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"Putting the baby back in the body": The re-embodiment of pregnancy to enhance safety in a free-standing birth center

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ABSTRACT

The general discourse in most countries is that technological surveillance during pregnancy and childbirth is synonymous with safety, while women's individual experiences are less likely regarded as critical. The aim of this ethnographic study at a birth center in Germany was to describe how midwives and their clients construct risk and safety. The data collection methods included participant observation and semi-structured interviews. 'Putting the baby back in the body' was the major theme that emerged, supported by three sub-themes. The women in this study relied on scans at the beginning of pregnancy to make their baby real to them, but became more confident in their capacity to sense their baby after experiencing the first fetal movements. The midwives fostered this confidence by using interactive palpation of the abdomen with the women, thus supporting their individual sensory experience, and, in the midwives' view, enhancing overall safety during pregnancy and at birth.

Introduction

The author of a German midwifery textbook from 1892, a notable obstetrician at the time, wrote that, when the information provided by a pregnant woman concerning her menstrual cycle, fetal movements, and the descent of the fetus into the pelvis (lightening) conflicted with the physical examination of the midwife, then the midwife should disregard the woman's physical knowledge and experiences (Dohrn, 1892). This approach, whereby the practitioner's expert knowledge takes precedence over the 'lay' knowledge of the pregnant woman, has become commonplace since the advent of ultrasound technology, which became customary in the 1980s in industrialized countries (Harris et al., 2004). The use of ultrasound technology in antenatal care became mandatory in Germany in 1979 (Erikson, 2007). With ultrasound, women's physical sensations during pregnancy are rivalled by what is considered hard evidence: the visualization of the fetus on a screen (Mitchell, 2001). Smythe's research on safety during pregnancy showed that there is often a discrepancy between the experiences of pregnant women and the interpretation of these experiences by their medical practitioners (2010). Calling into question physical experiences and knowledge of a patient to foreground technologically produced evidence is at the core of biomedical practice, and through reductivism, leads to de-personalization and disembodiment (Davies, 2006).

In high-resource settings, staff working in maternity services tend to use technology and digital data as part of standard care provision (Declercq et al., 2007; Maffi, 2016). Technologically assessed data during pregnancy is most often utilized in the context of risk assessment, generating the need for continual reassessment in our era of medical neoliberalism (Fisher, 2007). In neoliberalism, health becomes a product that cannot only be bought; it is expected that the patient invests in herself by investing money and time into her health. Self-governance and healthy choices are expected, whereby risk avoidance is paramount (Rasooly et al., 2020). In risk-averse systems, standardised statistical population norms are re-interpreted as the limits of what is normal (not pathological) for each individual (Sandall et al., 2010). Those with measurements outside of these statistical norms are then seen as, by definition, likely to experience pathology, and therefore 'at risk' (Downe and Stone, 2020). This is a category error, and it tends to be reinforced when data are collected by, and interpreted through, technical algorithms that are, themselves, a function of standardised protocol ((Downe, 2006) Subsequently, individual, experiential, embodied knowledge is downvalued (Smythe, 2010). In a maternity context, this potentially disturbs women's confidence in their ability to enact pregnancy and birth as a normal, safe, physiological process, while also undermining the capacity of caregivers to support women in this endeavour (Akrich and Pasveer, 2004; Davis-Floyd, 2018; Scamell, 2011).

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When women are asked to participate in the process of decision-making in matters concerning their pregnancy and the birth of their baby, they are often presented with data, risk evaluations and potentially uncertain and unsafe situations that could develop (Spoel, 2006). These data are presented in clinical terms and privilege the authority of the caretaker in the decision-making process (Davis-Floyd, 1994; Harris et al., 2004). The uncertain situations that are presented to the woman create a future scenario that serves as the context in which to find a solution for action in the present. Although this takes place within the discourse of personal safety, solutions are framed on the basis of generalized population level statistics. In doing this, the inner resources that the women have, including their closeness (physically and emotionally) to their baby, are often ignored (Lupton, 2013). In addition, issues presented within the context of risk aversion conversations between medical professionals and childbearing women illuminate future risky situations, thus creating fear (Scamell et al., 2019; Lupton, 2013). The future situations feel real, even those not rooted in physical reality (Giddens, 1990). Creating the circumstances for women to make decisions requires more than just calculating probabilities. It also means helping women to access their own inner knowing and experiential understanding (Davis-Floyd, 2018). From this perspective, safety is a dynamic, interpretive act that occurs between pregnant women and their healthcare practitioners, whereby women are listened to and believed (Smythe, 2010).

Women planning to give birth at birth centers or at home are often thought to be technology averse, aligning themselves with ideals associated with natural birth or a so-called non-medicalized birth (Davis-Floyd, 2018; Thompson, 2005; Westfall, 2016; Wood et al., 2016). Additionally, in many studies, notions of naturalness concerning the pregnancy and/or the naturally unfolding process of birth, are set in opposition to technology (Aune et al., 2015; Brubaker and Dillaway, 2009; Chadwick and Foster, 2014; Crossley, 2007; Davis-Floyd, 2018; Westfall, 2016). Thus, in general, women who choose to birth at home or in a birth center are usually typified as having the desire to accomplish pregnancy, labor and birth in a low-technology environment without interventions such as routine ultrasound scans, continuous fetal heart monitoring, epidural pain relief, vacuum extraction, and caesarean section (Thompson, 2005). A birth center was therefore seen as an ideal location to explore notions of safety for those using and providing care that seems to be counter-cultural for current norms of childbirth in high income societies.

