Women and Birth 36 (2023) e341–e352

Contents lists available at ScienceDirect

Women and Birth

journal homepage: www.sciencedirect.com/journal/women-and-birth

Immigrant women looking for information about the perinatal period on digital media: A qualitative study

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ARTICLE INFO

Keywords:
Emigrants and immigrants (MESH)
Smartphone (MESH)
Mobile applications (MESH)
Digital Divide (MESH)
Access to information (MESH)
Midwifery (MESH)

ABSTRACT

Background: Smartphones' development has allowed continuous access to information about the perinatal period on digital media. Knowing about immigrant women's experience on digital media may help health and social care professionals to fine-tune their care.
Aim: Our primary aim is to analyse how immigrant women experience information about the perinatal period on digital media. Our secondary aim is to discuss how health and social care professionals perceive the experiences of these women.
Methods: A qualitative study conducted in Switzerland encompassing semi-directed interviews with immigrant women (n = 20), health and social care professionals (n = 30) and interpreters (n = 12) completed with ethnographic observations and interviews.
Findings and discussion: Immigrant women form a diverse social group. They consequently use an array of social media to find information about the perinatal period depending on their linguistic and digital skills. Reflexively, they expect information found online to be of unequal quality and value information provided by professionals. They adapt their practices to their experience and may avoid media that negatively affects them. Their experience with digital media reflects the overall perinatal experience, providing clues for carers. Professionals worry about the difficult situations some immigrant women live in and stress that digital portals form barriers to services. Professionals may overlook immigrant women's use of digital media and their need for guidance.
Conclusions: Immigrant women use digital media to find information about the perinatal period to prepare for birth and the post-partum. They rely on unequal capabilities to do so and need translated information and holistic woman-centred support.

Statement of significance

Problem

Immigrant women's experience with Information and Communication Technologies (ICT) during the perinatal period may be overlooked in research.

What is already known

Non-immigrant women use ICT to find information about the perinatal period. They consider this information complementary to that provided by health care professionals.

What this paper adds

Immigrant women have diverse social backgrounds; they use an array of social media to find information about the perinatal period. They search for expected changes in their new health system. They know information found online is of variable quality and wish to discuss it with professionals. Women who cannot access information on ICT encounter other barriers to access care.

Introduction and background

Since 2007, the commercialisation of smartphones has allowed the ubiquitous use of applications (apps), Internet and social networks, making social lives more and more entangled with digital media and

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https://doi.org/10.1016/j.wombi.2022.10.003
Received 29 April 2022; Received in revised form 11 October 2022; Accepted 12 October 2022
Available online 17 October 2022
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enabling new forms of information practices [1,2]. Pregnancy, birth and the postpartum period are areas of continuous digital media developments, offering multiple possibilities for women and families to find information [3]. There is concern regarding the lack of reliability of many digital media that offer health-related information, as content creators are often not health specialists [3]. The experiences made online elicit emotions, feelings and reactions similar to those made without digital devices and have implications in day-to-day lives [2]. Digital ethnography as proposed by Pink et al. (2016) is hence not digital centric but conceived to enquire about a particular social situation in which digital media play a role [2]. Studies in digital ethnography can take many forms selected to understand the intricacies between social situations and digital devices and media.

Dwelling on Pink et al.'s propositions, we inquired about how immigrant women use and experience Information and Communication Technologies (ICT) while being attentive to topics and situations to which women or health and social care professionals (HSCP) connected the use of ICT. This allowed us to analyse the role played by ICT within a broader social context that was meaningful to women themselves and to the HSCP who cared for them.

Conducting research about immigrant women's perinatal experience is a public health priority. Beside forming an important proportion of the childbearing population, immigrant women and their children suffer from a higher maternal and neonatal morbidity and mortality than their non-immigrant counterparts including in the field of mental health [4–6]. Women in the asylum process or enduring social distress may live in circumstances that are unfit for the perinatal period; putting their and their infant's health at risk [7,8]. Immigrant and minoritised women's heightened morbidity and mortality has also been linked to the presence of stereotypes and discriminations [9]; a phenomenon that demands more research in this diverse social arena [10,11]. Access to information provided through ICT, is one such arena, as information is a resource that may contribute to women's capabilities to foster their health [10–12]. Importantly, this resource may enable immigrant women to navigate their new health and social system. Yet, digital scholars who research women's experience of digital media during the perinatal period tend to prioritise the recruitment of non-immigrant and middle-class women; a tendency frequently observed in the field of health research [10,13,14].

Defining a selection of immigrant participants is nevertheless complex and potentially problematic. For immigrant women are not, ontologically speaking, different from other women, as can be suggested by culturalist approaches [15]. Without denying that cultural differences may exist, we argue with others that immigrant persons may share common cultural representations and practices with non-immigrant [15,16]. In addition, immigrant persons change throughout the immigration process and the multiple interactions that arise from it [15,16]. Immigrant and non-immigrant persons construct multiple identities depending on the social worlds they experience throughout their lives [14–16]. In addition, as immigration processes have occurred over several generations and as migration policies attribute different rights to immigrant people depending on their provenance or educational backgrounds, contemporary immigrant populations living in high-income countries have become superdiverse with regard to their trajectories and situations [17]. Consequently, we opted to recruit immigrant women with diverse social backgrounds with the objective to describe the scope of their ICT experiences, practices and needs during the perinatal period. We will use the term immigrant women, the adjective immigrant conveying that the condition of migration is only a part of each person's identity.

In contrast to the field of digital sociology focused on health, information and communication studies (ICS) as well as migration studies (MS) have predominantly studied the role played by ICT in the trajectories and situations of immigrant populations [18,19]. These fields of research are important in order to understand the central role that ICT play in immigrant people's lives. A first field of research, inhabited by ICS and MS scholars, analyses how ICT pertain to migration trajectories, from the preparation of the migration to the process of settlement in a new country [20]. Immigrant people use social networks to prepare their migration journey while drawing on their peers' prior experience. Especially so, when migration journeys and settlement procedures promise to be complicated as is the case for persons who need visas to enter their country of destination [20]. Later on, immigrant persons will use ICT to find information about housing, work, social insurances and health in their new country [20]. These examples highlight how immigrant persons may become very skilled ICT users.

A second field of research, situated at the intersection of migration studies and the socio-anthropology of the family, has explored how ICT became essential to maintain contacts within the transnational family [21,22]. Immigrant persons use ICT to maintain connections with their family and significant others [21,22]; even more so during the perinatal period. For women, this need translates into regular hours of communication within an "ordinary ICT mediated co-presence" that enables them to "do family" despite the geographical separation [21,22]. These contacts may be more or less easy to maintain as they depend on ICT infrastructures and political climates in the country of origin. Contacts may also be facilitated or impaired depending on the skills and finances of both women and their families [21,22]. Practical and sentimental motivations make ICT essential tools for the "connected migrants" [18].

Situated at the intersection of digital socio-anthropology, migration studies and midwifery, our Swiss study aimed to enquire about how immigrant women use and experience ICT during the perinatal period. It comprised three axes: auto-information practices and experiences, contacts within the transnational family and contacts with HSCP. This article focuses on immigrant women's auto-information practices and experiences, including women who encounter difficulties using ICT. Our study was funded by the Swiss National Science Foundation (10DL1A_183123) and was conducted from December 2018 to January 2020. Consequently, our data do not include the COVID-19 pandemic.

