Special Section

TEXTO & CONTEXTO ENFERMAGEM
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USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES BY PREGNANT WOMEN FOR THEIR EMPOWERMENT IN THE PARTURIUM-PUERPERAL PROCESS

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ABSTRACT

Objective: To understand the meaning of information and communication technologiy use by pregnant women for their empowerment in the parturition-puerperal process.
Method: This is qualitative research, with a Grounded Theory theoretical-methodological framework in the Straussian version. Data collection took place in two maternity wards in homes in Florianópolis, Santa Catarina, Brazil, with theoretical sampling of 15 in-depth interviews with postpartum women, from July to November 2019. Data analysis was carried out concomitantly with collection, through open, axial and selective coding/integration, using the paradigmatic model.
Results: The central phenomenon entitled “Expressing the meaning of information and communication technologiy use for the empowerment of women in the birth process and breastfeeding” was constructed with four related categories: “Noticing gaps in prenatal care”; “Needing to confirm information from information and communication technologies with healthcare professionals”; “Empowering themselves for work, childbirth, and breastfeeding”; and “Highlighting women as leading actors”.
Conclusion: Information and communication technologiy use as complementary preparation for the parturition and puerperal process is significantly positive and essential for pregnant women. The search for these technologies encourages autonomy and empowerment, and is necessary, mainly, to fill gaps left by insufficient prenatal appointment time. Despite being part of everyday life, healthcare professionals continue to be irreplaceable in monitoring and welcoming these pregnant women. However, they need to adapt to reduce the possible negative impacts of these technologies and to make advances in the care process.

DESCRIPTORS: Obstetric Nursing. Pregnant Women. Prenatal Care. Childbirth. Post-Childbirth Period. Information Technology. Empowerment.

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USO DE TECNOLOGIAS DA INFORMAÇÃO E COMUNICAÇÃO PELA GESTANTE PARA SEU EMPODERAMENTO NO PROCESSO PARTURITIVO-PUERPERAL

RESUMO

Objetivo: compreender o significado do uso de tecnologias da informação e comunicação pela gestante para seu empoderamento no processo parturitivo-puerperal.
Método: pesquisa qualitativa, com referencial teórico-metodológico da Teoria Fundamentada nos Dados, na versão Straussiana. A coleta de dados ocorreu em duas maternidades em domicílios de Florianópolis, Santa Catarina, Brasil, com amostragem teórica de 15 entrevistas em profundidade com puérperas, no período de julho a novembro de 2019. A análise dos dados foi realizada concomitantemente à coleta, por meio da codificação aberta, axial e seletiva/integração, com a utilização do modelo paradigmático.
Resultados: construiu-se o fenômeno central intitulado "Expressando o significado do uso das tecnologias da informação e comunicação para o empoderamento da mulher no processo parturitivo" com quatro categorias relacionadas: "Percebendo lacunas no acompanhamento pré-natal"; "Necessitando confirmar as informações das tecnologias da informação e comunicação com os profissionais de saúde"; "Empoderando-se para o trabalho de parto, o parto, e a amamentação" e "Evidenciando a mulher como protagonista".
Conclusão: o uso das tecnologias da informação e comunicação como preparo complementar ao processo parturitivo e puerperal é significativamente positivo e essencial para as gestantes. A busca por essas tecnologias estimula a autonomia e o empoderamento, e faz-se necessário, principalmente, para sanar lacunas deixadas pelo tempo insuficiente das consultas de pré-natal. Apesar de fazerem parte do cotidiano, os profissionais de saúde continuam sendo insubstituíveis no acompanhamento e acolhimento dessas gestantes. Porém, necessitam adaptar-se para reduzir os possíveis impactos negativos dessas tecnologias, e para galgarem avanços no processo de cuidar.

DESCRITORES: Enfermagem obstétrica. Gestantes. Cuidado pré-natal. Parto. Período pós-parto. Tecnologia da informação. Empoderamento.