Antenatal care in Germany

The initial debate in Germany surrounding the best professional for antenatal care seemed to fall innately into the hands of obstetricians (Schumann, 2009). One reason for this was that the midwife's scope of practice did not include authorization to draw blood or treat pathology. Obstetricians used blood tests at that time to diagnose a pregnancy, making it impossible for midwives to objectively confirm a pregnancy in the first trimester (Schumann, 2009). Continuing into the 1970s, the examinations that were becoming routine and expected features of antenatal care, such as ultrasound, were thought to add an aspect of safety to pregnancy and birth planning, and impeded antenatal service delivery offered by midwives, since midwives did not (and still do not) perform diagnostic ultrasound examinations (Baumgärtner and Stahl, 2005; Lüdemann, 2015; Schild et al., 2008). In addition, it is not common knowledge that midwives provide antenatal care. This is thought to be one of the reasons that prevents women from booking antenatal visits with midwives (Lüdemann, 2015; Stahl and Hundley, 2003). In recent years, obstetricians in Germany have refused to share antenatal care with midwives, stating that "obstetricians carry the full responsibility for care in pregnancy. A midwife may offer antenatal care according to the maternity policy guidelines if she is working part- or full-time in an obstetric led practice" (Halstrick, 2015).

Research aims

This article is based on an ethnographic study conducted at a free-standing birth center in Germany. The research aim was to describe how midwives at a free-standing birth center, and the women registered to give birth there, perceived and created notions of risk and safety.

Reflexivity

Knowledge of the background of a researcher or research team informs readers of potential bias. The first author conducted this research as a PhD student from 2013-2019. At the beginning of the study, NIS had been a state-certified midwife for 13 years and had extensive experience working in hospital maternity units and at a free-standing birth center. NIS had previously conducted a study in a free-standing birth center in 2009-2010 (Stone, 2012) and was motivated to continue research at these sites. As a midwife who was still working in a birth center during the research period, it was necessary for NIS to maintain a reflexive journal while conducting research at a site similar to her workplace. The ethnographic researcher in a foreign land is a naïve observer. Where this is the case, it is believed that the researcher might be less prone to bias as opposed to the researcher gathering data in a familiar environment (Hammersley and Atkinson, 1995; van Ginkel, 1994). Conversely, the symbolic interactionists at the so-called second Chicago School at the University of Chicago, starting after the Second World War (Becker, 1999), conducted research in familiar urban environments, thus changing the fiber of ethnographic inquiry (Deegan, 2001). Rock (2001) wrote: "Interactionist ethnographers are not naïve empiricists. Quite the reverse. … Research is not passive or neutral. It is interactive and creative, selective and interpretive, illuminating patches of the world around it, giving meaning and suggesting further paths of enquiry".

In order to be aware of issues of bias, NIS consistently practiced reflexivity while writing fieldnotes (Hammersley and Atkinson, 1995). Where NIS felt there was a conflict between her own practice of midwifery and that of the research participants she was observing, she made additional notes to reflect on her criticism of the situation as she had perceived it and discussed these with her doctoral supervisors (authors 2, 3 and 4). In some cases, NIS discussed differences in practice with the midwife-research participants at the birth center, since one purpose of reflexivity is to make sure that the findings are grounded in the data and reflect the beliefs of the research participants (Lincoln and Guba, 1985). A strong advantage for NIS was that she was readily accepted and trusted. She was given access to spaces and events, such as births, which are profoundly intimate and private.

Participants and recruitment

Before beginning the study, NIS attended a team meeting at the research site and gave a presentation outlining aims, proposed methodology, methods for data collection, and planned course of research, including issues surrounding participant inclusion criteria, ethics, and data protection. The midwives decided as a team to allow NIS to be present for research purposes. Each midwife gave individual consent before the commencement of data collection.

The inclusion criteria for the midwife participants were that they worked at the birth center and consented to being observed. At the birth center, midwives worked in different capacities including administration, antenatal care, birth assistance, class instruction, and management. Some of these roles overlapped, for example, all midwives who attended births were expected to carry out administrative duties. However, there were also several midwives who worked solely in an administrative or management capacity who did not attend births. Lastly, several midwives joined the team during the research period. They were given study material and also gave their consent to be observed.

The women registered to give birth at the birth center who participated in the study were recruited in two phases over a period of eight months. In the first phase, convenience sampling was used to recruit participants. When NIS was in the birth center, the midwives asked each woman who had an appointment and met the inclusion criteria if she could be present at the appointment. In the second phase, purposive sampling was used to recruit women to assure a variation in background and previous experiences of study participants based on the emerging data.

The inclusion criteria for the pregnant women in the study were that they were registered to give birth at the birth center and were over 18 years old. While NIS attended appointments and classes with pregnant women at the birth center who were at different stages in their pregnancies, the semi-structured interviews all took place after the 34th week of pregnancy. Women who did not speak German or English were not approached to participate in the study. The postnatal interviews were conducted between 6-8 weeks postpartum. The women chose where they wanted the interview to take place.

The pregnant research participants, in addition to being referred to with pseudonyms, are further described in terms of the number of pregnancies they have had and the number of children they have birthed. The letter '*g*' has been used to illustrate how many pregnancies the woman has had ('gravid' is the term for being pregnant) and '*p*' has been used to illustrate how many live births she has had ('parity' is the term used to denote how many live births a woman has had). Therefore, g2p1 means that the woman has been pregnant twice, once being the current pregnancy; her previous birth resulted in a live birth. The annotation g2p0 means that a woman has been pregnant before the current pregnancy, however that pregnancy may have ended in a miscarriage, stillbirth, or termination.

Ethics

Ethics approval was given by STEMH at the University of Central Lancashire, unique reference number STEMH 212.

To comply with ethics and data protection regulations, information and descriptions that could reveal the identity of the participants or the research site have not been used in this article. This includes the location and layout of the research site, the place of study of the midwives, their age, and the number of years they have been practicing, as well as birth dates of the babies. Information that could lead to identifying the birth center has also been excluded. All participants mentioned in this article have been given pseudonyms.

