The art of hardening without losing tenderness: midwifery and the use of technologies in planned home births[1]

A arte de endurecer sem perder a ternura: o uso de tecnologias por obstetrizes na atenção ao parto domiciliar planejado

Priscila Kiselar Mortelaro Franceschini[a]
https://orcid.org/0000-0002-9253-7096
E-mail: priscilamortelaro@gmail.com

Mary Jane Paris Spink[a]
https://orcid.org/0000-0003-1672-505X
E-mail: mjspink@pucsp.br

Carla Cristina Garcia[a]
https://orcid.org/0000-0002-5075-3129
E-mail: cgarcia@pucsp.br

[a]Pontifícia Universidade Católica de São Paulo (PUC-SP). Programa de Estudos Pós-Graduados em Psicologia Social. São Paulo, SP, Brasil.

Abstract

Introduction: Given the intense medicalization of childbirth and the hegemony of a technocratic model, there is a growing need for professional midwives to promote safe pregnancy and childbirth with minimal interventions. Objective: This study aims to identify the technologies present in the toolbox of certified midwives graduated from University of São Paulo. Methodology: It consists of a descriptive-exploratory study, with a qualitative approach. Semi-structured interviews were carried out virtually with five midwives from August 2020 to May 2021. The material was analyzed using dialogical maps. Results: A very heterogeneous range of technologies was identified, which included soft, soft-hard, and hard technologies. Soft technologies include affection, effective communication (knowing how to speak, knowing how to listen), and bonding. Soft-hard technologies include basic disciplines, scientific evidence, experience, and intuition. Finally, hard technologies include human-made instruments, in addition to the use of the materiality of the body. Conclusions: Midwives tend to use hard technologies when they are unable to achieve the desired effect with the soft technologies they had available, while also using their interrelational resources throughout the entire process. Furthermore, to employ such technological resources, professionals use different kinds of knowledge, without hierarchizing them.

Keywords: Low cost technology; Home childbirth; Humanizing Delivery; Midwifery.

Correspondence
Priscila Kiselar Montelaro Fransceschini
Rua Nita Costa, 12. Salvador. CEP: 40155-000.

1 Financing: Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), Process No. 140189/2018-1.

Resumo

Introdução: Diante da intensa medicalização do parto, evidencia-se a necessidade de profissionais orientadas pela normalidade desse evento, como parteiras diplomadas, sejam elas enfermeiras obstetras ou obstetrizes. Apesar da reconhecida importância, certas especificidades da atuação dessas profissionais ainda permanecem pouco elucidadas. Objetivo: Buscou-se identificar as ferramentas presentes na valise de parteiras diplomadas formadas pelo curso de Obstetrícia da Universidade de São Paulo. Metodologia: Trata-se de estudo descrito-exploratório, com abordagem qualitativa. Foram realizadas entrevistas semiestruturadas com cinco obstetrizes entre agosto de 2020 e maio de 2021, em ambiente virtual. O material foi analisado por meio de mapas dialógicos. Resultados: Na valise das entrevistadas, identificou-se tecnologias leves, leve-duras e duras. Entre as tecnologias leves encontram-se o afeto, a comunicação (saber falar, saber ouvir) e o vínculo. As tecnologias leve-duras incluem disciplinas básicas, evidências científicas, experiência e intuição. Por fim, as tecnologias duras contemplam instrumentos produzidos pela atividade humana, além do uso da materialidade do corpo. Conclusões: Verificou-se que as obstetrizes recorrem a tecnologias duras à medida que não conseguem atingir o fim desejado com tecnologias leves, embora utilizem os recursos relacionais de maneira transversal a todo o processo. Para empregar tais recursos tecnológicos, as profissionais utilizam saberes muito distintos, sem necessariamente hierarquizá-los.

Palavras-chave: Obstetrizes; Parto humanizado; Parto domiciliar; Tecnologias de Baixo Custo.