Methods and setting

We described our methods and ethical precautions in detail according to the COREQ [23] recommendations for qualitative research in a previous Open Access publication [24]. To allow a seamless reading of this article, we will provide essential information about our methodological strategies.

To enquire about immigrant women's uses and experiences of ICT during the perinatal period from different standpoints, we opted for a triangulation of qualitative methods and data. We recruited immigrant women with diverse social backgrounds to account for the superdiversity of contemporary societies [17] and to describe the diversity of experiences these women entertain with ICT when looking for information about the perinatal period. As previous research has shown [8], HSCP who work in close contact with immigrant women may also have relevant information about women's situations, especially concerning barriers to care, good health and well-being. Consequently, we recruited HSCP including interpreters who worked with immigrant women regularly during the perinatal period.[2]

Information and consent documents were translated into 7 languages (Arab, Albanian, English, Farsi, Portuguese, Spanish and Tigrinya), selected according to the frequentation of several associations offering services to immigrant women. Our study was granted authorisation by the competent ethical committees (CER-VD/CCER-GE – Number 2018–0281), including the possibility for women to choose between

[2] The interviews with interpreters and professionals are shared on a data repository and will be consultable and usable on demand from October 31st 2022. Interviews with women could not be shared as they contained sensible and personal data. https://www.swissubase.ch/en/researcher/my-studies/14100/17898/datasets

written and oral consent with a witness. After consent was obtained, we conducted semi-directed interviews [25] with women (n = 20) and sometimes their partner (n = 3), with HSCP (n = 30) including midwives (n = 14) and, finally, interpreters (n = 12) (CC CK PP). In their day-to-day practice, interpreters translate health and social care consultations for immigrant women and help them navigate the health and social system. During the interviews, their answers were similar to those of the other HSCP and we included them in this category in the results to facilitate the reading.

We conducted the interviews with immigrant women in French, English (CC CK PP) or Spanish (PP) or in other languages with the collaboration of an interpreter. We defined the type of setting – with or without interpreter – according to the women's, and their partners', preferences [24]. Interpreters would translate what women said to us either by using the first grammatical person "I" or the third "she". We kept the original form they used in the verbatim extracts shared below. The interpreters we interviewed to enquire about their representations of women's use of ICT were not the same as the interpreters who enabled us to interview women. We also conducted two focus groups [25], one with women who originated from Kosovo in Eastern Europe (n = 6) and another with women originated from Eritrea in Eastern Africa (n = 6) (PP). Women from these regions had preferred a group version of the interview with the opportunity to exchange with their peers. To complement this data and include women unfamiliar with semi-directed interviews [25], we conducted participant observations of about three hours each (n = 15) in three associations that provided health or social services to immigrant women (CC PP); these observations included ethnographic interviews [25] that were not counted due to their heterogeneous duration. In this case too, oral consent with a witness was asked, sometimes repeatedly [26]. In this article, we focus on how immigrant women used ICT to search for health-related information during the perinatal period. We asked about the devices (smartphone, personal computer, tablet) and the social media (Internet, apps, social networks) women used to find information. We also enquired about the languages women used to search for information. Then, we focused on the content women searched for, and on the experience, women had with online information. In parallel, we asked HSCP what they knew about immigrants' use of ICT. We helped all participants expand their reflections with encouraging probes (e.g. echo or tell-me-more probe) [25] and by asking for examples.

We took fieldnotes (CC PP), recorded the semi-directed interviews and the two focus groups with non-connected devices to ensure data protection and transcribed them with the consent of participants (CC CK PP). Thereafter, we conducted a thematic analysis [27] through the software MAXQDA (CC CK PP) [24]. Firstly, we read and made notes about each interview in order to ensure cohesion in the experiences shared by each participant. Then, we analysed the interviews with women and HSCP as separate data sets within MAXQDA to ensure clarity. We conducted an inductive thematic analysis and constructed themes from elements shared by women and HSCP. During the process, we paid attention to other meaningful topics to which immigrant women or HSCP connected the uses of information retrieved from social media, such as women's overall experiences of the perinatal period as our theoretical framework suggests [2]. Each data item, for instance an individual interview, was first analysed by one member of the team and then by a second member to ensure trustworthiness and completeness of the analysis. Differences in the analysis were discussed and resolved during team meetings. The themes created through the inductive approach were also regularly discussed and, if necessary, adjusted during meetings.

The study took part in the French-speaking part of Switzerland where women may receive up to sixteen home visits by a community midwife during the first fifty-two postpartum days. This almost universal service is funded via the compulsory Swiss insurance scheme LAMAL [24]. It is complemented by other services, such as free walk-in consultations or group sessions where parents can go to weigh their infants and ask questions to HSCP such as midwives or nurses. Most Swiss cantons also have associations that are dedicated to the health and social well-being of immigrant women and that offer them an array of services. In our study, we recruited HSCP and interpreters working in such facilities.

Our interdisciplinary research team [24] included three women researchers: one anthropologist and midwife specialised in immigrant women's perinatal health and experience (PP, PhD, primary investigator), one anthropologist specialised in the anthropology of the perinatal period (CC, PhD) and one midwife specialised in breastfeeding and the post-partum period (CK, PhD-stud). Before our study, we were interested in immigrant women's uses and experiences of ICT. We did not have a positive or negative opinion of ICT but were keen to produce research results that could be useful for HSCP who create information for immigrant women and that could help these professionals reflect on their representations and practices.

Findings

In this section, we will present data shared by all participants: immigrant women, health and social care professionals including interpreters (HSCP). However, we will prioritise women's discourses as immigrant women's voices are the best placed to describe their experience of ICT. We also will present representations shared by HSCP to contrast them with women's and to share their reflections concerning the equity of access to health-related information and to health and social care services.

Description of participants

As intended, the immigrant women who participated in the semi-directed interviews had diverse social and educational backgrounds. The mean age of women participating in the semi-directed interviews was 30 years old (range 20–37). The median duration of women's stay in Switzerland was 2 years (range <1–10 years). Women recruited for the semi-directed interviews originated from Southern Europe (n = 6), Eastern Europe (n = 2), Northern Africa (n = 2), Eastern Africa (n = 2), Western Africa (n = 1), Middle East (n = 3), Eastern Asia (n = 1), Latin America (n = 1) and High-Income English-speaking countries (n = 2). When verbatim quotes are included below, we will disclose the nationality of women when they are members of well represented diaspora in Switzerland (e.g. Portugal) and only the region (e.g. Western Africa) for women who originated from smaller diaspora to maintain confidentiality. This ethical decision is also appropriate within our non-culturalist approach of women's experience, a perspective common in migration studies [15]. Women were also diverse in their educational backgrounds; some had a university degree (n = 8), other an intermediary occupation such as secretary or social worker (n = 5) and some had not achieved a certification after school (n = 7). Some of the women we interviewed lived or had lived in social distress [8] that included poverty, housing or employment problems and loneliness. Participants were also diverse with regard to their maternal experience. Twelve were first-time mothers (n = 12), five were second time mothers (n = 5) and one was a third time mother (n = 1); for two women this information was missing. All women who participated in the semi-directed interviews, except of two, lived with their child's father or were married.