Methodology and methods

Ethnography and Symbolic interactionism

This ethnographic study was conducted with the aim of describing the perceptions and construction of the notions of risk and safety from the perspective of the midwives who worked at the research site, a free-standing birth center in Germany, and the women registered to give birth there. Semi-structured interviews, conversational interviews, and participant observation were utilised to understand how the study participants individually and collectively expressed, understood, and interacted around the notions of risk and safety. Creating taxonomies, as described by Spradley (1980), guided data analysis and subsequent data collection, as well as thematic analysis (Braun and Clarke, 2006). Data that were collected in conversational and semi-structured interviews led to a deeper understanding of the pregnant research participants' experiences and meaning-making, as well as aiding to guide NIS in her observations of the interactions between the midwives and the women.

Symbolic interactionism

Symbolic interactionism (SI) was chosen as the theoretical perspective, which is aligned with a social constructionist epistemology. In SI, individuals create meaning through their interaction with one another, as well as with objects and places. Herbert Blumer, who wrote the seminal work on SI, wrote that: (1) ...human beings act toward things on the basis of the meanings that the things have for them; (2) ...the meaning of such things is derived from, or arises out of, the social interaction that one has with one's fellows; (3) ...these meanings are handled in, and modified through, an interpretative process used by the person in dealing with the things he encounters (1969/1986, p. 2). Blumer believed that interviews with research participants were necessary in order to reveal the participants' understanding of phenomena, especially in contexts where observations were not possible, as was the case in this study with the pregnant participants' antenatal appointments with their obstetricians. However, Blumer also considered the observation of interactions to be essential in the study of lived experience.

Nature of the research site

The birth center offered a context wherein it was possible to observe the interactions between midwives and women, and their interactions with pregnancy, the artefacts of pregnancy constructed within and outside of the birth center, and birth itself. The research site was a free-standing birth center in Germany. Birth centers are independent institutions that offer primary care for pregnant and birthing women. The birth center where NIS collected data required women who wanted to give birth there to attend an informational evening before they could register. At this event, they heard about the inclusion and exclusion criteria for giving birth at the birth center, as well as a description of the services offered (i.e. antenatal care, 1:1 care at birth, access to midwives 24/7) and those that weren't offered (i.e. ultrasound scans, epidural anaesthesia during labor, continuous fetal monitoring, caesarean section). Most women attended the informational evening at the birth center before their 10th week of pregnancy. Their actual registration at the birth center took place after the 15th week of pregnancy. Some women registered later in their pregnancy, having acquired a spot from the waiting list after a woman was either risked out or had decided against a birth at the birth center.

There were two rooms set up for births that also doubled as rooms for antenatal appointments. The larger birthing room had a bed that was set back and rarely used during labor and birth. A mat was placed on the floor during births next to the bed where most women labored if they were not in the birthing tub. A cloth hung from the ceiling above the mat that women used in different ways to support themselves when laboring in upright positions. Along the back wall of the room was a cabinet where emergency equipment was kept out of sight. Next to this was a sink. The layout of the smaller birthing room was similar, however, because of the size of the room, the bed had a more prominent position. The smaller birthing room did not have windows, while the larger room had windows with the possibility to control the amount of light that came into the room through blinds. The layout of the birth center made it possible to hear births in every other part of the birth center, including the kitchen/midwives' break room and the course rooms. NIS was allowed access to all of the rooms at the birth center, and always received consent before attending appointments and births.

Data collection

This study was done within the framework of a doctoral program. Data collection took place between June 2014 and March 2015. The doctoral thesis was completed in 2019. During the data collection period, observations were made throughout the birth center. Semi-structured interviews were recorded in German (one interview in English) on a hand-held digital recording device. After listening to each interview in

full, NIS transcribed the interviews verbatim, and translated excerpts from interviews that were used for this publication.

NIS wrote field notes by hand in field notebooks. At times when it was appropriate to be sitting at her laptop, NIS wrote fieldnotes on a password protected laptop at the birth center. At the end of each observation period, the handwritten fieldnotes were reflected upon and became part of the reflexive account of the observations (Emerson et al., 2011). The fieldnotes written or typed at the birth center were always written up more extensively after each observation period at the birth center.

Transcripts and field notes were analysed manually (without the use of software) with an inductive approach according to thematic analysis (Boyatzis, 1998; Braun and Clarke, 2006). Analysis took place between periods of observation, and informed subsequent data collection as themes emerged. Between observational periods, time was spent reflecting on and analysing data, allowing "a dialectical between data collection and data analysis" (Hammersley and Atkinson, 1995). The data and emergent themes were discussed with SD, FCD, and BKR.

SI, as the theoretical perspective, informed the choice of data collection methods. The data collection methods, (planned interviews, conversational (spontaneous) interviews during topic-related events and participant observation), were employed to focus on the interactions between the women and their artefacts during pregnancy (i.e. mother's record book, scans, appointments), between the women and the midwives, between the midwives and the unborn, and between the midwives themselves as these related to risk and safety. The interactions that the first author had with all of the research participants, which was documented in the first author's reflexive journal, added an additional layer to the afformentioned data. This approach allowed NIS to gather information concomitant with the lived experience of the study participants (Prus, 1996). Miles and Huberman assert that the researcher is a witness to "chronological flow, (seeing) precisely which events led to which consequences and derive fruitful explanations" (1994, p. 1).