Introduction

Since the 1950s, the World Health Organization (WHO, 1955) has recognized the importance of training professionals responsible for childbirth care who are compassionate and, despite their universal technical skills, sensitive to sociohistorical and cultural specificities in order to use the resources at their disposal properly and effectively. The history of modern obstetrics, however, has led to the hegemony of a model highly focused on hard technologies, which can only be wielded by medical authorities in places far removed from the homes and communities of women in labor: the hospital (Davis-Floyd, 2001; Spink, 2013; Mott, 2002).

Thus reducing the obstacles and allowing women to be subjected to all sorts of interventions for the convenience of doctors and the hospital. As Diniz (2001) points out, as early as the second half of the 20th century, there was a rapid expansion in the use of technologies aimed at controlling labor, which, to this day, perform the functions of monitoring, triggering, regulating, or accelerating the parturition process. In addition to resources such as synthetic oxytocin, cesarean sections are abundant in Brazil. In 2021, around 58% of all births took place surgically (Brasil, 2023), while rates of more than 10-15% are not justified (WHO, 1985).

According to Davis-Floyd (2001), given the hegemony of the technocratic model and the excesses of technomedicine, a humanist perspective is emerging, which seeks to humanize medicine and obstetrics, making them relational, partnership-oriented, and compassionate, without renouncing the use of technology. In the context of care, the role of trained professionals stands out—whether they are nurse midwives or midwives—in implementing a model of childbirth care that has been recommended by the WHO for more than 70 years This model is defined by the provision of safe care, with as few interventions as possible and the appropriate use of available technologies. As the United Nations Population Fund (UNFPA, 2006) points out, when trained properly and in accordance with evidence-based recommendations, nurse midwives and midwives are key to reducing maternal and infant mortality indicators, guaranteeing

sexual and reproductive rights, and also reducing the excessive medicalization of pregnancy and childbirth.

In Brazil, the majority of graduate midwives are trained by specializing in Midwifery after graduating in Nursing. However, since 2005, the possibility of another training route has been reopened. Linked to the School of Arts, Sciences and Humanities at the University of São Paulo, the Midwifery course trains professionals qualified in the art and craft of midwifery through direct entry to university, reviving the same training model as the School of Midwives of São Paulo, which was attached to the Faculty of Medicine at the University of São Paulo until 1971 (Riesco; Tsunechiro; Leister, 2011). In this context, from the extinction of the School of Midwives until the reopening of the midwifery course, the only possible route for training midwives in Brazil was a degree in nursing, which contrasts with the tradition of training midwives in direct entry courses, common in Europe (Riesco; Tsunechiro, 2002).

According to its Pedagogical Political Project (EACH, 2017), the Midwifery course is structured in accordance with the recommendations of the WHO and the International Confederation of Midwives (ICM). This implies training professionals capable of working in the field of education and promotion of sexual and reproductive health, with a special focus on care during pregnancy and childbirth. In childbirth care, midwives must be able to use technology appropriately.

Based on the guiding question "what technologies do midwives have at their disposal in order to act according to their goals during labor management?" we sought to identify the tools present in the toolbox of midwives who graduated from the Midwifery course at the University of São Paulo (USP). We used the notion of technological toolbox as a theoretical reference (MERHY, 200), taking into account that technologies can be of three different types: soft, soft-hard, and hard. The first relate to the relational space between the caregiver and the person being cared for. Soft-hard technologies, in turn, are the structured knowledge that underpins the decision-making and action process. Finally, the latter include equipment and other instruments endowed with materiality, and are closely linked to the hands of these professionals.

Methodology

The research that resulted in this article is qualitative, descriptive, and exploratory. The interviewees were selected from a list of ten urban midwives provided by a key informant, our first interviewee. The inclusion criteria were training in Midwifery and working in planned home births in the capital of São Paulo. Those who were not available to take part in the research within the time frame stipulated for collecting the information to be analyzed later were excluded. Also due to this schedule, additional contacts were not made with other professionals and, therefore, the recruitment of new participants was discontinued. The initial approach was made via messaging app (WhatsApp) and the interviews were conducted between May and August 2021, after approval from the Research Ethics Committee of the Pontifícia Universidade Católica de São Paulo, obtained in May 2020 (CAAE: 30829520.5.0000.5482, opinion no. 4.031.049).