Most women who participated in the semi-directed interviews were able to use two languages, sometimes three, at different levels of proficiency. Most of them, however, were still insecure in French. Women had the following languages as mother-tongues: Portuguese (n = 5), Spanish (n = 3), Arabic (n = 2), English (n = 2), Dari (n = 1), French (n = 1), Kurdish (n = 1), Japanese (n = 1), Polish (n = 1), Romanian (n = 1), Russian (n = 1), Somali (n = 1). Women recruited in the two focus groups spoke Albanian (n = 6) and Tigrinya (n = 6). In addition, during the observations and the ethnographic interviews, we spoke with women and sometimes fathers whose mother-tongues were Amalric, Arab, Georgian, English, Farsi, French, Greek, Mongolian, Spanish,

Tagalog, Tamil and Tigrigna.

Thirty HSCP and twelve interpreters participated in semi-directed interviews. The mean age of the HSCP was 44 years old (range 33–59), and their mean years of experience was 18 (range 5–35). The midwives worked in the community; several provided prenatal classes for immigrant women with the collaboration of an interpreter and all of them did post-partum home visits with or without interpreters. The nurses did community work and cared for immigrant women during the extended post-partum period up to one year after birth, including in asylum centres. One nurse worked in a special clinic for immigrant persons situated in a hospital. Social workers and adult educators either worked in associations dedicated to immigrant persons or in asylum centres. Most midwives cared for immigrant and non-immigrant families. HSCP were Swiss or French, three had migrated into Switzerland as children. Most HSCP, but not all, could use a second language, usually English, but not always at a proficient level. One HSCP was fluent in Arab and another in Spanish and Portuguese. The mean age of interpreters was 47 years old (range 28–66) and most had been in Switzerland for a mean of 22 years (range 3–43). Most interpreters were binational with a Swiss passport (8/12) and had a tertiary education (8/12). Below interpreters will be included in HSCP's responses.

To save space we will use codes to describe the type of verbatim quotes shared below. SDI for semi-directed interview and EE for ethnographic interview. The type of data is followed by a letter that indicates the linguistic situation: I for with interpreter, F for in French, E for in English, S for in Spanish. SDIp indicates interviews with HSCP, CM indicates community midwives, N nurses, SW social workers and I interpreters. All names are pseudonyms.

Looking for information on ICT: media, practices and experiences

Almost all immigrant women in our study looked for information about pregnancy, birth and the postpartum period on ICT using a diverse range of sources. As the verbatim quotes in the first part of the findings will show, these women tended to find ICT useful and used them with prudence and reflexivity. Some women reported negative experiences and coped with these with reflected strategies, as will be shown in the last part of this section. To share women's voices and to recognise their kind participation in our study, we will share a substantial number of verbatim quotes; including longer ones when women shared their in-depth experience.

Websites, digital groups, apps and video platforms

Technological progresses have improved the reading experience on smartphones over the years. Consequently, our results are far more concerned with the use of smartphones than computers. Only immigrant women who lived in stable situations, and who had an occupation that required the use of a computer, used both a computer and a smartphone to look for information. Individual women favoured two to three media to look for information among the existing possibilities. Most of them used the search engine Google™, the only one mentioned in our data. The women, including those with a short education trajectory, searched using key words, sometimes including technical ones.

> *I google. I type " fontanel ". […] She is my first child, I look a lot on the Internet. If the midwife is not here, many things can be searched for through Internet.* (SDIF-9 a West-African woman)

The search engine was used to access different digital sources such as discussion forums and blogs, including official websites such as the National Institute for Health and Care Excellence (NICE) from the British National Health Service, depending on women's skills searching and appraising information.

In addition, many immigrant women joined online groups addressing the perinatal period, hosted on social networks such as Facebook™, Instagram™ or WhatsApp™. These groups had diverse digital geographies. Some welcomed immigrant women who spoke a specific language regardless of their nationality while others reunited a specific diaspora. Some groups were meant for parents who lived in Switzerland, sometimes in a specific Swiss town. Other groups recruited a narrow membership such as Portuguese-speaking women who gave birth in a specific month and year but on an international level; digitally reuniting women in an identical period of their maternity experience. These digital geographies may seem trivial, but they influenced the support provided by each group. Only local groups enabled their members to meet in real life and provided information about specific services. Digital groups played a substantial role in helping immigrant women. In some cases, these groups were formed by women themselves while in others they were formed by HSCP such as midwives. Some of these groups had functioned for quite some time and had a life on their own.

> *Our WhatsApp group has 150 women in it. When I meet people out in cafés, with women who just moved here, I ask them if they want to join the group and they would be like 'oh no I already joined the group.' It does seem to travel by word of mouth. (SDIE-15 an American woman)*

Many women had also downloaded a specialised app that offered both information and advice about the health of the mother and the foetus during pregnancy. Interestingly, most participants had the same app "pregnancy+" that comes up first when searching for "pregnancy" on the app store. This app was available in several languages that switched according to the Smartphone's default language. Apps provided diverse functionalities including the possibility to quantify aspects of women's experiences such as the number of contractions or the foetus' movements. These functionalities did not retain the interest of participants who tended to try and drop them after a short period of time.

> *The app suggests entering the pregnancy parameters such as weight. She doesn't use this part. What she likes is the information she gets with the app*. (SDII-11 a Portuguese woman)

Beside websites, blogs, apps and social networks, women with diverse educational backgrounds appreciated the video platform Youtube™. Younger women with a shorter education trajectory considered this platform to be one of their favourite sources of information.

> *She uses Youtube™ to find information. She likes the tutorials on it. You can find information about any topic including […] light topics, make-up, hair styling [but] also videos about pregnancy. She looks for a Yoga video, it helps her fall asleep*. (SDII-8 with a Brazilian woman)

This video provider also hosted recorded talk shows. Some were appreciated by women as they invited different guests including women who spoke about their experiences and health care professionals who were expected to provide reliable information.

> *There is a midwife who is cool. [The guests] provide a diversity of opinions. [The journalist] invites psychologists, medical doctors, gynecologists. […] They show how people cope in their family, with a baby who cries a lot. […] others' families and homes. […] I could always find an answer to my question in [this talk show]*. (SDIF-4 a woman from the Maghreb region)

Depending on the languages they used, immigrant women also had different options for using ICT to search for information related to the perinatal period.

Searching for information in different languages

Many of the recruited women used several languages, even if not always to a proficient level. These women combined their languages to access the information they needed on digital media.

> *Since I have been pregnant for the first time, I searched the Internet to learn about the evolution of my pregnancy. […] There is information for*

parents on Telegram or Youtube in Kurdish or Farsi. […] As I don't master enough French, I look in Kurdish and Farsi. Sometimes in English, until I find an answer to my question. (SDII-19 a Kurdish woman).

Study participants who were fluent in English and who had a tertiary level education, tended to adopt sophisticated strategies to search for information and were more purposeful in their search.