In this sense, SI as a theoretical perspective informed the choice of data collection methods, as well as informing the unit of observation (interactions). Thematic analysis was an appropriate analytic method, since it recognizes the active part that the researcher plays during data analysis (Braun and Clarke, 2006). In that thematic analysis is aligned with a social constructionist epistemology, "patterns are identified as socially produced" (Braun et al., 2006). This relates to the researcher in the field, as well, who is always choosing where to look and deciding which data is worthy of collection. This process continues into thematic data analysis. Boyatzis writes that "Recognizing an important moment (seeing) precedes encoding it (seeing it as something), which in turn precedes interpretation" (Boyatzis, 1998). These three steps describe the process of thematic analysis, the chosen data analysis method:

(1) Perception of a pattern: '*seeing*';
(2) Classifying or encoding the pattern: '*seeing as*';
(3) Interpreting the pattern (ibid, p. 3-4).

Lincoln and Guba write that inductive data analysis is "a process for making sense of field data" (1985, p. 202).

Findings

Twenty-seven women were interviewed antenatally and postnatally. One additional woman was interviewed postnatally who had given birth before her scheduled antenatal interview and had requested to be interviewed postnatally. Seven births were observed. All of the midwives working at the birth center consented to being observed. Semi-structured interviews were conducted with 17 midwives and, in addition, one midwife who was responsible for the quality management system and currently on maternity leave. NIS conducted all of the interviews and observations.

The major theme that emerged from the data was: 'Putting the baby back in the body'. This was underpinned by three sub-themes, and show the data journey that NIS experienced during data collection and analysis.

"*It's better if you look at the baby, safer*": The wonder of ultrasound scans;

"*It becomes more real*": Reassurance through experiencing fetal movements;

"*I think he knows you*": Re-embodying pregnancy.

"*It's better if you look at the baby, safer*": The wonder of ultrasound scans

Except for one woman, all of the pregnant women interviewed began their antenatal care with an obstetrician between the 5th -7th week of pregnancy. In Germany, women customarily go to obstetricians for their antenatal care, even if they are registered at a birth center. The first appointment for every woman who had managed to get on the registration list at the birth center was scheduled after the 12th week of pregnancy. After this initial appointment, the women were offered a choice by the birth center midwives to have some or all of their antenatal care with the birth center midwives. The choice for provider for each appointment was made by the women, however many of the women explained in their interviews that their obstetricians were not willing to share antenatal care with the birth center midwives.

Thus, despite having registered with the low-technology birth center, the participants had an average of 8 scans antenatally. They frequently raised concerns about the results of antenatal scans during their appointments with the midwives at the birth center, as well as asking for clarification about comments made by their obstetricians. As a result of this, NIS asked the women during their semi-structured interviews to describe their antenatal care with their obstetrician and with the midwives at the birth center. In each interview, NIS went over each antenatal appointment that was documented in the mother's record books with the women and asked them to describe what had transpired. The women explained that the obstetricians used ultrasound at almost every appointment throughout the pregnancy to check the position of the presenting part of the fetus (head or breech), to measure the approximate weight of the fetus, and to listen to the fetal heartbeats. However, the obstetricians hadn't documented these scans on the pages in the mother's record book reserved for ultrasound scans.

These interviews added background information vital to understanding the antenatal care that the research participants were receiving, as well as contextualizing their needs as observed at the birth center. In addition, it added a more profound understanding of the care offered by the midwives in response. During their interviews, almost all of the women explained that they were reassured and delighted by seeing the fetus or close-ups of fetal organs on the screen. The technology itself, as well as the artefact (the image produced), was readily accepted and sparked awe in some of the women.

One of the study participants, Rachel, had experienced a first trimester miscarriage in her previous pregnancy. In her current pregnancy, she had a total of eight scans, with four in the first twelve weeks. She commented:

> I was really happy at the beginning of pregnancy that I had my doctor. …It was somehow really important to me at the beginning to watch the baby on the screen and have the pictures. And to see, okay, the heart is beating and it is moving and it is growing, and everything is good and as it should be. (Antenatal interview, Rachel, 2g0p)

Vanessa, pregnant with her third child, had given birth to both her previous children at the birth center. She had 6 scans throughout her pregnancy and had this to say about her experience:

> He (my obstetrician) looked a lot (with ultrasound). It's better if you look at the baby, safer, right? (You see) everything's okay. … I was happy that it was done. (Antenatal interview, Vanessa, 3g2p)

This technological approach to confirming the reality of the baby left some of the women feeling comforted for a short period of time after

each scan. However, the visual experience of their screen baby did not bring the women long term confidence, and, like Rachel, they needed repeated scans to watch and hear the beating heart. They could not transform the fleeting visual of the screen baby into an internal resource for a physical or emotional sense of security.

The habit-forming nature of the scans can also be understood through the emotions of wonder and excitement that they engendered. Laura, pregnant with her second child, said:

> I had ultrasound often. He (the obstetrician) did an ultrasound every time I was there, even 3D, without charging me extra for it. … It was a wonder to see the heart, the legs. That one can already really see everything, and see how it develops. This scientific aspect, I find it simply exciting. (Antenatal interview, Laura, 2g1p)

Monique, pregnant with her third child, had 6 scans. When asked about her scans, she told me:

> The doctor is someone who can see with magic if everything is okay. (Antenatal interview, Monique, 4g2p)

The enchantment of being pregnant had a competitor with Monique, a technological rival of sorts. For her, the declaration of the health status of her baby by the doctor was gravely important, since she had been confused by the probability ratios (based on her age) that the doctor had communicated to her in the first 6 weeks of pregnancy and was uncertain if she would give birth to a healthy child. With each visit to the doctor, she hoped that the scan would give her the healthy child she yearned for. She depended on her doctor, who was imbued with the gift to see with magic and to alleviate her fears.