USO DE TECNOLOGÍAS DE INFORMACIÓN Y COMUNICACIÓN POR PARTE DE MUJERES EMBARAZADAS PARA SU EMPODERAMIENTO EN EL PROCESO PARTURIO-PUERPERAL

RESUMEN

Objetivo: Comprender el significado del uso de las tecnologías de la información y la comunicación por parte de las mujeres embarazadas para su empoderamiento en el proceso parto-puerperal.
Método: Se trata de una investigación cualitativa, con un marco teórico-metodológico de la Teoría Fundamentada en su versión straussiana. La recolección de datos se realizó en dos maternidades de domicilios de Florianópolis, Santa Catarina, Brasil, con muestreo teórico de 15 entrevistas en profundidad a puérperas, de julio a noviembre de 2019. El análisis de los datos se realizó de manera concomitante con la recolección, a través de métodos abiertos, axiales. y codificación/integración selectiva, utilizando el modelo paradigmático.
Resultados: El fenómeno central titulado "Expresar el significado del uso de las tecnologías de la información y la comunicación para el empoderamiento de las mujeres en el proceso de parto" se construyó con cuatro categorías relacionadas: "Percibir brechas en la atención prenatal"; "Necesidad de confirmar información proveniente de las tecnologías de la información y la comunicación con los profesionales de la salud"; "Empoderarte para el trabajo, el parto y la lactancia"; y "Destacar a las mujeres como leading actors".
Conclusión: El uso de las tecnologías de la información y la comunicación como preparación complementaria al proceso de parto y puerperal es significativamente positivo y esencial para las mujeres embarazadas. La búsqueda de estas tecnologías fomenta la autonomía y el empoderamiento, y es necesaria, principalmente, para llenar los vacíos que deja el tiempo insuficiente de consulta prenatal. A pesar de ser parte de la vida cotidiana, los profesionales de la salud siguen siendo insustituibles en el seguimiento y acogida de estas mujeres embarazadas. Sin embargo, necesitan adaptarse para reducir los posibles impactos negativos de estas tecnologías y avanzar en el proceso de atención.

DESCRIPTORES: Enfermería Obstétrica. Mujeres Embarazadas. Cuidado Prenatal. Parto. Período Posterior al Parto. Tecnología de la Informacion. Empoderamiento.

INTRODUCTION

Digital and innovative technologies were inserted into people's lives in order to facilitate access, management and control of all aspects of life, and emerged to meet the dynamic and diverse nature of everyday requirements and challenges[1]. In public health, information and communication technologies (ICTs) are essential, as they increase the spectrum of health information coverage[2]. They also favor health promotion actions, and are clearly positive, producing new methods of assistance to the population[3].

ICTs are also essential for achieving global proposals such as the Sustainable Development Goals (SDGs) for the 2030 agenda, supported by the United Nations (UN). The SDGs, in turn, can be optimized as ICTs are used correctly so that they are implemented quickly and effectively[2].

The healthcare professional/patient relationship is changing. Currently, there are more resources available through ICTs, which have impacted health and nursing practice, allowing a more focused approach, through health promotion, self-care and tips for addressing the health-disease process[4]. Furthermore, these technologies are transforming the way we practice our rights or ensuring new dimensions and systems to guarantee empowerment[5].

Studies show that women are the ones who are most up to date with ICTs in relation to health[2] and seek to empower themselves during the parturition process and the postpartum period by acquiring enriching knowledge[6]. This updating process occurs through the search for emotional support and online information on websites, social networks, lives and platforms. Telemedicine services and prenatal appointments were also highlighted during the COVID-19 pandemic period[7].

Empowerment prevents situations that could compromise the lives of women and their children[8]. Therefore, misinformation is directly related to obstetric violence, from the lack of information to the execution of unnecessary interventions. This fact contributes to women becoming passive during the parturition and postpartum process, resulting in the absence of their leading role[9]. It is extremely important that the information is of high quality to provide autonomy in choices[7].

Digital technologies constitute substantial tools in the support system for pregnant women and their families during the gestational, parturition and postpartum period[6]. They have numerous potentialities, but there are also gaps in their use, such as difficulties in management, implementation and technical support, which compromises their effectiveness[10]. Furthermore, there is the challenge of combining innovation and the inclusion of people in the teaching process, as access to the internet is not yet universal[11].

ICTs are already part of people's daily lives, which is why nursing must follow this progress[4], requiring updating to support nursing knowledge and progress[11]. Working with ICTs in health is a challenge, so professionals need to be committed to the population's needs and evolution to guarantee rights[5] and improve quality of care from prenatal care.

During a meticulous foray into the MEDLINE, LILACS and SciELO scientific databases, and with the purpose of investigating the use of ICTs in the gestational context, aiming to empower women in the context of the parturition and puerperal process, came across a notable gap in the *corpus* of studies concerning this specific topic.