A semi-structured script was used as a basis. Carrying them out in this way allowed us to guarantee a certain amount of freedom when asking and answering questions, which provided moments of "construction, negotiation, and transformation of meanings," as advocated by Aragaki et al. (2014, p. 62, free translation). In addition to requesting an initial characterization of the training they had received and the field of work they were in, the script used included questions about the interventions these professionals usually carry out to achieve the necessary ends during labor, the tools they have at their disposal to intervene in the process and the knowledge that underpins their decision-making and action, covered in the following questions: (1) what are the principles that guide your practice?; (2) how do you decide that it is time to intervene in childbirth; (3) what technologies do you usually use?; (4) what knowledge or sources of knowledge do you use to assess the situation that requires intervention?; What underpins the decision-making and action process?; (5) in relation to women giving birth, what

is the negotiation process like when you identify the need for intervention?

Considering the pandemic period and the physical distancing guideline, the meetings took place in a virtual environment (via the Google Meet platform) and were conducted exclusively by the first author of this article. At the beginning of each meeting, an informed consent form was presented and, in accordance with Resolution 510/2016 of the National Health Council (CNS), consent was obtained verbally. The online meetings were recorded for later transcription. Each one lasted an average of one hour and comprised only the researcher responsible for conducting the interviews and the professional being interviewed.

After transcribing the content, we used dialogical maps, a tool from the field of social psychology (Spink; Medrado, 2013), to aggregate the statements about the technological resources used in planned home birth (PHB) care into predefined categories in the light of the theoretical contribution on technologies in health work (Mehry, 2000), which are: soft technologies, soft-hard technologies, and hard technologies.

Results and discussion

Before proceeding to present the discursive analysis, it is worth highlighting some of the characteristics of the research participants. In view of our inclusion criteria, they all had higher education in Midwifery, and two of them also had a master's degree. All the interviewees were women and lived in the city of São Paulo, which demonstrates a perpetuation over time of the profile prevalent among people graduating from the Midwifery course described by Trintinália (2011). The majority of those interviewed were White (60%). In addition, they all recognized their status as agents of a movement to humanize childbirth. In order to preserve the professional-statement relationship and confidentiality, we have only used the initials of the midwives interviewed. The statements, grouped according to the categories defined, are presented below.

Soft technologies: welcoming, knowing how to talk and knowing how to listen

For the midwives interviewed, communication was one of their first responses regarding the technologies they use during labor. Relational in nature (Mehry, 2000), this tool plays a key role in identifying the demands and needs of women and parturients.

> *The first thing is to know how to listen. So, listening in the sense of listening to that woman and listening to what she's going through and how she's going through it* (J.).

In this sense, the act of communicating with the woman and person giving birth should be understood as a process of exchange through which midwives interfere in the process. The professionals understand that this dynamic is the main instrument they have at their disposal to meet demands, identify needs, and clearly inform what is happening.

> *In all honesty, communication, my speech, the way I use my voice, is the main thing. It's what I use most to intervene. I say that communication is the most important, because by communicating I can listen to the woman, I can find out what she needs, what she's feeling, what the issue is. And I can also make myself clearer to her.* (G.)

It should be emphasized that communication can change the terms with which parturient women can make sense of their childbirth experience, interfering in the way women experience this moment, making the experience more positive or not.

> *So, the way I talk is one of those things. So, instead of saying that during the contraction she'll feel pain, I say that the contraction is a wave, that she'll go through it, right. So this is something I particularly like. It allows us to move away from this painful and violent childbirth experience to a childbirth experience that just happens.* (J.)

The gesture of communication is sometimes referred to as a dialog. The use of this term can be understood as an attempt to make sense of communication as an inter-relational process of exchange between subjects with transformative potential, distancing these professionals from conceptions that reduce communication to the

transmission of information. It is therefore recognized that dialogue is the first form of effective intervention since childbirth can be understood as a constant process of convincing.

> *In particular, I use dialog a lot. I think dialog is the first way to intervene effectively. Sometimes you have a conversation and you don't need to do anything. You just take the person and say, 'Person, look at me, let's talk. What's going on? What are you feeling? I think that's it. Dialog, I think, is the intervention I use the most. We use it the most together. At all times, we're talking with the woman, right, and doing... Because I think that's it, labor is a process of convincing. You're there all the time convincing that person that she's going to make it, that it's possible.* (M.)