Luisa, who had 8 scans during her pregnancy, didn't feel that there was a contradiction between wanting to give birth at the low-technology birth center and having high-technology antenatal surveillance, since the scans were so enjoyable. She said:

> I have to be honest with you—I found it so nice (to have scans). I'm, you know, to see the baby—it was really wonderful. I'm not, sad to say, that alternative. It's nice, it's simply totally wonderful to see it. (Antenatal interview, Luisa, 1g0p)

Several women had scans with unsettling, pathological results, and needed to return frequently for further scans. Lilly, pregnant with her first baby, was told by her obstetrician that her baby had choroid plexus cysts, small fluid filled structures in the brain of the fetus sometimes seen during mid-pregnancy scans. Lilly told NIS that she 'felt (she) would die' during these scans. She said:

> The ultrasound scans were not nice because we were tense. Cysts in the brain. It was in the 18th week. They said that they were relatively large. When they are that large, the doctor told us, there is the possibility … that the baby has trisomy 21. Or 18? I was told to get checked (by a specialist) in a prenatal center. ... So I had the detailed differential screening there followed by control scans. In the 27th week, there was absolutely nothing more to be seen of the cysts. False alarm! (Antenatal interview, Lilly, Ig0p)

Scans had the potential to fascinate, but also alarm the women. Many of the women who had had multiple scans in the first weeks of pregnancy lost interest in the scans after they experienced quickening, the first sensation of fetal movements. This is the subject of the next section.

"*It becomes more real*": Reassurance through experiencing fetal movements

The interview participants all felt a sense of relief after experiencing the first fetal movements (or 'quickening'). Yvonne, who was having her first baby, was hospitalized for hyperemesis gravidarum (severe vomiting) and requested additional scans so that she could see and hear the fetal heartbeat. She had five scans by the 13th week of pregnancy.

> I was terribly afraid—is something bad happening to the baby? I can't feel him; I have no control. Beginning from the moment when I could feel him—this happened really early on—in the 15th week, everything suddenly changed drastically. I could sense him; I loosened up and relaxed. (Antenatal interview, Yvonne, 1g0p)

Yvonne described how she no longer needed ultrasound scans after quickening to reassure her about the vitality of her baby. She only had two further scans from that point on until the end of pregnancy. In large part, she agreed to these because she felt that they benefitted the bonding between her partner and the baby.

Natalie also felt reassured after sensing the first fetal movements. She described this in the following way:

> (It was) absolutely amazing. … Around the 16th or 17th week I felt them ever so softly, like a fluttering. And I thought that that was for sure my baby moving. Everything was totally different after that, of course, because when you can feel the baby then you know that everything is good. (Antenatal interview, Natalie, 2g0p)

For Dora, quickening indicated the second part of her pregnancy. She experienced quickening around week 17 after having had a relatively difficult time adjusting to the physical changes in what she called the first part of pregnancy. From her interview:

> And, uhm, in the second part of pregnancy, it was sometimes intrusive to always feel the baby but I got used to it. You don't feel as bad as at the beginning of pregnancy, and it isn't as difficult to move around like at the end of pregnancy. (Antenatal interview, Dora, 1g0p)

The women rarely described the phases of their pregnancy according to trimesters, as Dora described in the quote above. A new phase of pregnancy accompanied by a sense of well-being was introduced with the sensation of fetal movements. Annika, pregnant with her second child, had had a particularly difficult time at the beginning of her pregnancy. Her obstetrician conducted the first scan in the 5th week of pregnancy (4 weeks + 2 days). After not finding any evidence of a pregnancy, she scheduled appointments for Annika twice weekly and continued to check for a developing embryo and a heartbeat. In the 8th week of pregnancy, after her doctor was unable to confirm the pregnancy through ultrasound, she sent Annika to the hospital. At the hospital, Annika had a very good experience. The attending physician asked her if she "felt" pregnant, and asked her to describe her physical sensations. After this, she conducted the scan and let Annika hear the heartbeat. Annika experienced this as relief; however, a deeper relief came when she felt the first fetal movements. She said in her interview:

> It was amazing. I felt him the first time in the 15th or 16th week of pregnancy. It was like bubbles that moved across my belly. I thought that it was maybe just air bubbles. I wasn't sure if that was him. And then it got progressively stronger. It was wonderful. Because after that I knew: he's there. He exists. And I knew that everything is okay with him. At that point, I could build a relationship to him. (Antenatal interview, Annika 2g1p)

When women sensed their baby's movements, a new phase of pregnancy began for them, shifting their emotions not just towards their child, but also changing the way they approached their antenatal care, as will be shown in the next section. At the same time, they developed a new skill: the ability to sense the vitality of their child. It was this shift that the birth center midwives fostered during antenatal care appointments.

"I think he knows you*": Re-embodying the pregnancy*

One of the midwives' goals at antenatal appointments was to reassure women who had become subsumed by the taken-for-granted risky nature of pregnancy. They sought to counter this by giving them resources to challenge and transform the ways in which their bodies had been constructed as risk incarnate. As the fetus grew, they utilized what is usually

considered a purely clinical diagnostic procedure, the Leopold manoeuvre, to palpate the abdomen and feel the position and movements of the baby together with the woman. Through this interactive experience, the women were encouraged to pay attention to the physical reality of their baby both internally, and as they felt it through their external touch. This process provided an opportunity for the midwives to reinforce the significance of the women's physical sensations of pregnancy and of the baby. It also enhanced the connection between the mother and baby, as well as the connection between the midwife and the woman, and the midwife and the baby.

Saskia, pregnant with her first child, had been on the waiting list at the birth center. Because of this, she didn't have her first appointment with the birth center midwives until the 25th week of pregnancy. She told NIS during her an appointment at the birth center:

> I thought I could connect with the baby when I saw him with ultrasound, but that was so abstract, the baby, you know, and its position inside me. When the midwife here at the birth center touched my belly for the first time, felt the baby and showed me just how he was lying inside my uterus and how he could move, I suddenly realized something. I could comprehend more; the back is here, the legs here. That gave me the feeling of being closer. (Field Notes, record 16)

The midwives' tactile engagement with the baby also served to create time and space for women to give their account of the physical sensations of their baby and their pregnancy. This provided the midwives with a layer of information beyond the conventional data that were documented in the clinical file. These interactions were also a significant aspect of birth preparation, since one of the ways the midwives wanted the women to get prepared for birth at the birth center was to become confident and aware of their body, not by basing their knowledge solely on the data collected during antenatal appointments, (the outsider's clinical perspective), but from within.