I would use a variety of things. […] There is a podcast that I consider essential to my education about birth, it is called 'the birth hour'. Women describe their experiences in it. It wasn't the place to go for authoritative facts; it was a place to go to hear what resources other women use. […]. The website 'Evidence-based Birth' is a central point of information that I used when I was expecting. (SDIE-15 an American woman)

Bilingual women used the languages they spoke to target online resources for distinct purposes. Several of them looked for information they considered reliable in English on the official websites of national and international agencies and used discussion forums in their mother tongue to read about other parents' experiences. Additionally, depending on the political regime in their country of origin, women considered that they had not always had access to information about reproductive health. Being a refugee, having settled in a new country after times of uncertainty, allowed some of them to access information more proactively if their diaspora had published the information they sought for.

There are different topics [on Youtube] for women or parents who speak [Farsi]. […] In the Middle East there are topics that are not really addressed such as sexuality. My husband and I try to get prepared for the day our children will have questions. […] Such information in Farsi does not stem from [Iran or Afghanistan], but is published from sources abroad, from the diaspora in Europe or the United States. (SDII-19 a Middle-Eastern woman).

After having described the different digital modalities used by immigrant women to find information about the perinatal period, we will consider the topics that interested them as well as their experience.

Learning to navigate the Swiss maternity care system

Firstly, aware that the Swiss maternity care system would differ from the one in their previous country of residence, participants looked for the kinds of services they could expect during the perinatal period and, notably, birth. This attitude was more common among women who had a higher education.

She looked for information about [differences in care during birth] between Switzerland and Portugal. In Portugal fathers cannot assist with caesarean sections but here yes. Here you find bathtubs in the birthing rooms, not in Portugal. (SDII-11 a Portuguese woman)

The topics of interest would vary according to the parity of women. Interest in the functioning of the foreign maternity system was more prominent for women who had already given birth in their country of origin. This interest was also keener for women originating from regions where the access to certain kinds of births was difficult. This was the case for women from Brazil where caesarean section rates are higher and the access to vaginal birth may be compromised.

[As she already gave birth in Brazil], the questions are not really about the pregnancy and the birth themselves. It is more about the context in which she will give birth: the maternity service, the culture of the facility. How midwives will care for her. […] She looked for information about how vaginal birth would be in Switzerland. (SDII-8 a Brazilian woman)

Some immigrant women and couples were wary of the medicalisation and technicisation of birth and feared that these could be imposed onto women's and infants' bodies without any robust justification. Persons in this situation looked for evidence-based information on official websites.

The Greek father explains how he would look on several English or Canadian websites to find information on the relevance of certain technologies. He is disturbed by how professionals use these techniques for fear of risks and litigation. He and his wife wanted a birth with no unnecessary intervention. (EEF-1 a Greek father)

Women with a higher education trajectory appreciated it when reliable and comprehensive information could be found online, thus providing them with more agency in their care trajectory.

If I had not [looked for information online] I wouldn't have been able to advocate for myself as I did. […] I might have made a different choice of birth location. The amount of information that I had in hand to feel confident and safe where I was, and also have a little patience. My birth was quite long but I knew […] what we would need to transfer to the hospital for. I knew the timelines we were working with. Basically, I was informed, being informed is great, not be anxious because you know what is going on. (SDIE-15 an American woman)

Women also wanted practical advice including about the things that they would need to bring with them to the maternity hospital. Here too, women anticipated that the service provided in Switzerland might be different from the one in their country of origin.

She looked for information about the suitcase she must bring to the maternity hospital. […] In Brazil, when a mother goes to the maternity hospital, she must take all her things including [sanitary napkins], nappies and clothing for the baby. Not here. (SDII-8 a Brazilian woman)

Some women noted that information about maternity hospital policies was not available online, which could make it difficult for them to choose a facility.

I remember plenty of frustration [for] I could not find […] statistics on birth outcomes in my city [such as] caesarean rates for each hospital. (SDIE-15 an American woman).

Hospitals' websites are rarely translated into other languages. When using Google™ on a computer, translation may be available, but not on all Smartphones, preventing women from finding information.

She could not find information [on Internet] in Portuguese [about] birthing balls, long pillows, alternative positions and different types of supportive devices. She didn't know about these things as they were not available in Portugal. [This] was discussed during the prenatal course [in Portuguese with a midwife] though. (SDII-13 a Portuguese woman)

In addition, immigrant women were keen to know more about their pregnancy.

Following the pregnancy timeline and the infant's development on digital media

Participants were eager to find information about the development of the pregnancy and of their future infant, including what awaited them during the pregnancy follow-up.

Immigrant women found that this information was well presented on apps.

There were pieces of advice about the future tests. For instance, you will have an ultrasound, here is how it will go […]. This was really interesting. (SDIF-10 a Spanish woman)

Women appreciated being able to find information about the purpose of surveillance and care.

This app addresses topics according to the week of pregnancy. […] When they do an echography at 37 weeks, the app explains what they search for. (SDII-3 a Portuguese woman)

They also valued the apps that provided information fitting the pregnancy timeline.

The topics were connected to my own questions. [The app does not] anticipate problems, they are discussed at the right time. They manage to know what our preoccupations will be at a given time. (SDIF-4 a woman from the Maghreb region)

Participants were pleased to find information, images and videos about the development of their foetus and infant on apps and on the video platform Youtube™; including women with a shorter education trajectory.

Week after week you see the baby developing. It's nice to know that from now on her heart beats, her lungs are developed, now she can hear. (SDIF-10 a Spanish woman).

In addition to apps, several participants enabled each other to anticipate the evolution of the pregnancy or the development of the infant by sharing their experience on digital groups.

When one will feel the first movement of their baby [during pregnancy], other mothers shared when it happened. (SDII-18 Polish parents).

If immigrant women searched for information to know more about the experience of pregnancy in general, they also used ICT when they had specific doubts about their infant's health or their own.

Searching for information when in doubt and with prudence

Firstly, immigrant women searched for information that would help them assess the normalcy of their child's development and how they could foster it in a health promotion perspective.

[What she is supposed to do at three months]. To check if she's normal. […] They also explain activities you can do with […] a three-month-old child. (SDIF-5 a Spanish woman).

Secondly, when in doubt about their own or their child's health, immigrant women explained they would use Internet to assess the need for a medical consultation.

[My three children] are young and get sick from time to time. Instead of immediately going to the pediatric emergency service if I notice something unusual with them, I google "two-year-old child threw up". They explain how to put your child in a safe position [showing with her arms how to turn her on her side]. […] My friend Google. (SDIF-16 an East African woman)

Women also considered selected groups of parents on social networks useful to help assess their situation as other parents shared their experiences on them. Immigrant women were reflexive about their use of such advice and explained what made these group safe for them.

I would [advise other foreign women] to join our WhatsApp group, because you can ask any question and 99.5% of the time people are supportive and have practical information. When something is wrong with their kids, people say 'go to the doctor', they don't start giving medical advice. […] People post pictures of [prickles and spots] on their baby's skin to look at; now I know a little bit about that. I learned more about the baby. (SDIE-15 an American woman)

Immigrant women detailed how they reflexively weighted other parents' advice on social networks.

You verify the information. My baby had not pooped for three days. If another mother says you can wait for seven days [before calling the doctor], no need for me to be alarmed. After five days, I called my paediatrician and midwife. (SDIF-10, a Spanish woman).