With regard to dialog, it is also argued that it is through dialog that a relationship of trust is established between the woman and the parturient, facilitating the negotiation process in cases of interventions that, at first, are not desired but become necessary. In this sense, open communication about the possible need for interventions throughout the gestational period is key for the midwife's intrapartum work and for women to have a positive experience, even in cases where more invasive interventions are necessary, especially in the management of urgencies and emergencies.

> *It's very difficult for women to get suspicious when you say you're going to transfer her, because you're also going there, you know? Or even when you say: "So, I'm going to break your water because their little heart isn't doing very well," she won't question it, because she knows you're doing what's best for her there. I think it's a different kind of prenatal care, a different kind of bonding. So... And she doesn't feel suspicious also because she knows what's going on. So, we don't hide anything, we're always very frank. They also ask us, right, even in the birth plan, to tell them the truth and we're not ones to lie. So they trust us a lot.* (F.)

> *Little by little I realized that I needed to discuss this with women during prenatal care. Even if it happens 1% of the time, right, so my chance of a postpartum hemorrhage from a retained placenta is 1%, I need to tell her. In fact, it can happen. So during prenatal care, we've talked about this a lot. And when we're actually doing it, we can't be so clear, we can't explain. So, we act and then talk to her about what happened. So, already along prenatal care, she knows that this can happen.* (L.)

Ultimately, the adequate communication of accumulated knowledge about what happens to the parturient body is seen as a *sine qua non* condition for women and other people experiencing this process to be subject to the care offered. This results in a shift in the axis of power in the care offered, including with regard to decision-making and control of the process. However, it must be emphasized that, for midwives, empowerment and self-determination are only possible in a context where every choice is based on quality information provided by professionals.

> *I don't think we can fight for normal childbirth at any cost if the woman doesn't want it. But, at the same time, I need her to have quality information about it. If she has all the information about it, if she can choose freely, I think that's what underpins my practice, that women should be free.* (J.)

> *I think that passing on quality information and this woman being able to have her body know what's going on, during both pregnancy and childbirth, is a kind of empowerment, indeed, of this process that was taken away from us.* (J.)

Recognizing themselves as part of the humanization movement, these professionals' stance reflects the idea that humanizing childbirth involves both welcoming and respectful treatment and respect for the rights to information and self-determination, highlighting the polysemic nature of the humanization movement pointed out by Diniz (2005).

Hard technologies: the body as an instrument and the instrument in the body

When soft technologies alone do not achieve the goal of guaranteeing the physiological progress of labor, professionals move towards the use of harder

technologies to intervene in labor, those which, according to Merhy's (2000) definition, are endowed with materiality.

> *And then if you've listened, talked, hugged, cried, changed the ambience of the household, you know, and you see that something isn't flowing, right? Then we think about doing something of our own. Propose some exercise, a change of position, you know. From then on, you're literally, for me, intervening in the process. Because up to then you're letting the woman walk, be free, turn around, I don't know.* (M.)

Here, the materiality reported as a tool for conducting labor does not completely fit Merhy's (2000) definition of hard technologies as instruments that involve what he called "dead labor" in their production process. The tool they are referring to concerns the use of the materiality of the woman's or parturient person's body through specific exercises and positions, using anatomy in favor of the parturition process.

> *Basically, using the mother's body in favor of the birth. So, positions that the mother does during pregnancy and labor, so that this birth is more fluid, right?*

With regard to the use of the materiality of the parturient body during labor, the professionals refer to the method called *Spinning Babies*, created by American midwife Gail Tully. The purpose of the approach is to offer a third perspective on the dichotomy between technology and nature in childbirth, since, according to the creator of the method, the two need not be mutually exclusive[2]. It is therefore a question of using the materiality of nature itself as a tool for intervention in childbirth, working with the body in new ways. For our interviewees, the aim is to use the body of the baby and of the woman/person in the process of giving birth, before resorting to other hard technologies.