This finding unequivocally signals the urgency of new investigations, in order to enrich healthcare professionals' knowledge framework regarding the use of these digital tools in preparing pregnant women for the birth of their children.

Therefore, this study aimed to understand the meaning of ICT use by pregnant women for their empowerment in the parturition-puerperal process.

METHOD

This qualitative study was based on the Grounded Theory (GT) theoretical-methodological framework in the Straussian version. This was conceived by a master's thesis in nursing, and, based on the data collected, the substantive theory was developed, constructed in a rigorous manner[12].

The setting chosen to gather participants were two maternity hospitals, one public and the other private, both in Florianópolis, capital of the state of Santa Catarina, located in southern Brazil, and also homes of some postpartum women attended by a planned home childbirth team. These locations were selected aiming to diversify study participants, which is indicated in accordance with what GT recommends, since different social strata increase the possibilities of comparison between concepts and densification of categories[12].

Postpartum women who were using or who had used ICTs during pregnancy to prepare for work, childbirth, and breastfeeding, who had a eutocic childbirth, and who were being assisted or had already been assisted in maternity wards or by the healthcare team planned home childbirth selected for this study were included.

Postpartum women who did not know, did not have and/or did not have access to ICTs during pregnancy, whose newborns were hospitalized in the Neonatal Unit, with psychiatric problems and clinical complications due to post-childbirth hemorrhage were excluded.

Data collection occurred through a semi-structured interview, carried out individually, in two stages. Initially, theoretical sampling was intentional, with 10 postpartum women being interviewed, five still hospitalized in the shared accommodation of a public maternity hospital in Florianópolis and, subsequently, five postpartum women at home and who had a home childbirth. These locations were selected with a view to diversifying study participants, which is recommended in accordance with what GT recommends.

Based on responses obtained from the 10 postpartum women in the first stage, we moved on to the second stage, in which five more postpartum women who were in the shared accommodation of a private maternity hospital in Florianópolis were interviewed. The hypothesis that guided this second stage was: Do postpartum women who had their childbirth in a private maternity hospital use ICT more during pregnancy to empower themselves for the parturition-puerperal process?

In total, the sample consisted of 15 postpartum women who were in the immediate postpartum period (up to the 10th day after childbirth). In the two maternity wards and homes, the interviews were only carried out after participants' authorization.

The main question asked to all participants was "What does ICT use, such as Facebook®, Whatsapp®, Instagram®, Twiter®, blogs or others, mean to you for your empowerment in the parturition-puerperal process?", which was deepened during the interview.

The data collection period took place from July to November 2019. The researcher/participant relationship was established at the time of the invitation in person, together with the main researcher's presentation and the research objectives, with no refusals. The interviews were carried out by a master's student, who was the main researcher, using a semi-structured script, and recorded on a mobile device, lasting an average of 40 minutes, and transcribed in full. Memoranda and diagrams were created and were essential for data analysis in this research. Collection ended with theoretical saturation. The data was stored on a computer.

Data analysis followed the GT stages, starting with open coding, followed by axial coding, which generated 1,187 codes. The paradigmatic model was used, relating the categories to their respective subcategories and to the analytical components that are conditions, actions/interactions and consequences[12]. In the third (analytical) stage, the theoretical model was validated in two ways. First, the theoretical scheme elaborated was compared with raw data found in the investigation. This

was then assessed and validated by a professional expert in the area related to the phenomenon investigated and in GT. Subsequently, selective coding determined the refinement and integration of categories with the central phenomenon. For this purpose, ATLAS.ti version 8.4.21 was used. Hence, the substantive theory emerged[12].

Aiming to respect Resolutions 466/2012 and 510/16 ethical aspects, this study was carried out after approval by the Research Ethics Committee. In order to preserve confidentiality regarding participant identity, statements were identified by the letter "P" (initial of the word postpartum women) followed by an Arabic number according to the order in which interviews were carried out. The survey results were forwarded to each participant.

RESULTS

A total of 15 postpartum women participated in this study, of which 10 were hospitalized in the maternity wards' shared accommodation and five postpartum women in their own homes. They all lived in Florianópolis (SC), underwent prenatal care with approximately 12 appointments and were on average 30.1 years old.

