional demands often tended to dominate the atmosphere as soon as the birth process departed from the standardised *Birth Manual*. With the authoritative guidance of standardised procedures in accordance with the *Birth Manual*, the care providers could thereby counteract the *Personal room*. This, by contributing to an atmosphere of the *Institutional room* where women's agency was decreased.

Discussion

This study explored the influence and meaning of the birth environment for nulliparous women giving birth in either one of two differently designed birthing rooms at a hospital-based labour ward. The main findings demonstrate that the hospital birth culture with its institutional authority managed through the concept of a *Birth Manual* permeated the atmosphere irrespective of the design of the birthing room. The analysis identified two abstract rooms to be significant for the influence and meaning of the birth environment; an *Institutional room* and a *Personal room*.

In exploring the influence and meaning of the birth environment for the women, the analysis identified that it was essential to understand the meaning of the birthplace (the hospital setting), the birth room design, and the human interaction within it. These factors, intertwined, were facilitators for or barriers to the *Institutional room* and the *Personal room*. In line with the 'technocratic, mechanistic and medicalised approach' [5] to childbirth, the *Institutional room* can be metaphorically described as the room where the approach to birth involves the baby being transferred by professionals from a woman's uterus into the outside world. In contrast, the *Personal room* can be explained in line with the concept of 'humanisation of childbirth' [30], whereby the birthing woman's personal needs are highly valued and supported within a safe environment, and with medical interference if required. These different approaches defining the abstract rooms of our study affected the atmosphere and role disposition in the birthing room, and thereby the influence and meaning of the birth environment.

A significant finding of this study was that, irrespective of the spatial design of the birthing room, the hospital birth culture with its institutional authority managed through the *Birth Manual* was ubiquitous, and to varying degrees permeated the atmosphere in both the Regular rooms and the New room. Even though the New room provided a personalised and familiar feeling that facilitated the *Personal room*, it was dependent on the care providers' permissive approach that enabled the women's agency as well as the women's readiness to take ownership over the room. In accordance with findings from a Danish study [31] about women's experiences of giving birth in a redesigned birthing room similar to the New room in our study, the care providers shaped the environment regardless of the room's spatial design. Essentially, maternity care providers working in hospital settings have significant responsibility for creating a safe space for birth signified by birthing women's maintained integrity, control, and ownership [6,9,32].

It has been discussed that medical authority often is favoured in conventional hospital birth settings [6,33,34], and we have seen how this authoritative guidance could counteract the *Personal room*. The complexity of the hospital setting has been discussed as being, apart from a geographic place for birth, a discursive space with power and social relations, often standardised and regulated in line with biomedical knowledge and institutional demands [35]. The care providers in our study tended more to be representatives of the institution, managing birth based on a medical risk perspective. As discussed in previous research [33], the perception of labour and birth as critical and unable to predict necessitates a management of control in order to avoid adverse medical events and reduce the risk of litigation. In our findings, the institutional demands with their medically standardised procedures tended to undervalue the importance of an individualised approach based on the birthing women as autonomous.

In order to understand why the care providers' decisions and assessments often tended to be based on standardised procedures, Foucault's concept of the 'panopticon gaze' could be used [36]. Panopticon is the metaphor for an institutional system of surveillance and control to ensure compliance, which could facilitate the understanding of structured power relations within the birthing room. Being under the gaze of the panopticon means that the subjects' sense of being observed by institutional systems causes them to base their practices and decisions on the expected desires of the institution. Even though the care providers in our study were not physically observed at all times, they often approached and guided birth procedures as if every decision would be under future investigation. This practice is also defined as 'defensive medicine' [34], a management approach influenced by anxiety regarding subsequent errors and blame.

The concept 'Paradox of the institution' [24], illustrates how a predominant focus on preventing medical risk may contradict the physiology of birth. It is doubtless that medical interventions, when used on indication, could be lifesaving. However, when used routinely and ignoring the knowledge of the uniqueness in the physiology of birth, there is instead potential for increased risk-taking [24]. For instance when assessed prolonged labour

progresses are managed solely through standardised medical interventions, such as administering synthetic oxytocin to speed up the birth progress rather than creating an optimal environment to facilitate the release of endogenous oxytocin [1]. Routine use of medical interventions could undermine care providers' clinical judgement and, when overused, may do more harm than good [37].

Midwives' being the primary supportive care providers for birthing women and responsible for normal labour and birth, while also being required to follow institutional regulations, could position them between different philosophies of birth [25]. Caring for women in the New room might be challenging for them, as the spatial atmosphere signifies a birth philosophy that might not adhere to the rules of the institution. The midwives seemed to stand at the borderline between being with the institution and being with the woman to meet her individual needs [23]. This borderline situation occurred due to the ruling institutional demands to follow the *Birth Manual*, despite midwives having the knowledge about the importance of individual and continuous support for birthing women. The midwives may intend to be with the woman, but the institutional demands make it challenging when, not at least when they have to simultaneously care for more than one woman in active labour.