> *It's something that really helps in childbirth, a lot, a lot, a lot. So, understand*ing *with a much more specific eye, knowing that it's not just about the woman pushing and the baby rotating, but indeed, the soft parts of the body, right, the pelvis is very connected, the tendons, how much tension there is in that body.* (L.)

However, it's not just the materiality of the parturient body that goes into these professionals' toolbox as instruments of intervention, but also the materiality of their own bodies. With their hands, midwives can intervene in childbirth in a wide variety of ways. The professionals mention that touch is one of the most used interventions in labor, bringing a sense of affection that gives women resources to deal with the prolonged rhythmic pain.

> *I think touch also helps a lot. Sometimes holding their hand, you know, giving them a massage, stroking their hair, you know? Or letting the person touch you, cry.* (M.)

In this context, touch is the physical contact between midwife and parturient used as a strategy to provide the woman with physical and emotional support. However, midwives also use their hands to perform other types of procedures. One of these is the manual reduction of the cervix, the use of which is very controversial in the field of humanization. In this regard, G. points out that the hands are one of the most versatile and important instruments in her work:

> *The midwife's hands... That's what the midwife is, right, it's all about our hands. It's what we really put into play, you know. And I use my hands in various ways. Sometimes I use my hands just to touch the woman. I use my hands to intervene, in the sense of turning the baby's head, if necessary, reducing the cervix, right, which is when we push on the cervix, causing it to dilate in the finger. So, this is something that we use a lot and that, in college, for example, I thought was awful. I thought 'people, that's absurd.' And it's absurd if it's used routinely.* (G.)

In addition, the midwife's hand will be the first resource used to perform maneuvers in cases of

2 Available from: https://www.spinningbabies.com/about/what-is-spinning-babies/. Access on: July 2, 2024.

shoulder dystocia and postpartum hemorrhage due to uterine hypotonia. In contexts where there is freedom to give birth in non-supine positions, the algorithm A SAIDA[3] recommends that the parturient's body be used to facilitate detachment, resorting to manual maneuvers if necessary (Amorim, et al., 2013). To control bleeding, the first instruments used by midwives are their hands, to perform uterine massage and bimanual compression of the uterus.

If these strategies don't work, the materiality of the body is associated with other hard technologies. To control bleeding due to uterine hypotonia, for example, oxytocin and other drugs are administered. In this sense, other hard technologies are employed, such as the use of uterotonic substances in the third period, in order to prevent bleeding.

> *What else? Uterine massage, medication, you know, in the postpartum period. There are various interventions, getting access, for example.* (M.)

Even so, the use of hard technologies is not restricted to the management of urgencies and emergencies. The midwives interviewed say that they also use them to manage labor, if the attempts with softer technologies have not achieved their goal. In this sense, they argue that, if they consider it necessary, they can resort to artificial rupture of the amniotic sac membranes, also known as amniotomy, a procedure carried out with a specific sterile instrument called an amniotome. Although there is a recommendation that amniotomy should not be used alone in the management of labor, only in combination with oxytocin (WHO, 2018), the home context ends up allowing some procedures to be carried out before the use of drugs such as synthetic oxytocin, given that, in this case, the parturient should be referred to plan B: her reference hospital.

Therefore, in addition to the materiality of the body, there are many of the midwife's tools that fit Merhy's (2000) traditional definition of hard technologies. These professionals also carry their toolboxes to the birth, in the literal sense.

> *Look, if I were to tell you all the stuff I have... I have a car and I drive to births and my trunk doesn't exist for my personal life. When I go to choose a car, I ask how many liters I can fit in the trunk. I don't care how powerful it is, how many kilometers it does per liter, how powerful it is. Laughs. So we have a list, right, of materials and technical resources. So it ranges from oxygen, an oxygen cylinder, of at least three liters. So we always need to check the maintenance of this oxygen, make sure it's refilled every time. So there's... As well as having the material, we need to check that it's complete. So, neonatal resuscitation material. So we have ringer, we have saline, we have equipment. We have medicines, right, so we have syringes, needles. We have specific material for puncture, so Jelco, tourniquet and swab. We also have a kit in case of lacerations, so there's a suture kit, gauze, sterile gloves, xylocaine. So, before the birth, we check all this material and what do I end up taking for the birth itself? The stool, which is something I leave there and if the woman wants to use it, she does.* (L.)