The most used ICTs during pregnancy were apps about pregnancy (20.3%) and websites such as YouTube® (18.8%), Instagram® (17.2%), WhatsApp® (12.5%), Facebook® (10.9%), Google® search engine (6.3%), books and magazines (6.3%), online course/class (4.7%), and films (3.1%). Regarding the search for information about breastfeeding, they considered that the most used were online courses/classes, Google® search engine and social networks, and none of them used applications about breastfeeding.

Through the paradigmatic model application, the substantive theory "Expressing the meaning of ICT use for the empowerment of women in the birth process and breastfeeding" was constructed, which is the central phenomenon of this study. Using this model, the analytical components were expressed through four categories related to the central phenomenon: "Noticing gaps in prenatal care"; "Needing to confirm information from information and communication technologies with healthcare professionals"; "Empowering themselves for work, childbirth, and breastfeeding" and "Highlighting women as leading actors". The first category corresponds to the conditions analytical component. The second and third correspond to the actions/interactions component. The fourth corresponds to the consequences component.

Noticing gaps in prenatal care

Gaps in prenatal care will have a direct impact on the parturition and puerperal process, which sometimes does not reach satisfactory standards in Primary Health Care or in private practices, compromising the quality of the process. The low quality of prenatal care can adversely impact the mother-child dyad's health during pregnancy, highlighting failures in appointments that require urgent corrections.

Study participants point out deficiencies in appointments, highlighting the lack of training of healthcare professionals, who often offer mechanized care and superficial information, resulting in potential harm to pregnant women and their babies. [...] *Appointments were very superficial and well* [...]. *They followed a routine of questions. I told them more about what was happening in relation to the pregnancy than they gave me information about what I should do. It wasn't as informative as it should have been* (P4).

Women expressed expectations of more extensive prenatal appointments, addressing questions about pregnancy, labor, childbirth and the postpartum period. However, both in Primary Health Care and in specialized private practices, they reported brief meetings, lacking detailed information, and unpreparedness for work, childbirth and breastfeeding.

On the other hand, postpartum women assisted by home obstetric nurses in private appointments highlighted a positive reception, with adequate time to clarify doubts and comprehensive guidance on gestational, labor, childbirth and post-childbirth aspects. [...] *Appointments were always very broad* [...] *It was not a formal appointment, so they came here at home, we talked, debated, talked about childbirth, they listened to the baby* (P6).

It is clear, according to reports, that pregnant women place expectations on healthcare professionals during prenatal care, given the anxiety and fragility of this period. Due to the lack of information in appointments, many seek other means, including ICTs, to obtain clarification and face their curiosities and fears about the future.

Needing to confirm information from information and communication technologies with healthcare professionals

In the search for information in ICTs, clashes of ideas and behaviors generate confusion and doubts, weakening women's self-confidence. In a society with broad access and diversity of unfiltered information, women report feeling confused due to data density and mismatches of information. Therefore, this category reveals three subcategories.

The first subcategory, "Confusing with information from information and communication technology", highlights that women without prior knowledge about pregnancy and childbirth can become confused when faced with miscellaneous information on ICTs, making them more vulnerable to misunderstandings from different sources. [...] *You have to have the appropriate direction, because, as I said, there is a lot of erroneous information. There is a lot of biased information that ends up leading women to an unnecessary cesarean section, due to the interests of doctors who are not well informed* [...] (P10).

In a growing "virtual" context, where technologies tend to replace human interactions, study participants expressed the need for personal meetings with healthcare professionals to feel calm and safe. Women highlighted the importance of face-to-face care from nurses, especially obstetric nurses due to their safe, humanized and empathetic approach to personal meetings. [...] *Nurses were essential throughout our journey* [...] *And even though I was very prepared, feeling very safe, even though I was always sure that I had the capacity to give birth, that was all very natural, in many things they reassured me* [...] (P9).

The second subcategory, "Needing a personal meeting with healthcare professionals", highlights the importance of human contact, making up for the coldness of ICT screens. During pregnancy, women seek attention and care, feeling needy.