The 'birth territory theory', developed by Fahy & Parratt [9], describes the 'Surveillance room' and 'Sanctum' as two contrasting birth spaces with characteristics similar to those of the physical rooms in our study (the Regular rooms and the New room). The physical features of the 'Surveillance room' metaphor are characterised by the facilitated control of women during birth, while the 'Sanctum' aims to protect women's privacy, comfort, and emotional wellbeing. The Regular room, similar to the 'Surveillance room', was described as denoting a clinical environment with a dominating hospital bed and enabled access to medico-technical equipment. That a clinical environment could lead to birthing women adapting to the signals of abnormality, and constitute them as passive participants in their own labour and birth, has been discussed in several previous studies [6,10,32]. Stenglin & Foureur [3] offer insights into the understanding of the relationship between the subject's sense of security and 'bound and unbound spaces'. Being restricted to medico-technical attachments is an example of being 'too bound', which is suggested to cause feelings of insecurity and even of being smothered, due to coercive restrictions on spatial mobility. The New room, similar to the explanation of the 'Sanctum' [9], on the other hand promotes a certain kind of birth philosophy that strives for optimal physiological function for the complexity of birth [1]. This, as the room offers multiple choices that promote an upright position, but also as it is in line with a described 'bound space', meaning a protected and private space that has the potential to provide feelings of safety, security, and maintained integrity [3].

As discussed in previous research, the domesticity of a room could offer the possibility to facilitate birthing women's confidence and agency [10]. However, the discourse of domesticity within the hospital birthing room does not necessarily imply agency and autonomy for birthing women. The women in our study described that, as labour pain increased their vulnerability, the importance of the spatial design gradually decreased and they depended more on those supporting them. In order for them to maintain their agency, care providers needed to enable the women to respond to their spontaneous bodily sensations. Making decisions based on women's needs and choices is a form of integrative power that facilitates birthing women to feel empowered [9]. As characterised by the *Personal room*, this integrated power can be used by midwifery guardianship [9], enabling the woman to have an undisturbed and physiologically safe birth with retained agency.

In contrast, care providers can use disintegrated power [9], which is in line with the authoritative guidance through the *Birth Manual* that affected the atmosphere in the *Institutional room* of our study. This form of manipulative power is significantly detected when women offer resistance, as presented in our findings. The disintegrated power requires that the woman become docile and behave like a 'good patient', complying with the demands of the institution [9]. The women's acceptance and normalisation of authoritative guidance of birth procedures, as signified by the *Institutional room*, seemed to contribute to their undertaking a submissive and passive role in the birthing room. Telling a woman that she is not labouring quickly enough communicates to her that this birth belongs to the care providers and thus that they control it. In addition, birth procedures could be presented as critically indicated for the unborn babies' lives, which makes it impossible for the women not to accept the authoritative guidance.

Previous research has identified [38] that women's approach to birth as being a condition in need of advanced medical care makes their own knowledge and experience superfluous compared to the professional expertise. The medical knowledge and the power of knowing how to use the inevitable technology possibly extends the care providers' authority. Women in our study highlighted that the medical control could occasionally convey a sense of safety.

Foucault [36] describes the docile body as being under subjugation, possible to convert and manipulate. Through disciplinary power, this 'body as a machine' could, through the presented subtle but coercive methods, conform to the demands. Feminist analysist Cohen Shabot [39] argues that the medical authority mediates birthing bodies to be compliant. With the structures that are discussed as being embedded within the conventional hospital birth setting, the 'noisy and powerful' birthing body could be seen as a threat to the feminine norms of passivity and obedience [39]. These analyses could offer insights for understanding the women's desired needs to behave and conform to the passive disposition signified by the *Institutional room*. Women described an expectation of the cultural norm of, for instance, giving birth in bed led by professionals, as this is the image they said is presented in media and in birth stories, which has also been discussed in previous research [32].

The disintegrated power that dominated the *Institutional room* can cause women to feel disempowered [9] and guilty, as was described by some of the women in our study. In contrast, experiencing an environment signified by the *Personal room* could increase the women's sense of giving birth under their own power given that, no matter the outcome, they participated in decisions regarding the birth procedures. Research has shown that participating in decisions, specifically in situations in which interventions are indicated, is strongly associated with a positive childbirth experience [11]. It has also been shown that perceived control during birth is one of the main variables for women's satisfaction with childbirth and is correlated with long-term maternal wellbeing [40].

