

Review

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Care-educational technologies for labor and delivery: a scoping review

Tecnologias cuidativo-educacionais para o trabalho de parto e parto: revisão de escopo

Tecnologías de atención y educación para el trabajo de parto y el parto: una revisión exploratoria

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ABSTRACT

Objective: To map the care-educational technologies for labor and delivery.

Method: A scoping review, developed using the recommendations of the Joanna Briggs Institute. The research question was formulated using the PCC strategy and its report described according to PRISMA-ScR. Searches were conducted in April 2025 in the Medline/Pubmed, Cochrane, Scopus, EMBASE, CINAHL, Web of Science databases and gray literature, without idiomatic and/or temporal restrictions.

Results: Twenty-two studies were included, identifying ten types of technologies, mainly aimed at preparing pregnant women and their companions for labor, reducing anxiety and strengthening autonomy, as well as supporting healthcare professionals in monitoring labor and making clinical decisions.

Conclusion: Care-educational technologies are configured as strategies to support obstetric care, prepare pregnant women for labor, and improve professional practice during childbirth. Its use can contribute to safer, more participatory practices aligned with the humanization of childbirth.

Descriptors: Educational Technology; Labor, Obstetrics; Childbirth; Maternal Health; Scoping Review.

RESUMO

Objetivo: Mapear as tecnologias cuidativo-educacionais para o trabalho de parto e parto.

Método: revisão de escopo, desenvolvida por meio das recomendações do *Joanna Briggs Institute*. A questão de pesquisa foi elaborada mediante a estratégia PCC e seu relatório descrito conforme o PRISMA-ScR. As buscas foram realizadas em abril de 2025 nas bases de dados Medline/Pubmed, Cochrane, Scopus, EMBASE, CINAHL, Web of Science e literatura cinzenta, sem restrição idiomática e/ou temporal.

Resultados: Foram incluídos 22 estudos, identificando-se dez tipos de tecnologias, direcionadas principalmente ao preparo de gestantes e acompanhantes para o trabalho de parto, redução da ansiedade e fortalecimento da autonomia, bem como ao apoio aos profissionais de saúde no monitoramento do trabalho de parto e na tomada de decisão clínica.

Conclusão: As tecnologias cuidativo-educacionais configuram-se como estratégias de apoio ao cuidado obstétrico, ao preparo das gestantes para o trabalho de parto e à qualificação da prática profissional durante a parturição. Seu uso pode contribuir para práticas mais seguras, participativas e alinhadas à humanização do parto.

Descritores: Tecnologia Educacional; Trabalho de Parto; Parto; Saúde Materna; Revisão de Escopo.

RESUMEN

Objetivo: Mapear las tecnologías asistenciales y educativas para el trabajo de parto y el parto.

Método: Revisión exploratoria, desarrollada siguiendo las recomendaciones del Instituto Joanna Briggs. La pregunta de investigación se formuló utilizando la estrategia PCC y su informe se describió según PRISMA-ScR. Las búsquedas se realizaron en abril de 2025 en las bases de datos Medline/Pubmed, Cochrane, Scopus, EMBASE, CINAHL, Web of Science y literatura gris, sin restricciones idiomáticas ni temporales.

Resultados: Se incluyeron veintidós estudios que identificaron diez tipos de tecnologías, principalmente dirigidas a preparar a las embarazadas y a sus acompañantes para el trabajo de parto, reducir la ansiedad y fortalecer la autonomía, así como a apoyar a los profesionales de la salud en la monitorización del trabajo de parto y la toma de decisiones clínicas.

Conclusión: Las tecnologías asistenciales y educativas se configuran como estrategias para apoyar la atención obstétrica, preparar a las embarazadas para el trabajo de parto y mejorar la práctica profesional durante el parto. Su uso puede contribuir a prácticas más seguras y participativas, alineadas con la humanización del parto.

Descriptores: Tecnología Educacional; Trabajo de Parto; Parto; Salud Materna; Revisión de Alcance.