Although many reports point out the usefulness and necessity of access and use of ICTs for women to feel safer, it is observed that this does not replace the physical presence of healthcare professionals. As participants demonstrated, the preference is to be welcomed by competent professionals who provide security throughout the gestational process and at childbirth. [...] *It remains something distant.* [...] *It's all a bit theory.* [...] *I think that, in work, it is not just information, but there is also acceptance!* [...] *And security, how are you feeling about that* [...] *I think you can't do that so easily with information technology, because it's a very cold thing. Information technology will not welcome you and will not provide security (P8).*

The third subcategory, "Believing more in professionals than in information and communication technologies", reveals that pregnant women sought additional information during pregnancy, in addition to prenatal appointments, including ICT use. However, participants emphasize that ICT use does not replace the monitoring of healthcare professionals. Although ICTs are often used to clarify doubts and acquire knowledge, women prefer to trust healthcare professionals' opinion more than information from ICTs. [...] *No, I don't think it replaces it, because everything I read on the internet I questioned*

with my professionals who were following my prenatal care, because we learn how to breathe, how to do it and so on [...]. *I, at least, am afraid of doing that and that not working* (P11).

Empowering themselves for work, childbirth and breastfeeding

The third category highlights that participants adopted proactive attitudes of empowerment. Preparation for labor, childbirth and post-childbirth is considered crucial and, ideally, should begin before pregnancy. Some participants reported having prepared with their families for a long time, while the majority did so throughout the pregnancy. Family empowerment was considered essential for support, especially in choices related to work and childbirth.

In the subcategory "Empowering the family", it is highlighted that participants' families sought information during pregnancy, being strongly encouraged by them. Many reports highlight ICTs as facilitating tools for family empowerment during this period, with greater reach and persuasive power than pregnant women's words. [...] *And the internet was fantastic for that.* [...] *of being able to bring information about childbirth to the whole family, to prepare for that moment, you know?* [...] *So, like, because they watch childbirth videos, you know, like that?* [...] *Even though I had certain information, it was no use. That thing, when we talk to our husband and children, it's not the same thing as you taking it and just sending a link, watch it* [...] *And then they go, watch it and "oh yeah" and really listen, you know?* (P6).

Amid concerns about cases of obstetric violence related to a technocratic model of obstetric care, women seek, above all, safety and the certainty of a successful childbirth, without constraints. In the second subcategory, "Feeling safer", participants highlight that both ICT and guidance from healthcare professionals made them feel calmer. The information found in ICTs, in particular, contributed to their confidence in relation to events surrounding the childbirth event. [...] *Technology* [...] *So, it gave me more security.* [...] *Because of her I was much calmer.* [...] *I arrived here calmly, people looked at me and said, guys, you don't look like you're going to have a baby, it looks like a false alarm.* [...] *Everyone thought I was going to leave and the doctor already admitted me. So, I arrived very calmly here and at the time of the pain there, when I arrived with 9 dilation that fell, "it doesn't come close to me", but until then I was able to keep breathing and so on, and it was really technology that gave me this security, that taught me, that I learned how to breathe and be calmer.* [...] *It wasn't just technology, but yes, it certainly contributed a lot* (P11).

Pregnancy, a period of intense physical and emotional transformations, highlights the importance of female self-knowledge, as evidenced by postpartum women's reports. The third subcategory, "Self-knowledge", reveals that participants recognize the need to understand their bodies with unique characteristics, emphasizing the uniqueness of each childbirth and women's natural capacity for this process. This self-awareness is considered essential even before planning a pregnancy. [...] *I think they helped me to have different views than mine to understand that people are different, bodies are different, childbirths are different and not create expectations about something idealized.* [...] *I think it helped me in that sense. I think that, if I didn't have these technologies, I wouldn't have so many different accounts and I wouldn't have felt safe to understand that we are different* (P4).

In the fourth subcategory, "Preparing for the unpredictable", the unpredictability of work and childbirth is addressed, despite the preparation efforts of women and their family. Even with information acquired through ICTs and other sources, participants highlight that it is not possible to anticipate everything. Some reports indicate that, although they have prepared themselves, the maternity experience often differs from what was planned, generating fear and, at times, frustration. [...] *Even if it had been through technology or professionals, it is, even so, still, when the time comes, right.* [...] *We still get scared, you know? Thinking,* [...] *It's not quite the way I thought it would be, you know? And that! I found it very important to be confident when getting there, understanding things*

and everything. But of course, this still cannot fully prepare the person. [...] *It is only after it passes that you will understand correctly* (P1).

Being conscious during the birth process is challenging and requires psychological preparation. The more a woman acquires knowledge about this, the more she feels prepared and safe for unpredictable situations. Through the fifth subcategory, "Becoming more aware in the birth process", it is clear, through reports, that the more information women receive, the more aware they become.