Some of the interventions mentioned by the midwives involve the use of hard technologies that require transfer to hospital if the birth is taking place at home, whose prescription is not the prerogative of midwives and nurse-midwives. These interventions may be necessary both to manage urgencies and emergencies, such as bleeding that is difficult to control, and to manage labor. One such case is the use of oxytocin. The midwives say that this is, in fact, one of the possibilities, always arguing that resources like this are used in cases of real need.

Among the technologies mentioned whose use is not the prerogative of certified midwives are vacuum extractors, forceps, analgesia, and cesarean sections. As long as these are used when necessary, they understand that they are not prohibited in humanized childbirth. In this sense, midwives reported using less invasive resources before resorting to these interventions, but that they are

3 The mnemonic A SAIDA consists of A = ask for help, acquaint the mother, augment the squat; S = suprapubic pressure; A = alter the position to all fours (Gaskin maneuver); I = internal maneuvers (Rubin II, Wood, inverted spin); D = deliver the posterior arm; A = assess the need for rescue maneuvers. With the first three maneuvers, the authors have achieved the conceptus delivery in 90% of the cases. (Amorim et al., 2013)

not ruled out. The point is that they presuppose teamwork, which is not possible in home births.

> *Because I know that if it doesn't work, I'll have to use a slightly stronger intervention, I think, for that. And then the other things are: oxytocin, which I may have to use at some point. Breaking the water is another one. Reducing the cervix ends up being a practice we do. The use of vacuum extractors. I'm not the one who ends up using it, because midwives in our country can't use vacuum extractors, but doctors can. It's just that we end up taking part in this process, yes, just not as the person carrying out the intervention. So, the vacuum-extractor. Forceps are used very little in our medicine, especially in humanized childbirth, but, if necessary, they can be used in some small cases. And cesarean section too, I think it's a good intervention, right, used as it should be used in life. I think that's it, a bit. Oh, and analgesia. It's not my favorite, but it's very good.* (J.)

Finally, the interviewees understood that hard technologies do not replace soft technologies: in other words, instruments and procedures are used in a complementary way to the relational resources they have at their disposal to ensure the smooth running of labor. In this sense, the following case illustrates how the use of soft technologies can guarantee the expected result when using hard technologies after transfer to hospital:

> *I know that I went into her ear and started saying things like that, how wonderful she was and so on. So much so that the doctor noticed that when I said something in her ear that the doctor couldn't hear, she stopped shouting and paid attention, concentrated and was able to push. In the end, she had a very good image of the birth. So, somehow, we managed to make it not a moment of panic and trauma, but to really focus on the fact that her child was being born, that we managed to help her with that vacuum. So, it was both, having the vacuum, but it was very important that I knew what she needed.* (G.)

The situation described above is part of a context in which the parturient woman needed to use her bodily strength to make the instrumental delivery a success, but was terrified during the expulsive period. Given the need for the parturient and the qualified professional to work together to perform vacuum extraction, the use of soft technologies was key to the effectiveness of the hard technology.

Soft-hard technologies: between structured knowledge and other legitimate forms of knowledge production

If we only look at soft and hard technologies, some questions remain unanswered. For example, how do midwives know which type of exercise to use or when? How do they detect situations in which a cesarean section is necessary, such as cephalopelvic disproportion? In this respect, Merhy (2000) argues that there is a set of soft-hard technologies that cuts across the use of soft and hard technologies: structured knowledge. At the very least, it is necessary to master anatomical repertoires, to know the mechanisms of labor and the physiology of this event in order to implement practices that use the body in favor of childbirth, as we have seen these professionals do.

> *I know that, if I change position, I can make this woman have a more peaceful birth, with less pain, or even a quicker one through these exercises. So, in particular, I really like this kind of practice.* (J.)