Nevertheless, immigrant women considered that information found on digital media was only a component of a wider information strategy that prioritised face to face relationships.

Using ICT as a complement or substitute to in presence relationships

Immigrant women's reflexivity went further. They expected information found online to be of variable quality and they considered information found on digital media complementary to the information provided by trusted social actors during in presence encounters. Participants highlighted how contacts with HSCP such as their paediatrician, obstetrician or midwife were important to them, even women who were the most proactive digital users.

Of course, beyond what was on ICT and information I found there, I had to trust the people that I was going to be with during that time. (SDIE-15 an American woman)

Some participants worried that information found on digital media might be incorrect or incomplete. Consequently, they relied on information provided by HSCP and wished that reliable digital information in their own language was easily accessible.

For the baby I look for information that is more reliable. At the midwives' association, I can take leaflets. I prefer. Online information is not always [reliable]. If only I knew a reliable website. I prefer to speak with people […] especially for the baby. Someone with more knowledge than just searching online. […] If there was a reliable app for the baby, I would use it. (SDIS-7 a Central American woman).

Immigrant women, including women with a short education trajectory, selected websites or blogs written by HSCP to avoid being confronted with disinformation, even if this initiative does not guarantee the access to reliable information.

[She uses the blog of a gynaecologist, a reliable source]. As opposed to forums where women may share wrong information […]. [She says] that it may be difficult [to sort out accurate from inaccurate information]. (SDII-18 a Polish couple).

Similarly, participants did not consider information found online to be reliable in situations that worried them intensely.

I panicked when she discharged a little bit of blood [from her vagina]. Nobody had explained me that baby girls can have like a small period. We panicked. It's impressive. I tried to call the private clinic, but they didn't answer. Then, I called midwives. (SDIF-10, a Spanish woman).

Lastly, women also shared that they would not use digital media as much if their family were with them. Digital media hence partly substituted the information women would receive from their significant others in their former region of residence. This absence was partly compensated for by contacts with new acquaintances and with HSCP.

In my country, we never use Google to understand a child. We have the family around us, we can ask them. They teach us how to raise our children. It was different here as I didn't have my family. […] After I had my baby, I started looking for information [online]. How should one month baby be or sleep? […] A midwife came home, looked after her, took her weight, looked at [everything] and gave me information. (EEE a West African woman)

Prior examples illustrated how immigrant women used and valued digital media while being reflexive about this use. As was already hinted by several participants, digital media may also contribute to negative or mitigated experiences which women coped with using strategies adapted to their situation.

Living and coping with negative experiences on digital media

Immigrant women explained how digital information about the perinatal period can be disturbing for them and how they react to maintain or recover a better experience.

Importantly, immigrant women experienced the information found online not only per se but within their personal and social situation. A

negative experience could, therefore, stem from the social pressure felt online as well as in day-to-day life. If experiences shared by peers could be useful as shown above, such stories and advice could also add to the pressure felt by some women. This was the case when pregnancy, birth or the postpartum period did not go as expressed in social norms such as in the example below. Besides, on social media, women were confronted with an array of parenting styles; it could take time until they found the style that suited their values and situations.

> *A friend created a page about breast feeding in my country of origin. She has become some sort of a Super Mum. My own breastfeeding was difficult, it made me feel guilty. I felt as if [breast feeding promotion] was more about forcing women to breastfeed. I could not find any divergent opinion about it. I wish I was a relaxed and happy mother, you see. So, I bought the book for young lazy mothers. It seemed more suited for me [laughing]. […] It's a tendency for women my age "my baby, my life", [an intense and sacrificial form of maternity]. […] I felt guilty not [being like them]. […] And so many judgements, about breastfeeding. So, I stopped [using Facebook™]. And I feel much better.* (SDIF-4 a woman from the Maghreb region)

Several participants could anticipate that information found on social media might be stressful for them. Consequently, in order to avoid unnecessary anxiety, they limited their search for information.

> *I'm not an anxious person, not stressed about what might happen. […] We did the genetic tests and all that. But I didn't look for bad things that might happen. I thought I would inform myself if something happened, instead of anticipating.* (SDII-11 a Portuguese woman).

Despite such strategies, information found online could contribute to worries when it concerned immigrant women's situation and when it was focused on risks; hence contributing to a negative anticipation of events.

> *She looked for information about the induction of labour. She said maybe it was a mistake, as her labour will be induced next week. […] She is worried as [according to the information found online] an induced labour may cause more pain. Contractions can be stronger and closer in time [than with a spontaneous labour]. She wonders how she will be able to cope from a state with no contractions to one with many painful contractions.* (SDII-3 a Portuguese woman)

Inconsistent information was unsettling especially when it contradicted previous knowledge acquired by immigrant women through public health campaigns. For women originally from low-income countries with health systems that did not offer universal care, it was also upsetting to learn that some parents in high-income countries were wary about some care interventions. In such cases, women reflexively turned to their providers to find reassurance.

> *The paediatrician said the vaccination starts at two months. So, I googled "baby vaccine Switzerland". Some parents say they don't vaccinate their children, others do. Why don't they vaccinate? It was confusing […] I will ask [my pediatrician] about it. It scared me as one [mother] said vaccination causes diseases to children.* (SDIF-9 a West African woman).

In addition, the quantity of information found online interfered with some women's own reflections and overwhelmed them with different opinions or possibilities.

> *Too many opinions. It influenced me too much. I could not make my own opinion anymore. I could not follow my instinct. I sort of froze. I was troubled by all these "do it like this or like that". I have friends in these groups, so I listen. […] You think that if she writes comments, she knows better. You lose your self-confidence.* (SDIF-4 a woman from the Maghreb region)

Several participants expected online information to be inconsistent; it was therefore not their major source of dissatisfaction. Rather, these women were more disappointed and stressed when HSCP provided inconsistent information in a context of the discontinuity of carer.

> *There were many midwives in the hospital. Each one had a different opinion on breastfeeding […] and would tell me something different. That was crazy. At the beginning, I had no milk coming in. One midwife told me [my baby] was hungry and dehydrated and I should give her formula. Another one said "Did you give her formula? Oh no!". […] On the Internet I read rigid articles. I don't take them seriously. I know anybody can write [in there]. But, when it comes to midwives, I mean, I used to take them [seriously].* (SDIF-5 a Spanish woman)

Lastly, if groups on social networks were appreciated for their provision of information, the ways in which peers addressed specific topics on them sometimes interfered negatively with women's experiences. Participants tended to react accordingly, to protect themselves.

> *They get along well, it's a nice [WhatsApp group]. However, sometimes she stops using it. […] They spoke about pain [on it]. […] Some mothers are more anxious than others. [Others'] anxiety would reach her and weigh on her.* (SDII-3 a Portuguese woman)

Immigrant women displayed a varied set of practices and experiences. They tended to be reflexive about their experiences, find strategies to sort out useful information and acknowledge when they had difficulties doing so. As the next subchapter details, HSCP were not always aware about this diversity of ICT use and the reflexivity that accompanied it.