Methodological strengths and limitations

One strength of this study was that the participant observation allowed for detailed descriptions of the human behaviours within the birthing room. Grasping an atmosphere and describing human interaction in detail would not have been possible if we had only conducted interviews. Combining the observations with interviews gave a rich data set that provided different perspectives on the studied phenomenon. The follow-up interviews, however, deepened our understanding of the women's experienced meaning of the birth environment as they allowed for the clarification of possible misunderstandings or the confirmation of observations.

Still, when interpreting the findings of this study, it should be considered that it also has methodological limitations. For instance, the method of participant observation may have had implications on the participants' behaviour, described as the Hawthorn effect [19]. Being aware that there is an observing researcher in the room may have made the birthing women, companions, and care providers behave differently. On the other hand, participants tend to forget that the researcher is present, as the researcher often becomes part of the environment [20]. Both of the data-producing researchers were insiders in the field; this situation can be problematic and lead to personal biases due to presumed understandings of the studied phenomenon [29]. Consequently, the perspective could be represented from the professionals' point of view rather than that of the birthing women. To manage these challenges, the risk of personal bias was identified early on in the regular team discussions. Having an outside researcher with a critical analytic perspective was also important for promoting the credibility of the analysis [29]. Considering that ethnographic analysis is iterative [19], there was a possibility to discuss concepts and themes with the other researchers regularly, which enabled a maintained reflexive and critical perspective on the analysis.

Being an insider in the field also had significant benefits, such as having enabled access to the study setting, being accepted by participants and care providers, and having a profound understanding of the language and culture within the setting, while also feeling familiar in the environment and in birth situations. The insider experiences enabled the researchers to 'blend in' in the environment, which is a vital part of doing ethnographic fieldwork and analysis [19].

A strength of the study was that women originating from different parts of the world were observed and interviewed in-depth, which provided a spread in cultural perspectives and understandings of birth. It should be emphasised as a limitation, however, that all of the women were nulliparous and that the majority of them were provided epidural analgesia and synthetic oxytocin for augmentation of labour contractions, and thereby could present similar birth experiences. The reason for this might be that women in straightforward, spontaneous labour and intense pain were unable to give informed consent to participate in the study. To gain a complete understanding of the influence and meaning of the birth environment in future research, multiparous women's perspectives also need to be considered. It should also be noted that the data collection was conducted at a single site, with a relatively small sample size. However, the study gives a localised deepened understanding of the birth culture and its influence in a hospital setting, thereby contributing to previous research describing the institutional culture and the impact it might have on women's childbirth experiences. The findings could also be transferable to similar hospital ward settings, where nulliparous birthing women are cared for.

Conclusion

The analytic concept of the *Birth Manual* controlled and regulated birth procedures in accordance with institutional demands, irrespective of the birthing room's design. Care providers, women, and companions within the environment conformed to the *Birth Manual* to varying degrees, which affected the role disposition, birth practices and atmosphere. In the *Institutional room*, the atmosphere was influenced by the authoritative guidance from care providers and the women's passive disposition in the room, making the *Birth Manual* a profound part of the decisions and practices. The impact of the institutional culture that permeated the birth environment meant that the *Birth Manual* was also present in the *Personal room*. The difference was that the atmosphere in the *Personal room* was rather influenced by the care providers respecting birth as a life transitional event, acknowledging the agency of the birthing women. Thereby, care providers, women, and companions continuously needed to consider the *Birth Manual* by either following it strictly or resisting it, which signified the atmosphere in the abstract rooms.

The birthing women's agency does not necessarily seem to be associated with a familiarised, personalised, and adaptable physical environment. Particularly, as the meaning of the birth environment predominantly depended on the given support, sense of safety and control. The women's retained agency seems rather associated to the birth philosophy approach and the care given. To increase women's sense of agency and satisfaction with childbirth, we need to fully understand the importance of the influence and meaning of the birth environment in hospital-based labour ward settings with a medical risk perspective that values surveillance of and control over birthing women and babies. Thereby, maternity care facilities need to not only modify the spatial design of birthing rooms to make them familiar and comfortable for birthing women, but also incorporate a woman-centred, personalised birth approach. Further research on how this approach could be implemented within maternity care facilities is required in order to reduce power imbalances and to increase women's sense of agency and satisfaction with childbirth.

Author statement

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Ethical statement

Ethical approval for the study was obtained from the regional ethics board in Gothenburg, date 28 June 2018 (d.nr 478-18).

Conflict of interest

None declared.

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CRediT authorship contribution statement

Lisa Goldkuhl: Investigation, Data curation, Data curation, Writing - original draft, Writing - review & editing. **Lisen Dellenborg:** Methodology, Validation, Data curation, Writing - review & editing. **Marie Berg:** Conceptualization, Methodology, Writing - review & editing, Project administration, Funding acquisition. **Helle Wijk:** Conceptualization, Writing - review & editing. **Christina Nilsson:** Conceptualization, Methodology, Investigation, Data curation, Writing - original draft, Writing - review & editing, Project administration.

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