I know. What is this knowledge? In the optimal fifth term, the course's curricular structure provides that, provided they have fulfilled the prerequisites, students take Physiology of Pregnancy, Childbirth and Postpartum, covering pregnancy adaptations in systems studied previously. In addition, this subject introduces content that will be mobilized directly in clinical practice by midwives, such as the physiology and determinism of childbirth, as well as its clinical periods.

According to the course's political pedagogical project (EACH, 2017), these subjects lay the foundations for specific knowledge about pregnancy, childbirth, and the postpartum period, awakening scientific and critical thinking by proposing an active and cooperative learning process. Following the recommendations and guidelines of the ICM

on the model of care that should be offered by midwives, it is imperative that the promotion of critical and scientific reasoning is present in the basic disciplines, extending to those that prepare professionals for clinical practice. According to the ICM, the ethical and competent care provided by midwives should always be guided by formal and continuing education, scientific research, and the practical application of evidence (ICM, 2014).

Mirroring the political pedagocial project (PPP) of the Midwifery course, our interviewees place scientific evidence as one of the main points of support and legitimization for their daily childbirth care practices. The proposal for care based on scientific evidence is put forward as the principle that guides the practice of this professional category.

> *Today, I only work with humanized childbirth, right, and one of the premises of humanized childbirth is that we have Evidence-Based Medicine as our guide. So we have good studies and new studies coming out about monitoring labor and what should be taken as* [...] *I can't say as common, but as the physiology of that birth should be, right?*

Although scientific evidence guides the work of these professionals, midwives make it clear that home birth care has its own specificities. For example, it is not the average duration of the process, calculated on the basis of a large sample, that will determine how long a labor can last without the need for more resolute interventions. At home, it relies on careful monitoring to assess whether there is a need to use any measures or, on the contrary, to assess whether the situation can be 'carried on' for a while longer:

> *Yeah, we have a few things. For example, in a home birth, we go along. We don't have... we don't work with time, you know. But, of course, if we see that some time is passing and the child, you know, the baby starts to slip up, we'll evaluate it.*

In this sense, midwives are sensitive to what Canguilhem (2009) called the individual relativity of the normal, a principle according to which the normal cannot be trapped in the average, nor reduced to what is most common in a population. In other words, normal childbirth is not necessarily the average childbirth. Therefore, despite their undeniable importance, scientific productions of a quantitative nature are not the only type of legitimate knowledge to guide the entire process of decision-making and action in the daily lives of midwives.

In order to deal properly with the bodies that, when giving birth, call this statistical normativity into question, it is necessary that sensitive knowledge is no longer understood as a source of deception but as valid within the production of knowledge. Those who practice the art of midwifery must not only observe, but also feel and listen to those they encounter, turning to the parturient body in search of uniqueness—apprehensible through easily overlooked details—that can guide care and action in the face of possible complications and even the conscious use of scientific evidence.

> *The childbirth process shows signs for when we need to intervene.* (F.)

In this sense, monitoring vital signs is a great ally for professionals in detecting real risk and, consequently, using interventions to manage this risk and avoid negative outcomes. Detecting them, however, requires dedication and keen senses (Mortelaro; Cirelli, 2021).

Another key aspect is the way in which midwives' work is based on experience. In this sense, it is pointed out that many elements go into the decision to use conducts in labor or to intervene in a certain way, but when it comes to the knowledge involved in the process, the experience is just as important as scientific evidence.

> *First the scientific evidence, you know, our limits as professionals. Women's wishes, you know, and... wow, I was going to say something really important, but it slipped my mind. I said the woman's wishes, our limits, you know, the scientific evidence. Oh, and our experience. Our experience, I think that it counts for a lot, quite a lot, right?*

Experience is constantly mentioned as one of the central aspects of training as a midwife. In addition to the experience acquired during their own professional practice, the knowledge acquired

by midwives is also closely linked to the experience of other certified midwives.

> *I don't know if it serves for this answer, but I would also add a bit of the practice I had with other midwives. So, accompanying deliveries, accompanying pregnancies and births with other people who were already in practice was very good, because each one brings a bit of their previous experiences and their knowledge.* (J.)

Finally, there is a fundamental aspect to the practice of these professionals that escapes the linear forms of inductive and deductive reasoning that are granted the monopoly of legitimacy in relation to knowledge production in Western societies (Davis, 1989). It consists of intuition as a source of knowledge underpinning the decision-making process and actions of midwives.