When Annika's labor began, she called the midwife who was on-call, Daniela, and told her that, although she didn't yet have many contractions, she was sure that labour was beginning. Daniela told her to come to the birth center. She then called NIS, since Annika had given permission for her to be present during labor and birth. When Annika arrived with her husband, Daniela escorted them into one of the rooms used for antenatal appointments and connected Annika to the fetal heart monitor. From NIS's fieldnotes:

> Daniela came into the kitchen to get me. She told me that she was okay with me coming into the room. I must have had a questioning expression because she asked me: Why not join us now? I asked her if she had established a relationship with Annika, that I didn't want to disturb their connection. I had had an interview with Annika and knew her better than Daniela. She waved her hand in the air and said: Yes, it's just fine. Annika had hardly any contractions and could talk through all of them. When the CTG was finished, I went back into the kitchen to write notes.

> When Daniela came into the kitchen, I asked her what she would do. Would she send Annika home? Absolutely not, she told me. The reason she gave was: Annika said that she was in labor and would give birth. … Daniela explained that she is sure that she will "find her way into labor"—develop a dynamic, and that the contractions will increase. When I asked her if she had conducted a vaginal exam she told me: There's no reason for it. She said she and her baby are ready for the birth and doing well. (Field notes, record 19)

The midwives listened to the women, often basing their decisions not on results of vaginal exams, but on women's subjective experiences.

Some women had gained enough confidence in their ability to sense their baby that they came to reject fetal monitoring (with the fetal heart monitor or CTG) and scans during pregnancy, in spite of the routine utilization of these at antenatal appointments with their obstetricians. This was the case with Rachel, who, as mentioned above, had a strong need for extra ultrasound scans at the beginning of her pregnancy to see and hear the beating heart of her baby. One of the first appointments that NIS observed at the birth center was an antenatal appointment with Rachel and the midwife Renate. From NIS's field notes:

> Rachel laughs a lot in a jovial way, her laughter coming out in explosions. Renate is mostly talking to her and doing her check-up as if incidentally—not making the measurements the focus of the dialogue. Instead, she is asking questions of a more personal nature that don't seem to have anything to do with the actual examinations. There's a flow to it, as if the measurements are a backdrop to what Rachel has to say. Among other things, Renate asks her how she's feeling and then asks her how the baby is feeling. Rachel answers that she is feeling good, and that her baby is doing well. He's moving around a lot and responds to her touch and to the voice of her partner.

> I was deliberating while I was listening how often I have ever asked a pregnant woman how her baby is *feeling*. (Field Notes, record 2)

Renate continued with the appointment and finished with the external palpation of Rachel's abdomen. Before beginning, she asked her if she knew what position her baby was in. Rachel, without a second thought, showed us where the back was using her left hand, and used her right hand to show us where she felt the most kicks, saying that the feet must be there. From my field notes:

> After this, Renate put both hands on Rachel's abdomen and waited. But for what? Why isn't she beginning the examination? As I sat there wondering, I suddenly heard both of them exclaim: "Ah, there he is!!" Both laughed, made eye contact with each other, and smiled. Renate had been waiting for Rachel's baby to move. When it was time to listen to the heartbeats, Renate used a wooden tool called a Pinard horn. (Field Notes, record 2)

At this appointment, after Renate was finished listening with the Pinard horn (a hollow horn made out of wood or metal by which the midwife can auscultate the fetal heart), she asked Rachel if she wanted to hear the heartbeats with the fetal heart monitor. Rachel declined, explaining that she didn't need to hear the heartbeats since her baby was moving around as usual, and she knew he was doing well. Rachel also informed NIS in her interview that she declined the routine fetal heart monitoring conducted at her obstetrician's office at each antenatal exam after the 26th week of pregnancy. During pregnancy, she had gone from needing visual and auditory proof to know that her baby was doing well to relying on her sensations and the interactions and examinations with the midwives.

The midwives at the birth center believed that helping a woman to cultivate the ability to sense her baby was paramount. The midwife Beatrice explained this to NIS in her interview:

> During pregnancy, with all the women, I work with palpation of the baby. I really tell them: give me your hands. Have you used your hands to touch your baby? Do you know the position he's in? … What is he doing right now? And is there anything he does at specific times; times when he's kicking and when he's not? My thinking is that they'll describe to me the experiences they've had with their baby, and I can at least tell if there is a connection between them. Or she'll say: No, I've never tried to touch him, and, no, I don't know what position he's in, or anything about his movements. And you can take her hands and show her: This is how it works. Trust yourself and reach into your belly. … This is so important. This is what the women don't experience anymore when they go to the obstetrician. And also, that no one shows them that they can touch, they can reach deep into their abdomen, and it doesn't hurt them or their baby. Then they can sense the baby in a new way, and it changes their perception. (Midwife interview, Beatrice)

When Berit visited the birth center for a post due date appointment, the midwife Mathilde integrated a lengthy hands-on session into the usual examinations. An excerpt from NIS's field notes:

> Mathilde rests (her hands) on Berit's belly, waiting, chatting all the while in a friendly manner. After a few minutes, Mathilde and Berit look at each other, eyes suddenly wide open. "Hello! There you are!" Mathilde says. She and Berit share a laugh together. "I think he knows you," Berit says. "It always takes longer for him to respond when the other midwives do this." (Field Notes, record 4)