Perceiving immigrant women's situations and their use of ICT

During semi-directed and ethnographic interviews, HSCP shared about their care experiences with immigrant women and about their understanding of women's situations and their use of ICT. As explained in the introduction, our research team aimed to understand the use and meaning of ICT within women's broader lives and perinatal experiences; professionals contributed greatly to this understanding for they witnessed a multiplicity of situations in their practice.

Understanding immigrant women within their social situation

A first important element shared by HSCP concerned the social context in which some immigrant women lived. Professionals stressed that these women sometimes became a mother while in distressing situations and without their family around them.

> *[Many immigrant women I care for] live in very complex situations, that make them vulnerable, fragile. Throughout the migration process, the fact that they are here alone, without this entourage, this family, this support. […] they live in a certain loneliness. […]* (SDIp-1 CM)

Similar observations were shared by HSCP working in different regions and contexts. Observations were detailed when expressed by the professionals who cared for families where they lived, such as community midwives or the nurses, social workers and interpreters who practised in asylum centres.

Professionals also acknowledged that immigrant women experience the perinatal period and the care they receive in a different health care system, highlighting how difficult the access to services can be.

> *They cannot access all the information like we do. So, it may be difficult to have access to these women. It's not them who come to us, we have to find them.* (SDIp-1-CM)

Besides, the HSCP professionals who mostly cared for immigrant persons also described the vast array of administrative procedures that immigrant persons must complete to ensure stability and safety in their new region of residence; including for their housing, employment and permit of residence. In a digital society, most of these procedures must now be performed through digital portals and emails. However and intriguingly, the use of ICT to find health related information was less

known to them.

Women's use of ICT as an emerging and disturbing topic in care

In contrast to their detailed descriptions of immigrant women's social situations, HSCP seemed to know less about how immigrant women used ICT to find information about the perinatal period and about health services. HSCP showed a low to moderate interest in women's information searches, be they immigrant or not. For instance, no professional shared that she would consistently enquire about ICT use as part of a dialogue about women's previous knowledge.

> *I never had the opportunity to see [immigrant women look for information through ICT]. I could never see it. I never really asked about it. I imagine they do. I don't know.* (SDIp-5 CM).

This tendency of not enquiring and discussing information found on ICT may be connected to HSCP's own relationship to ICT. Several HSCP shared that they were not keen users of ICT themselves, preferring direct over digital contact with people. HSCP were in average 14 years older than women. This sociodemographic difference may partly explain their limited interest in women's uses of ICT. For instance, several HSCP did not use social networks or had difficulties using them.

> *I'm totally helpless [with social networks]. I created an Instagram™ account, but I have not been able to upload a profile picture on it. I tried ten times. My child helped me.* (SDIp- 8 SW)

Besides, HSCP had a variety of positive and negative opinions about how immigrant and non-immigrant women searched for information on ICT. Some, but not all, adapted to individual women's reactions.

> *[Looking for information through ICT] can induce a lot of stress for mothers. Sometimes, it may reassure them. It depends on how mothers perceive them […]. What matters is what she can do with it. If it overwhelms her, going in all different directions. Then, I will try to [help her] let go of it. But if she just shows me "my baby went to the breast six times" on her app, it's fine. […] Does it reassure her or make her more anxious?* (SDIp-11 N)

Some HSCP considered that ICT were barriers to the so-called real-life experience, including when these means were used within the transnational family living abroad.

> *Moments [like birth] are so strong, deep, unique. Yet, people quickly switch to their smartphone. The baby is just born, and everyone must know it through social networks and messages […]. Parents receive tons of messages after birth. Precious time lost to answering messages instead of looking at this new baby. Kept away from your real life.* (SDIp-1 CM)

Given how widespread the use of ICT was among immigrant women, it could become a topic of discussion in care; a habit not yet taken by HSCP as shown below.

Comparing immigrant and Swiss women's use of ICT

When asked what they knew about how immigrant women used ICT to find information, HSCP tended to compare their perception of immigrant and Swiss women. HSCP considered that immigrant women rarely used ICT to search for information about health. These representations contrasted with women's testimonies described above.

> *I think immigrant women don't [look for information online] a lot. If I discuss with a Swiss family about their child's phimosis. […] They will type "phimosis" and read everything. A migrant mother will not. She will ask her mother or family. People around her.* (SDIp-11 CN)

It should be noted that HSCP relied on actual discussions with women to construct their opinion, showing that some immigrant women may not use ICT to search for information.

> *I asked women from [Somalia, Sri-Lanka, India and Senegal] during an antenatal class [through the interpreter] if they used apps […]. They answered they didn't. They told me they ask for information to their mothers or mothers-in-laws. These [women] were their app.* (SDIp-3 CM)

HSCP considered that some immigrant women lived in situations that made searching for information about health and the perinatal period secondary.

> *[When] immigrant women become pregnant they have [more important] issues to deal with. Papers, the right to stay here or not. Food, material, where and how to find money. […] The feeling of loneliness. […] Sometimes their husband can't arrive here. […] So, they are less focused on finding information about pregnancy and the baby's development […].* (SDIp-1 CM)

Several HSCP tended to see immigrant mothers stereotypically as more spontaneous or "natural" mothers who would not need to search for information on ICT.

> *Typically, no [immigrant mother] has any of these breastfeeding apps […]. Almost all Swiss families have one. […] Swiss women feel like they must note down each feeding, left breast, right breast. Immigrant families do not really have such questions. For them, it's more natural. […] If they arrived recently, they will do like their mother. […] An African mother will do as in her country. […] If the baby cries, like in Africa, the baby will be put to the breast.* (SDIp-11N)

HSCP thought immigrant women would not spontaneously be interested in their body's physiology or the foetal development. This opinion was contradicted by immigrant women's discourses.

> *[Immigrant women] live pregnancy as it comes. [Some women in my antenatal course] already have two or three children, but don't know that the baby develops in an amniotic bag, with the fluid, the umbilical cord, the placenta. […] They look happy when one explains it to them. […] They can make connections with their previous childbirths then.* (SDIp-1 CM)

HSCP tended to make a distinction between the different levels of education women and men may attain and the implications for their relationship with ICT.

> *[Families] with a higher education look for information on Internet, about pregnancy or the education of children, questions about health. Mostly in English. […] Then they may come back to us with questions. […] [Women and men from Afghanistan] who have not been to school or shortly, […] they had to work early in their lives. Illiteracy is a huge barrier to access [ICT].* (SDIp-1 Interpreter for Farsi and Dari)

HSCP held opinions that were complementary to immigrant women's testimonies. Despite their sensitive attention to women, HSCP held representations that were not consistently in tune with women's experiences of ICT, a point further analysed in the discussion. Immigrant women and several HSCP alike mentioned the unequal access to ICT and their implications for women.

Not all immigrant women have access to online information

Most immigrant women who participated in the semi-directed and ethnographic interviews used ICT at some level, if only to reach their family. Nevertheless, there were some women who either could not or barely use information on ICT.

An unequal access to Wireless technology and Internet

HSCP and immigrant women themselves explained that women did not always have access to WIFI or 4 G technology for the use of Internet and social media.

This was the case of immigrant women who lived in asylum centres,

as WIFI technology was not always made available to them. This lack of access to WIFI not only prevented women from looking for information, but also from reaching their significant others.