> *And there's another aspect too, which is intuition, you know, which isn't so Cartesian, but sometimes you just get the feeling that something isn't right and you don't always have concrete data, you know. The baby's heartbeat is fine, the woman is fine, even progressing, but there's something there that hints at a possible problem. And it won't necessarily be a physical, biological problem, like bleeding. Sometimes it's a question of the woman not being comfortable there, she wants to go to hospital and she's not telling you, for example. So I see these aspects a lot. So I see my decision-making based on what I've studied, I know that this is probably what's going to happen, and there's this other path of intuition. I can't even say exactly which elements, but something isn't quite right, I think we need to do something. So that's how I see it.* (G.)

In this sense, it is argued that, besides all the knowledge provided by the medical tradition and which underpins their training, midwives depend on their intuition to act appropriately, or, in their words, on what they call the midwife's sense.

> *I think medicine is very useful, it can guide us very well, but I still need to use my midwifery sense.* (J.)

This sense refers to a very specific way of thinking that is more akin to a flow of impressions, a variety of elements that professionals connect almost automatically, so that they can act intuitively in labor.

> *I think my brain has put together some dots that my brain connects, that sometimes I don't need to think about it when I'm going to act. We say that 'words come out loose at home birth,' but not really. In fact we've created a line of reasoning and we follow it, you know?*

Intuition presents itself as a way of relating to the knowledge that these professionals have learned, in a fragmented way, about labor, an event which, despite our efforts to simplify it, remains complex. Although the training of our interviewees is still situated within a biomedical model—despite constant efforts to reform it, shifting it from the technocratic paradigm to the humanized paradigm—they have developed the ability to reconnect broken links, bringing together scientific evidence, knowledge produced about the physiology and anatomy of the female and parturient body, clinical signs and other unique elements that relate to each parturition experience.

Final considerations

At first glance, the professionals' work is in line with the recommendations of the World Health Organization, implementing care aimed at keeping the mother and baby healthy and safe, using as few interventions as possible, always in keeping with safety. To this end, they use the technologies in their toolbox, in accordance with professional regulations, be they soft or hard, employing them through careful observation of the process and interpretation of the findings.

In these professionals' toolbox we can find everything from soft, relational technologies to hard, material technologies. The latter include both the instruments produced by human activity—stool, amniotome, needle and thread for suturing—and the very bodies of midwives and parturient women. We were able to identify that professionals resort to hard technologies when they are unable to achieve the desired end with relational technologies, although they use the latter throughout the process.

In order to use these technological resources, professionals draw on very different types of

knowledge, without necessarily ranking them. These include the disciplines that structure university education, scientific evidence, and sensitive knowledge, which come together to form a tripod that supports decision-making. In order to combine such different–and sometimes contradictory–sources of knowledge, intuition seems to play a fundamental role, enabling the knowledge they carry with them to be effectively put into relation when assisting each specific parturition experience. Finally, the experience they acquire through years of practice and with other more experienced midwives allows them to develop the ability to handle and use everything they have at their disposal in an increasingly appropriate and assertive way.

In short, the aspects of attention to PHB discussed and analyzed here are an initial approach to the subject. Although the small number of participants allowed important aspects of the use of technologies to be addressed in depth, the selection of participants by indication and the geographical restriction are limitations of this study. In addition, the restriction to midwives as research subjects may contribute to overlooking PHB care practices employed by urban midwives with other training paths, such as nurse midwives, and who work in other regions of Brazil, if such specificities exist. For this reason, further research is needed to expand the production of knowledge about the technological toolbox of urban midwives and the criteria adopted for mobilizing and using these tools.

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Contribution of the Authors

Franceschini was responsible for conceiving and designing the research, producing and analyzing the data, writing the article, and approving the version to be published. Spink was responsible for supervision, writing of the article, critical review, and approval of the version to be published. Garcia was responsible for the writing of the article, critical review, and approval of the version to be published.

Received:11/30/2023
Resubmitted: 04/30/2024
Approved: 05/28/2024