INTRODUCTION

Care-Educational Technologies (CET) represent an innovative proposal because they overcome the traditional view that separates technologies into purely educational (focused on teaching and learning) or care-related (focused exclusively on care). Instead, CET inseparably integrate caring and educating, recognizing that, in professional practice, especially in health and nursing, these two processes occur simultaneously⁽¹⁾.

The CET can be classified as product and process. Product-type CET correspond to concrete and structured resources, such as booklets, videos, applications and manuals that support care and education in an integrated way. Process-type CET, on the other hand, refer to the practices and interactions developed in the act of care itself, such as dialogue, listening and guidance carried out during labor and delivery, being intangible technologies, built in the relationship between professional and user ⁽¹⁻²⁾.

In the field of health, Merhy⁽²⁾ proposes classifying technologies as soft, semi-hard and hard, considering the nature of the work process in health. Soft technologies refer to the relationships established in care, involving welcoming, listening, bonding, communication and accountability between professionals and users. Semi-hard technologies refer to the structured knowledge that guides care practice, such as scientific knowledge, protocols, methods, educational materials and pedagogical instruments. Hard technologies, on the other hand, include equipment, devices, computerized systems and material resources that provide technical support to care.

In this sense, a care-educational technology is not defined solely by its format or support, but above all by the pedagogical and care-oriented intentionality that guides its use in the context of health care. For a technology to be recognized as care-educational, it is necessary that it be planned, evaluated and applied in a way that is articulated with care practices, considering the needs of the target audience and the context in which it is used⁽¹⁾.

The implementation of CET in maternal health has the potential to promote positive behavioral changes, being considered an effective strategy for promoting women's health, strengthening health education and bringing the target audience closer to the topic addressed, enabling a real assimilation of knowledge. However, its use depends on the interaction between various actors, such as users, health professionals, managers, health services, among others, which requires the planning of strategies that can influence the process of adherence, acceptability and availability of these methodologies⁽³⁻⁴⁾.

The inclusion of CET in the context of labor and delivery has been shown to contribute to promoting the well-being and safety of the parturient. These tools favor the

development of a critical-reflective attitude in women, allowing them to better understand the experiences they may have during childbirth. In addition, it promotes an increase in knowledge of the birthing process, strengthening the autonomy and active participation of the parturient in her own care⁽⁵⁻⁶⁾.

By integrating educational guidelines with comfort, welcoming and continuous support practices, care-educational technologies strengthen the bond between professionals and parturients, promoting autonomy, female protagonism and greater safety in care. Considering that childbirth involves physiological, psychological and social dimensions, the adequate preparation of pregnant women and their companions, mediated by these technologies, contributes to the reduction of anxiety and to the experience of more positive experiences during the birth process^(3,5).

In one study, the use of different care mediation technologies was observed, such as educational groups, booklets, software, blogs, games, manuals and educational albums⁽⁶⁾. However, no scoping review was identified on the CET focused on labor and delivery, with the aim of improving knowledge and promoting the empowerment of those involved, considering their lived experiences.

Despite the growth in publications on educational technologies in maternal health, the scenario of labor and delivery remains underexplored from the perspective of care-educational technologies. For this reason, this study seeks to fill this gap, contributing to the dissemination of knowledge to promote empowerment and the implementation of humanized practices in obstetric health, with the potential to positively impact the quality of care and the satisfaction of those involved.

For this reason, the production of this study is justified by the need to encourage the inclusion of care-educational technologies that assist in the birthing process, so that their implementation provides comprehensive support to the parturient woman.

Therefore, these tools, which contribute to maternal empowerment, were investigated, considering that this research may generate evidence about the CET used in childbirth, assisting in their inclusion in public and/or private services, with the potential to improve the quality of childbirth care, the satisfaction of the parturient, her companions, and the health professionals involved.

Given the above, the present study aimed to map the care and educational technologies for labor and delivery.