> *When I lived in the other side of the building, I couldn't access the WIFI. It only worked in one side of the building. […] When my husband arrived […] we bought a SIM card. Now, we use the SIM card and the WIFI. […] [Before] I would sit on the stairs to get the WIFI and keep in touch with my husband. I'm happy now, I can reach my family.* (SDII 14 a Middle-Eastern woman)

The lack of WIFI in asylum centres was intentional and sometimes based on prejudices about immigrant persons.

> *They promised we would have [Internet and WIFI]. […] There is still no WIFI, no Internet. People must go to the roadside or to the library in the town near-by as they have a WIFI hotspot. […] Our social programme used to have an Internet Cafe. The information service shut it down. They feared residents would use Internet to watch pornography.* (SDIp-8 SW)

The alternative was to purchase a cell phone subscription to obtain seamless access to WIFI and Internet through 4 G technology. However, many people in the asylum process could not afford it.

In addition, some immigrant women had migrated in-between two pregnancies or during a pregnancy. Some women were originally from regions where WIFI technology was not well distributed yet. Others did not have access to wireless technology because of the duress of their migration journey which included travelling through unserved areas. This was the case for women who had fled a political crisis or a war situation and were looking for asylum.

> *Sometimes, I watch short video clips about how to feed children or similar topics [in Dari]. […] During my migration journey, we were in a sort of desert, there was no WIFI at all. So, I couldn't use [apps and ICT] a lot during my pregnancy.* (SDII-14 an Middle-Eastern woman)

Besides access to material, immigrant women had to overcome the complexity of ICT use in a new country of residence and relied on unequal resources for it.

Digital illiteracy as a complex barrier to information and services

General literacy and digital literacy were also, as could be expected, barriers to searching and finding information about the perinatal period and maternity services.

This was mentioned by some immigrant women themselves who also explained how they tried to use digital tools' affordances to countervail their difficulties.

> *Mary has access to the Internet in the refugee centre where she lives. She explains she does not use it though as she cannot write. She can use the vocal function to search information with Google™ but according to her, it does not function well.* (EEE-2 a West African woman).

HSCP who worked closely with immigrant women living in more precarious situations stressed how literacy problems were prevalent and complex. One of the associations in which we conducted our study hosted regular French classes for immigrant women. Women who were illiterate in their mother tongue, as they did not benefit from a standard education, visited specific classes with slower paces and adapted pedagogies. These HSCP highlighted that some women thus encountered multi-layered barriers to accessing information. They had to learn how to read, recognise a new alphabet, learn French and use ICT all at the same time.

In addition, these HSCP stressed the difficulties inherent in ICT features. For current users, these features may seem intuitive. However, seamless ICT use demands a complex set of cognitive skills and of cultural references.

> *To use Word™ you must master the keyboard. The mouse requires fine coordination and motor skills. The keyboard is in capital letters, but letters appear in lower case on the screen [their aspect is different]. […] In addition, one types on a horizontal keyboard and the text is shown vertically. [When surfing the Internet, it gets messier], with one column on the right, images, blinking advertisements that pop up.* (SDIp-14c AE)

In societies that have become increasingly entangled with digital technologies, this set of skills is demanded to access services. The adult educator quoted above also stressed that immigrant women needed to have an email and to create digital accounts on portals to access basic health and social services such as day care facilities. Immigrant women who had literacy and digital literacy difficulties therefore faced multiple barriers to know about and access health and social services that could improve their health and well-being. Consequently, the HSCP who regularly worked in close contact with women in such situations tended to extend their role to help women find information on digital media and access the services they needed.

> *[I helped her] because she was not able to do it on her own. There were online forms to fill in and print, then sign, scan and send by email. She didn't have [a scan and printer]. So, the employee of [the day care facility] sent me the papers. I gave them to the mother the next day. We filled in the forms together, I scanned the papers and emailed them back. We saved a lot of precious time by doing so. The next Monday, her little girl could start the day care. [And her mother could take care of the premature twin babies].* (SDIp-23 CM)

Our findings show that if most immigrant women use digital media to search and find information about the perinatal period and maternity services, their capacities to use these tools vary greatly. Furthermore, immigrant women in the asylum process or with language and literacy difficulties are hindered in their process of settlement by logistic barriers and by the complexity of linguistic and digital skills needed to access information and services in a digital society.

Discussion

In this part, we will discuss the relationships that immigrant women entertained with digital media as well as how these relationships intervened in their perinatal experience. We will also contrast immigrant women's experiences with HSCP's representations and examine the implications for immigrant women as well as for the care they receive.

Most immigrant women in our study used ICT to find information about health during the perinatal period; thus confirming that this use has become a mainstream practice across social and cultural groups [1], even if a stable minority of the population barely use ICT [28]. Similarly to Mason et al. [12], our data show that immigrant persons use a range of information resources, including peers, family and health care professionals. In addition, the strategies deployed by women to find information about the perinatal period on ICT varied greatly, from very skilled searches on official websites hosted by governmental and non-governmental agencies to less directed searches on apps and social media. Whereas some women occasionally looked for information about foetal development, others aimed to prepare their maternity journey while learning about specificities of their new health system. This heterogeneity of practices mirrors both the countless possibilities offered by ICT and the superdiverse population that inhabit contemporary societies [10,17].

Overall, immigrant women adopted a reflexive attitude towards their experience on social media as also shown by other authors [12]. First, women expected to find information of varied quality on ICT. They also recognised that it was difficult for them to appraise the information on their own and they wished they could discuss the information found online with HSCP [12]. In other words, immigrant women adopted similar attitudes as non-immigrant women interviewed in other studies

[29,30]. Besides, when they felt that their experience online was negatively interfering with their well-being, they tended to adapt it and avoided specific medias. As also highlighted by Gouilhers et al. [31] in another setting, women selected *lively options* (p.63) suitable for them within their situation and their social interactions.

Importantly, immigrant women reflected on how their experience on social media mirrored their overall perinatal experience. They did not depict online interactions as an isolated cause for anxiety or sadness, but as a component of it. The women concerned described how they felt in a holistic manner and showed how experiences on digital media and "in real life" were connected and interacted [2]. For instance, immigrant women confirmed that digital media have become of the essence in the situation of migration [18,21,22]. Nevertheless, they also shared that these media were substitutes for social relationships they could not entertain in presence because of the migration; thus highlighting the role of significant others in providing information during the perinatal period. Similarly, they analysed the dissatisfaction they felt about the heterogeneity and rigidity of the pieces of advice they received online and "in real life", adding to the experiences previously shared by non-immigrant women [32]. These findings may be useful to HSCP who could integrate women's experience on digital media in their holistic approach of care.

Our findings partly contrast with previous publications. Several studies show that immigrant persons tend to use ICT less than non-immigrants to find information about health [10,11]. However, the contrast of use was greater for the older and less educated immigrant participants [10]. In our qualitative study, participants were younger, hence more prone to use ICT [10,28]. Our data suggest that immigrant persons with lower education levels not only use ICT less to inform their health but have less capability to orientate their search and appraise the information. Despite this disadvantage, immigrant women were aware of their need for support. The only immigrant women who did not search for information about health on ICT, either had literacy difficulties or lived in difficult circumstances without WIFI access. The absence of searches for health-related information on digital media by them is therefore not reassuring [11] but points to wider social inequities [28].