The interviewees said that accessing ICTs is a practical and quick way to acquire knowledge and that, through social networks, mobile applications and search engines such as Google®, they obtained information that made them more aware of what was happening. [...] *I looked, I found out.* [...] *In these media that I mentioned, in these social networks and technology and then I already knew, for instance.* [...] *I knew I was starting with the prodromes; I knew I was entering the active phase; I knew that soon I would feel like pushing. All of this helped me, even though it was painful, to move through it in a more conscious way* (P5).

Ideally, preparation for labor and childbirth should begin before pregnancy, but often begins throughout pregnancy. The subcategory "Feeling better prepared for work and childbirth" highlights how postpartum women benefited from seeking information in ICTs, contributing to their preparation from the beginning of work until the birth of their children.

Some reports even point out that information from ICTs prepared them better than the guidance that healthcare professionals gave during prenatal appointments, and this raises doubts as to whether pregnant women are receiving adequate preparation from these professionals for the birth of their children. [...] *Yes, they helped me* [...]. *When I came here to the maternity ward, I arrived here with 7 cm dilation.* [...] *I read in these groups, on these pages that when it started, I would have to do some exercises to help increase dilation. Of course, that's not the only thing that works, but it helped me a lot in the beginning. So, when I saw, according to what they said on these pages, what I was feeling, now it's time to go to the maternity ward, I'm already dilated.* [...] *Contraction every 5 minutes* [...] *I came to the maternity ward* (P11).

The seventh subcategory, "Positioning themselves in relation to conduct", highlights how women empowered by accurate information are able to position themselves in the face of healthcare professionals' conduct, even when they diverge from their beliefs. Participants report feeling strength and determination to defend their convictions based on information obtained from ICTs. [...] *Definitely yes. For instance, I didn't want it from the beginning, what I agreed with my doctor was not to have it, to try not to have analgesia, not to induce childbirth artificially, not to break the water. Because I had information that this, based on studies, could be harmful to me, to the baby, and could lead to an unwanted cesarean section. So, the study made me firm in following my plan, and I ended up having a completely natural childbirth (P15).*

Preparation for the postpartum period necessarily includes breastfeeding, which offers several benefits for mother and child, promoting health and strengthening the emotional bond. Unfortunately, many professionals do not adequately address this topic during prenatal care. The eighth subcategory, "Preparing for breastfeeding", highlights how women are preparing for this aspect, and what resources are being used to achieve this goal. [...] *I had some doubts, such as the preparation of the breast. If I had to do anything to prepare the breast, I checked with my obstetrician. But I took an online breastfeeding course. As you can't do it at the clinic, for instance, because I came here to do it; I did it online to answer any questions I had* (P13).

Some postpartum women resorted to using ICTs while they were still pregnant to gain more knowledge about breastfeeding, in addition to what they had during prenatal care. Unfortunately, most of them reported that they did not even hear about this during pregnancy from the healthcare professionals who treated them. Some mentioned that they even received information, but it was very superficial.

Highlighting women as leading actors

The fourth and final category, “Highlighting women as leading actors”, expresses how women’s leading role came about during pregnancy, work, childbirth and the postpartum period, and how they themselves built this. The subcategories explain how this construction occurred, such as “Receiving encouragement from healthcare professionals to use information and communication technologies”, “Acquiring knowledge through information and communication technologies” and “Complementing information during prenatal care”. [...] *And so in home childbirth we are totally leading actor, so they don’t make any decisions, none, none. So how am I going to make decisions? So, they sent a lot of articles about it. I asked, “What about vitamin K, what do you think?” “I don’t think anything, the childbirth is yours, the baby is yours. But look, there are articles about pros and cons, about what it is for, about what.* [...] *So they,* [...] *everything I questioned about childbirth decisions, they sent me articles so I could make a decision with the best possible basis* (P9).