METHOD

Study Design

This is a Scoping Review constructed following the methodological framework of the Joanna Briggs Institute (JBI)⁽⁷⁾. For the description of the findings of this research, the checklist of Key Items for Reporting Systematic Reviews and meta-analyses with extension to Scoping Review (PRISMA-ScR)⁽⁸⁾ was used. The review protocol was registered in the Open Science Framework⁽⁹⁾ under the identifier OSF.IO/RJ8P4.

Research Question

The research question was based on the acronym PCC (Population, Concept and Context) considered “P: Pregnant women, women in labor, companions, father and health professionals”; “C: “Care-educational technologies” and “Educational technologies” and “C: Labor and delivery”. “What care and educational technologies have been developed for labor and delivery?”

Eligibility Criteria

Studies addressing the development and evaluation, with experts and/or target audiences, of care-educational technologies for labor and delivery were included. Regarding the type of evidence source, studies of all methodological designs were included, as well as dissertations and theses, with no restrictions on publication date/year or language.

Studies that addressed only the development of these technologies were excluded, since the evaluation of instruments is an essential process to guarantee the effectiveness and relevance of these tools in the context of childbirth, as it ensures that these resources are scientifically consistent, safe, understandable, and effective for the target audience.

Search strategy

The search for studies was conducted in April 2025 in the CINAHL (via EBSCO), Cochrane Library, MEDLINE (via PubMed), Scopus (Elsevier), Web of Science, and EMBASE databases. Additionally, through the Virtual Health Library (VHL), the Latin American and Caribbean Literature in Health Sciences (LILACS), Nursing Database (BDENF), and Scientific Electronic Library Online (SciELO) databases were consulted.

To broaden the scope and minimize the loss of relevant studies, a search was also conducted in the grey literature, including the CAPES Theses and Dissertations Catalog, the Brazilian Digital Library of Theses and Dissertations (BDTD), Google Scholar, OpenGrey, and ProQuest.

The search strategy was constructed from the combination of controlled descriptors and keywords, as recommended by the JBI⁽⁷⁾. The controlled descriptors were identified in the vocabularies Health Sciences Descriptors (DeCS) and Medical Subject Headings (MeSH), according to the language and specificities of each database. The keywords corresponded to uncontrolled terms, extracted from preliminary exploratory searches in the literature, including terminological variations, synonyms and expressions frequently used in the titles and abstracts of studies on the subject.

For searches in Portuguese, the following DeCS terms were used: *Trabalho de Parto* (Labor), *Parto* (Childbirth), *Tecnologia Educacional* (Educational Technology), and *Saúde Materna* (Maternal Health). The following terms were used as keywords: *tecnologia cuidativo-educacional* (educational-care technology), *tecnologia educative* (educational technology), *gestante* (pregnant woman), *parturiente* (parturient), *acompanhante* (companion), *pai* (father), *profissionais da saúde* (health professionals), *parto human* (humanized childbirth), and *parturição* (parturition).

In the English-language searches, the following MeSH terms were used: *Educational Technology*, *Labor*, *Obstetric*, *Parturition*, and *Maternal Health*. Keywords included: *care-educational technology*, *educational technologies*, *pregnant women*, *health personnel*, *birth companion*, *childbirth preparation*, and *labor support*.

The descriptors and keywords were combined using the Boolean operators AND and OR, and the search strategies were adapted to the specific characteristics and syntax of each database. The entire process of developing the strategies had the technical support of an institutional librarian, contributing to the refinement of the terms and to greater sensitivity and specificity in the search. The complete strategies used in each database are presented in Table 1.

Table 1 - Search strategy used in each database. Fortaleza, Ceará, Brazil, 2025.