As a non-English speaking country, Switzerland is nevertheless the home of many English-speaking immigrants who work in multinational organisations or companies; these immigrants are often called "expats" to highlight their more affluent situation. Several women corresponding to this profile participated in our study. They expressed that it was difficult to navigate their new health and social care system; an element common to all women in our study irrespective of their social situation. These women were skilled ICT users and were able to access information on websites such as the NICE or the well documented site *Evidence-based birth;* reminding us that Evidence-based medicine is used by the public, individually or within social movements, to promote citizens' rights within health care [33]. These sites cannot be used by the Swiss HSCP who do not read English; a proportion of professionals as yet not assessed in our country. Swiss maternity hospitals, like those in other European countries, may encounter delays in adapting perinatal care to the state of the evidence. For instance, the rate of caesarean sections is above 30%, hourly vaginal examinations during labour are still in place in some maternity hospitals and episiotomy rates have only decreased slowly and inconsistently over the last two decades [34]. Hence, English speaking immigrant women may face a difficult experience, if they access good quality evidence supporting a balanced technicisation of birth but give birth in a setting prone to an abundant use of technicisation.

Women's results contrasted with the culturalist representations held by some professionals who either saw immigrant women as having less of an appetite for ICT-based information or who held a negative opinion of ICT-use for finding information [35]. Our findings suggest that the absence of ICT-use could help identify women who live in social distress [8] and who have difficulties accessing health and social care services [11,28]. Digital technologies, including information accessible on social media and digital portals that allow access to services, constitute digital determinants of health [36]. Public health and digital scholars have expressed concern regarding the unequal access to information and services that the digital era may augment [11,28]. These authors encourage policy makers as well as HSCP to improve access to their services by conceiving procedures that grant access to information or services inclusively [11,37]. In our study, HSCP working in close contact with women living in social distress worried about the unequal access to services linked to online portals; they countervailed this inequality by helping women to subscribe to essential services. This attitude may be critiqued by professionals who worked with more affluent populations [8]. Practitioners from all professions adjust their activity to the circumstances and problems they encounter [38]. We therefore argue that this adaptation by HSCP to social distress pertains to the scope of practice, including for midwives and nurses.

The diverse digital capabilities and practices of immigrant women as well as the almost limitless landscape of digital media containing health-related information pose a challenge to HSCP. Information about health constitutes one of the resources that may help women promote their own health [11,12], provided they live in circumstances that allow health promotion [7,8]. For immigrant women, information accessibility may be more important as they suffer from higher morbidity and mortality rates during the perinatal period in high-income countries [5,6]. We hence suggest that ICT-based information should become a topic of discussion within woman-centred care [39], with the purpose of identifying if women's needs for information are covered. Immigrant women in our study were eager to have conversations with healthcare professionals about the information they found on digital media. Yet, this discussion does not seem to have started as a matter of routine. HSCP tended to know little about immigrant women's searching strategies with a few exceptions. As our and others' findings show, HSCP are not necessarily digital experts, especially when considering older generations [35]. HSCP can hence be reluctant to engage with social media themselves [35] and may have difficulties identifying relevant information sites. This difficulty may be stronger in smaller and non-English speaking health systems where a central system of information such as the UK-based NICE does not exist.

Social scientists have argued that the voices of research participants' must be taken seriously [31]. When midwives or nurses worry about an intrusion of digital devices into the perinatal period and early childhood [40], they mention a phenomenon that deserves attention both professionally and in future research. This reluctance towards digital media expressed by several professionals may nevertheless distort professionals' understanding of the role played by digital media in women's experience. During the interviews, HSCP recognised the potential value of digital resources for women, but also tended to point out that information found online could be a source of distress for women. In some cases, women who looked for information were considered responsible for their state of anxiety. As discussed above, and as our data show, information found online and interactions with peers contributed to distress when women were already in a distressing situation, particularly during the postpartum period. When HSCP considered digital information as an independent cause of distress, they may have downplayed the role of the overall environment in which women lived their experience as well as the unfolding of pregnancy, birth and the postpartum period as a potentially challenging bodily experience [31].

In addition, HSCP sometimes held a binary vision of women who may or may not use digital media to find information. Some professionals tended to stereotype immigrant women positively in their discourses – particularly women who originated from an African country - as having less need for information and support. These women were depicted as more "natural" or "instinctive" and less prone to ask questions. These stereotypes were observed in an ethnography conducted with midwives who accompanied home births and who were less in contact with low-income immigrant women [26]. These representations were contradicted by several immigrant women met during our research who expressed difficulties along their maternity journey. These women

needed information as well as concrete support about childrearing practices. In another study, similar stereotypes prevented hospital-based health care professionals from contracting interpreters to communicate with immigrant women and from identifying social distress [8]. Even if they circulate a positive idea content about women, these stereotypes interfere with the identification of concrete needs; an important finding in the context of immigrant women's and infants' augmented morbidity and mortality [5,6].

Limitations

Our study mainly relied on interviews with participants. Hence, we only modestly accessed the digital media immigrant women use. Direct data on women's strategies for searching for and appraising information are needed. Complementary limits are described in a previous open access article [24].

For future research and development

Digital media pertain to the determinants of health [36]. Research and initiatives seeking to include how women use ICT in the care plan within a woman-centred approach [39] are needed. Access to health and social services has to be considered for all, including women with linguistic or literacy difficulties.

Conclusions

Immigrant women entertain diverse and unequal experiences with digital media to find information about the perinatal period. Therefore, their digital experiences and need for information ought to become a topic of discussion within the framework of woman-centred care [39]. Women would welcome respectful discussions with professionals about the reliability of information they found. Professionals can expect women to be reflexive towards ICT use and to search for adapted *lively options* within their current situation and interactions [31]. Immigrant women who have a negative experience on ICT and women who do not access ICT to find information may have other important needs uncovered.

Ethics approval and consent for participation

The research protocol was granted approval by the competent ethical commissions in Switzerland (Project 2018–02081 CER-VD Lausanne Switzerland and CCER-GE Geneva Switzerland). Participants were informed of the objectives and procedures of the study, when necessary, with translated documents and an interpreter, and gave their consent to participation.

Funding

The article is based on original data that were produced throughout the research Mi-TIC about immigrant women's use of Information and Communication Technologies led in Switzerland from December 2018 to January 2020. Our research was funded by the Swiss National Science Foundation (10DL1A_183123) under the title "Usages, expériences et besoins de femmes migrantes en regard des nouvelles technologies de l'information et de la communication autour de la période de la naissance".

Authors' contributions

PP designed the study, CK performed the literature reviews prior, during and after the study, PP, CC and CK produced and analysed the data, including the revision and discussion of the coding. PP wrote the first version of the manuscript; PP, CC & CK revised and edited the manuscript. All authors have read and approved the article prior to submission.

Conflict of interest

None declared.

Acknowledgements

Our research team thanks all participants in our research warmly: immigrant women and HSCP for having shared their experience. We thank Susan Dingle for the English proofreading and the secretariat of HESAV for their precious support and know-how.

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