Healthcare professionals are encouraging pregnant women to seek information, update themselves and develop critical thinking. During prenatal appointments, they recommend using mobile apps and participating in social media groups to gain knowledge about pregnancy and baby development and childbirth. This is highlighted in the first subcategory “Receiving encouragement from healthcare professionals to use information and communication technologies”. [...] *So, my doctor suggested the app to me, doctor* [...], *he said, “Look, I think you’d better use the app, because I’m not going to be there 24 hours with you. Then he will clear up any doubts you may have had until the appointment (P3).*

Many women in this study highlighted that access to ICTs enriched their knowledge, providing a more comprehensive understanding and strengthening their empowerment with the information obtained. In the second subcategory, “Acquiring knowledge through information and communication technologies”, pregnant women perceived ICTs as an effective tool for learning, information and updating, being an excellent alternative for clarifying doubts about various aspects related to pregnancy, childbirth and postpartum. [...] *It was interesting, because it’s there, right? The information is all there for you to study. Basically, because there are several aspects that are divided and we can take a little bit for ourselves and end up learning more about pregnancy, right? Here comes the doubt. So, for me, that was cool, because I learned a lot from her, from what I saw on the internet, on Instagram, on Facebook®, in mothers’ groups* [...] (P11).

Prenatal care is an essential moment to provide essential information about pregnancy, labor, childbirth and postpartum/breastfeeding. However, participants in this study criticized the lack of satisfactory information received from healthcare professionals, feeling the need to seek supplements on their own.

It is highlighted in the third subcategory, “Complementing information during prenatal care”, that participants felt a lack of complete and concise information being provided by healthcare professionals, seeking alternatives to provide this through ICTs. [...] *But about childbirth, it would be more in prenatal appointments, just not as much information, right?* [...] *Some information.* [...] *Because the rest of it I took from YouTube® and the app itself* (P01).

These women sought to expand their knowledge through other sources of information. This suggests that prenatal care is not being provided in a way that promotes safety and preparation for pregnant women for the birth process.

DISCUSSION

Nursing is a relational profession, so face-to-face assistance is essential. However, ICTs are defended with scientific evidence as complementary technology tools for nursing care[7], even if digital technologies are not substitutes for healthcare professionals[4] according to this study that reveals professionals' encouragement to use these technologies, providing safety and reception. However, the dilemma of dehumanizing care by mechanizing care is also a dilemma experienced by professionals[13].

Professional nurses occupy a prominent position in actions to prevent obstetric violence, providing quality care, with health education regarding women's rights in the pregnancy-puerperal cycle[14]. Professionals must be trained to guide pregnant women on how to prepare childbirth plans according to their clinical needs and the realities of health services in their locality[15].

All information about risks and benefits must be passed on during prenatal care. And empowerment gives women the power to take a stand when it comes to decisions regarding their body and sexuality, and have a parturition and puerperal process in accordance with their instinct and biological characteristics[14]. Obstetric violence has increased in the current scenario, which is why the adoption of resources to prevent this situation is emerging[16]. Restoring women's autonomy with a focus on sexual, reproductive and human rights can break this obstetric model in confronting violence[17].

Strategies that can be used to empower pregnant women and avoid obstetric violence are knowledge of their rights during the parturition and puerperal process, building a childbirth plan, and creating a bond between pregnant women and healthcare professionals[8]. Together, these support the findings of this study with regard to autonomy in the search for information through ICTs. Another practical example is a study that presents the construction of a textual technology for an educational guide to empower pregnant women and their companions during the birth process[18].

Pregnant women must be educated about their rights[9]. Prenatal health education would be able to identify and prevent obstetric violence, changing a negative outcome[8]. The use of digital technologies generates a system to guarantee fundamental human rights against violence[5]. This is in line with the findings of this study in relation to the desire to expand women's and their families' knowledge through ICTs.

For there to be an impact during prenatal care, it is necessary to address new technologies covering different contexts and realities to reduce the global digital divide[7] and even the feasibility of universalizing digital access, according to evidence in this study. With the COVID-19 pandemic, a new trend and change occurred in relation to digital technologies, the investigation of existing software and local market ICTs to adapt to these changes[2].

Professional practices must be targeted at the unique needs of each patient[7], and technologies must be adapted to the realities of each location. To achieve this, healthcare professionals must be involved in its creation and implementation. Consideration must be given to the way in which individuals absorb knowledge and carry out this learning, reflecting the way in which educational materials are designed so that they are accessible[19]. Content must consist of essential content, questions from pregnant women, self-explanatory, understandable and relaxed images, with learning activities for greater assimilation[18].

Furthermore, the needs of people with visual impairments should not be ignored so that technologies are also suitable for this population[19]. However, it is possible to minimize the negative impact of ICTs through healthcare professionals' engagement in assessing usability, providing feedback on actions developed, and others[20]. According to the present study, excess information and lack of selection criteria are unfavorable points.