This deliberate process to help the women achieve an internal, kinaesthetic sense of their baby was also at the heart of how the midwives defined connection. The midwife Tanja summed up what all of the midwives had expressed in their interviews and in the observations made by NIS. She explained:

> Mother and baby do the birth together. It's different than saying that the mother's body works like a machine or that birth is only about birth mechanics. It is an individual process, like every person. And every child brings his/her own personality to the process. The connection doesn't begin the moment that the baby comes into this world, but before. (Midwife interview, Tanja)

Tactile perception of the baby raised the awareness of almost all of the women whom NIS observed and interviewed. This was considered to be a significant factor in creating and maintaining safety during pregnancy and childbirth. Miriam, one of the birth center midwives, explained this to NIS during a conversational interview in the break room:

> You NIS were there the other morning when I started my shift. The woman I was caring for—I didn't have a good connection with her or her baby, and she didn't have a good connection with her baby. When that's the case, all you have to go on to know if everything is okay are the fetal heartbeats. And when you're in a situation like that, everything seems potentially suspicious. You start to think about transfer. I spent a lot of time connecting to her and to her baby, but her connection to her baby didn't improve. Her baby didn't descend (into the birth canal), and I had to transfer her in the end. (Conversational midwife interview, Miriam)

The midwives believed that when the women were able to listen to their body and reflect on physical sensations, they knew the habits, position, and movement patterns of their baby. This, metaphorically, 'put the woman back in her body', while at the same time 'putting the baby back inside the woman' (in contrast to the disembodying effect of ultrasound scanning in the early months of pregnancy): a process that, according to the midwives, created a connection between the woman, her unborn, and the midwife, thus optimising safety for mother and baby.

Discussion

At the beginning of pregnancy, all of the research participants except one relied on ultrasound scans to confirm their pregnancy. This discovery was unanticipated, since, according to the perinatal data collected by Q.U.A.G. (Association for the Quality of Out-of-Hospital Birth) in 2015, of the 11,039 women who began their births at home or at a birth center (aggregated data for both birth places), 77% had apparently had 4 or fewer scans (Loytved, 2016). Metaphorically, the scans took the baby out of the woman's body, while at the same time being promoted (and, for some women, experienced) as a bonding opportunity—an ironic twist of purpose and function (Mitchell, 2001). In Germany, the majority of women go to an obstetrician for their antenatal care (Bauer, 2011; Schäfers and Kolip, 2016), even those who are planning to give birth in birth centers and at home (Loyrved, 2018). This practice, which began in the 1960s when the Statutory Health Insurance Funds began covering the costs of antenatal care with an obstetrician to the exclusion of midwives, continues today (Schäfers and Kolip, 2016; Schumann, 2009; Stahl and Hundley, 2003). Susan Erikson discovered in her study of antenatal ultrasound in two large German hospitals that, while parents-to-be enjoyed seeing the image of their baby on the screen, the German obstetricians she interviewed "complained that the pleasure of looking confounded the medical use of ultrasound as a diagnostic tool: obstetricians use ultrasound to ferret out risky maternal and fetal conditions; parents use ultrasound to see their future children" (2007(Erikson, 2007), p. 22).

The non-medically indicated overutilization of ultrasound in pregnancy by women who also use birth centers for labor seems to be paradoxical, unless one takes into consideration that, for these women, new meanings of risk, safety, and surveillance emerged during pregnancy. The SI approach to data collection and analysis in this study allowed NIS to witness the change, as well as the potential for change that is inherent in all interactions (Plummer, 2000). The women's experiences of fetal movements, especially the first, felt movements, were accompanied by a profound change in attitude towards the tentativeness of the pregnancy (Rothman, 1987), shifting these women's attitudes towards their developing child and the kinds of surveillance they wanted in antenatal care. The midwives were able to reinforce the positive effect that sensing fetal movements had on the women by using abdominal palpation. As a result of this, instead of feeling that they embodied risk, the women shifted to a sense of embodying a healthy pregnancy (Akrich and Pasveer, 2004), which, for the women in the study, was a better reflection of their actual health status and that of their baby.

The creation of the fetus as a discursive object in the 1960s separated the pregnant woman into two objective entities or bio-medical bodies: herself and her future child (Weir, 1996). The construction of the biomedical body relies on the practice of cataloguing objective, measurable and quantifiable evidence in regards to the physical body (Berg and Harterink, 2004; Duden, 1993; Weir, 1996; Westfall, 2016). While the biomedical body can be utilized to understand, diagnose and further the comprehension of physiology and pathophysiology, in the case of pregnancy, it detaches the pregnant woman from her baby, ensnaring her in the neoliberal discourse that gives her a sense of urgency concerning her role in the health of her fetus (Harris et al., 2004). Assuring health becomes dependent on regular scans when pregnancy is governed by models of risk. Fisher writes that "Because they are positioned as having the right to make choices about health care, consumers also have the obligation to utilize whatever products and services are available to ensure health or to treat illness and disease" (2007(Fisher, 2007), p. 64). The bio-medical body as an object of scientific and medical discourse privileges the knowledge of the practitioner and replaces the lived body in interactions between professionals and clients (Duden, 1993; Lyon and Barbalet, 1994/2003). The lived experience of the individual fades into the background, resulting in the construction of a passive agent who is expected to adhere to and behave according to expert advice. Social interactions are constrained as a result, since diagnosis and treatment replace individual, embodied experiences as the substance of information exchange (Lyon and Barbalet, 1994/2003).