Health teams face several difficulties when it comes to comprehensive care, and sometimes they do not have funding to invest in information to promote self-care, autonomy, and monitoring of women

in prenatal care[7]. This is an important gap also perceived in the assistance provided by participants in this study. Structural difficulties are also encountered by professionals when using technology, such as the lack of computers in institutions[13]. On the other hand, technologies used inappropriately can also harm maternal and neonatal indicators, causing opposite effects and increasing costs[21].

ICTs must be designed appropriately, being compatible with local realities, user experiences, safety in use, scientific evidence, operability, and with strategies to produce positive impacts and favorable outcomes[20]. Digital interventions promote greater access to information and increase quality of healthcare, reducing health system costs, representing sustainability[4]. Thus, ICT use can assist in the nursing care process and enhance empowerment for the parturition and puerperal process.

Supporting findings from the present study, a scoping review highlighted ICTs as key elements for the empowerment of women in different spheres of their lives, emphasizing that through these technologies pertinent health information is made available[22]. According to the authors, this information plays a fundamental role in supporting and strengthening pregnant women during the prenatal period, comprehensively preparing them for the labor, childbirth and postpartum phases.[22].

Women who do not have information about their rights and care are in a more vulnerable position. Therefore, nurses are the professionals with the best possibility of advocating for women's rights in the parturition and puerperal process as they have a greater bond and frequency of care, requiring a greater sense of responsibility for this[23].

Among the limitations of this study, two significant ones were identified. The first is related to the exclusivity of postpartum women as participants, suggesting the need to extend investigations to include pregnant women, family members and healthcare professionals. The second limitation refers to the absence of women who chose not to use ICTs during pregnancy, indicating the importance of considering this group in future research. A more comprehensive and inclusive approach to these aspects will contribute to a more complete and contextualized understanding of the experiences associated with ICT use in maternal and perinatal health.

CONCLUSION

The present study made it possible to understand the meaning of ICT use by pregnant women for their empowerment in the parturition-puerperal process. These technologies were highlighted as tools that provide relevant information and perform the function of assisting and empowering women during this period. In this context, the integration of ICTs as a component of preparation for such moments emerges as a positive factor for these women.

Although prenatal care is essential, professionals often "fail" to provide detailed information, leaving gaps that pregnant women seek to fill through ICTs. This lack of adequate preparation during prenatal care raises questions about the quality of care offered by healthcare professionals.

Although ICTs represent relevant support during pregnancy, healthcare professionals are irreplaceable in monitoring pregnant women. Therefore, in the era of digital technologies, it is imperative that these professionals adapt and become actively involved to mitigate any adverse impacts of these technologies, thus promoting improvements in the quality of care provided.

It is observed that ICT use, such as mobile pregnancy applications, group chat applications, search sites and online information sources, gives pregnant women a notable increase in autonomy and empowerment.

Through these technological tools, they gain access to information that not only promotes greater security and serenity for themselves, but also for their families throughout the gestational, parturition and postpartum periods. However, it is pertinent to note that, occasionally, data profusion can cause additional confusion for pregnant women, parturient women and postpartum women.

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NOTES

ORIGIN OF THE ARTICLE

Article extracted from the dissertation - "*Contribuições do uso de tecnologias da informação e comunicação pela mulher durante a gestação para o seu empoderamento no processo parturitivo e amamentação*", presented to the Graduate Nursing Program, *Universidade Federal de Santa Catarina*, in 2020.

CONTRIBUTION OF AUTHORITY

Study design: Carvalho KM, Backes MTS.
Data collection: Carvalho KM, Will SF.
Data analysis and interpretation: Carvalho KM, Backes MTS.
Discussion of results: Carvalho KM.
Writing and/or critical review of content: Carvalho KM, Backes MTS, Fernandes VMB, Santos EKA, Collaço VS, Carvalho SM.
Review and final approval of the final version: Carvalho KM, Fernandes VMB.

APPROVAL OF ETHICS COMMITTEE IN RESEARCH

Approved by the *Universidade Federal de Santa Catarina* Research Ethics Committee, under Opinion 3,258,058 and Certificate of Presentation for Ethical Consideration (*Certificado de Apresentação para Apreciação* Ética) 10282319.0.0000.0121.

CONFLICT OF INTEREST

There is no conflict of interest.

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