This leads to de-personalization of care and disembodiment, as these modes of comprehending the body become embedded in taken-for-granted interactions and in ways of seeing and doing (Duden, 1992, 1993). The self in the body is no longer the focus of medical practice. This happens in the name of safety, since the privileging of clinical understanding of the objectified body and pregnancy seems most rational (Duden, 1993; Oakley, 1980). It is not the relationship between the mother and unborn that becomes the centralizing theme on which care is based, but rather the risk discourses which guide care (Davis-Floyd, 1994). This results in the omission of women's sensed experiences from decisions about care and treatment, and thus, the relinquishment of an authority which comes from inner knowing (Duden, 1992; Rothman, 1982;1984, Smythe, 2010). While women are expected to do everything possible to assure a healthy pregnancy and a safe birth, the pervasiveness of the risk discourse challenges women's agency, creating barriers for the informed decision-making that medical neoliberalism

requires (Cheyney, 2008; Davis-Floyd, 1994; Dubriwny and Ramadurai, 2013).

McLuhan (2013) wrote that the effects of technology are not found in the content it produces, but rather in the changes in the relationships that occur through its use. For example, before ultrasound technology was widely accessible for use in antenatal care, obstetricians palpated the abdomen of pregnant women in order to gather information about the position of the fetus in the womb (Duden, 2002). While ultrasound technology was still in the developmental phase, obstetricians used the scanner together with the information gathered from palpation, since abdominal palpation assisted the physicians in understanding the scan (Tansey and Christie, 2000). Now, abdominal palpation during pregnancy is rarely done in physician-led antenatal care, since it is time intensive and scanning seems to satisfy clients (Peleg and Warsof, 2019). Duden (2002), Mitchell (2001), Rothman (1987) and Lupton (2013) are among the many researchers who have critically described the disembodiment that women experience as a result of antenatal scans. One consequence is the phenomenon of technological quickening. This occurs when the woman sees an image of her fetus before her own sensation of the first fetal movements (Mitchell, 2001).

In this study, we have shown that midwives' efforts to construct safety at the birth center pivoted on increased maternal physical awareness of the fetus as a way to help women get accustomed to the normality of the physiology of pregnancy and birth and, therefore, increasing the possibility that they would notice a change in the health status of themselves or their baby. The antenatal hands-on dialogue between the woman, midwife, and baby acquired an added meaning with respect to birth, since it became the foundation for connection and communication, both of which were seen by the midwives as crucial to safety.

Women who did not have an embodied awareness of their baby were believed to be less able to sense and to relay necessary information about the well-being of their baby to the midwives, leaving the midwives only with technological means to assess safety. Ultimately, this reduced the assessment of fetal health to the fetal heartbeats (Mitchell, 2001). In contrast, if the woman had a good connection to her baby, she could report her sensory experience of the baby in pregnancy and labor, providing a rich and complex basis for understanding fetal vitality and response to stress.

Limitations

For this study, data were collected at one midwife-led free-standing birth center in Germany. Therefore, the findings and insights captured in this study are not immediately transferable to all birth centers in Germany, nor to birth centers in other countries. However, the descriptions and quotes from field notes and interviews can help readers of the study make comparisons in their own context. This may especially be the case in a German context, where birth centers are all subject to the same laws and regulations concerning the structure and equipment that must be on hand. In addition to requirements for basic equipment (i.e. fetal heart monitors and resuscitation equipment), birth centers do not offer interventions during labor (i.e. epidural anaesthesia, oxytocin drips to augment contractions, and caesarean section). Furthermore, obstetricians are not on staff at birth centers, only state-certified midwives. These factors assure that there will be some measure of transferability from this birth center to other birth centers in Germany. However, while the actual structural conditions in birth centers are the same throughout the country, there is variability concerning the distance to the nearest transfer hospital. Hence, if this research were to be done elsewhere, it would be valuable to compare the perceptions and construction of safety in birth centers that have a longer transfer distance than the birth center where this research was conducted, which was, on average, 10 min.

Another limitation was that the first author's physical distance from the birth center prevented her from arriving at the birth center in time for several births. In addition, during data collection, the birth center hired three new midwives. Since the staff needed to focus on training these new staff members, there was less time for them to devote to facilitating access for research. Despite this, the quality and richness of the data collection was sufficient for generating robust ethnographic analysis.

The data for this study were gathered in 2014-2015, and, while 6 years have passed, the findings are still relevant, as the first author has discovered during data collection in birth centers throughout Germany during a current research project. Ultrasound scans are still presently conducted with the same regularity, and midwives and obstetricians are still embroiled in a battle over who should conduct antenatal care.

Conclusion

The midwives in this study believed that by helping women to sense their baby kinaesthetically, their psychological, emotional and physical connection to their baby could be enhanced. Through this, they worked to mitigate what they saw as the disturbing effects of the risk discourse, helping most of the research participants to feel safe with the physiological changes during pregnancy and confident in their connection to their baby and their ability to make decisions concerning birth. In addition, these findings provide an exemplar of how midwives and women together were able to promote and deepen a sense of safety and trust. The pregnant research participants responded well to the lengthy sessions of abdominal palpation, and, due both to the consequent connection to their baby, and of quickening, many felt that they didn't need further non-medically indicated ultrasound scans and electronic fetal heart monitoring in the later stages of pregnancy and during birth. Introducing wider use of concentrated, thoughtful abdominal palpation as a tool for catalysing the embodied mother/baby connection, rather than just as an assessment tool (or, worse, not using it at all) could enhance women's confidence in their ability to judge the wellbeing of their fetus, and improve their capacity to communicate with their healthcare practitioners and to labor and birth physiologically. This study provided an exemplar of how midwives and women together were able to promote and deepen a sense of safety and trust for the women. Such individualised woman-centerd techniques could also provide positive and complementary care for women who experience and need substantial technological surveillance and intervention during pregnancy.

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Nancy Iris Stone: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Writing – original draft. **Soo Downe:** Conceptualization, Methodology, Supervision, Validation, Writing – review & editing. **Fiona Dykes:** Conceptualization, Methodology, Supervision, Writing – review & editing. **Barbara Katz Rothman:** Conceptualization, Methodology, Supervision, Writing – review & editing.

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