DATABASES	SEARCH STRATEGY	TOTAL
MedLine via PubMed	((“Pregnant Women” OR “Pregnant Woman” OR “Woman, Pregnant” OR “Women, Pregnant” OR “Health Personnel” OR “Healthcare Workers” OR “Healthcare Worker” OR “Medical Chaperones” OR “Patient Chaperones” OR “Chaperone, Patient” OR “Patient Chaperone” OR Father OR Fathers) AND (“Educational Technology” OR “Technology, Educational” OR “Educational Technologies” OR Technology) AND (“Labor, Obstetric” OR “Obstetric Labor” OR Parturition OR parturitions OR “delivery, obstetric” OR “Obstetric Delivery”).	894
Cochrane		22
Scopus		255
Web of Science	((ALL=(“Pregnant Women” OR “Pregnant Woman” OR “Woman, Pregnant” OR “Women, Pregnant” OR “Health Personnel” OR “Healthcare Workers” OR “Healthcare Worker” OR “Medical Chaperones” OR “Patient Chaperones” OR “Chaperone, Patient” OR “Patient Chaperone” OR Father OR Fathers)) AND ALL=(“Educational Technology” OR “Technology, Educational” OR “Educational Technologies” OR Technology)) AND ALL=(“Labor, Obstetric” OR “Obstetric Labor” OR Parturition OR parturition OR “delivery, obstetric” OR “Obstetric Delivery”).	76
CINAHL and EMBASE	('pregnant women'/exp OR 'pregnant women' OR 'pregnant woman'/exp OR 'pregnant woman' OR 'woman, pregnant' OR 'women, pregnant' OR 'health personnel'/exp OR 'health personnel' OR 'healthcare workers' OR 'healthcare worker'/exp OR 'healthcare worker' OR 'medical chaperones'/exp OR 'medical chaperones' OR 'patient chaperones'/exp OR 'patient chaperones' OR 'chaperone, patient' OR 'patient chaperone' OR 'father'/exp OR father OR 'fathers'/exp OR fathers) AND ('educational technology'/exp OR 'educational technology' OR 'technology, educational'/exp OR 'technology, educational' OR 'educational technologies' OR 'technology'/exp OR technology) AND ('labor, obstetric'/exp OR 'labor, obstetric' OR 'obstetric labor'/exp OR 'obstetric labor' OR 'parturition'/exp OR parturition OR parturitions OR 'delivery, obstetric'/exp OR 'delivery, obstetric' OR 'obstetric delivery'/exp OR 'obstetric delivery').	361
Lilacs, BDENF and Scielo via BVS	((parturient* OR gestant* OR "profissionais da saúde" OR "profissional de saúde" OR "pessoal da saúde" OR acompanhant* OR "acompanhante de paciente" OR "acompanhantes de pacientes" OR pai) AND ("tecnologia cuidativo-educacional" OR "tecnologia educacional" OR "tecnologia educativa") AND ("trabalho de parto" OR parto).	242
BDTD	"tecnologia cuidativo-educacional" OR "tecnologia educacional" OR "tecnologia educativa" AND "trabalho de parto" OR parto.	585
CAPES Catalog		621
Google Scholar	("tecnologia cuidativo-educacional" OR "tecnologia educacional" OR "tecnologia educativa") AND ("trabalho de parto" OR parto)	100
Open Grey	((“Educational Technology” OR “Technology, Educational” OR “Educational Technologies” OR Technology) AND (“Labor, Obstetric” OR “Obstetric Labor” OR Parturition OR parturitions OR “delivery, obstetric” OR “Obstetric Delivery”).	1356
ProQuest		1524

Source: Research data, 2025.

Study selection

After searching the literature, the studies were exported to Rayyan® software, a reference manager for the listed studies, in which duplicate studies were removed. The non-duplicated publications were evaluated by reading the titles and abstracts by two independent, blinded reviewers.

Discrepancies in the selected studies were resolved through discussion, in which both authors reviewed the findings to ensure consistency in the search and selection of studies. When consensus was not reached, a third author was consulted. Subsequently, the studies listed were read in full. Furthermore, the reference lists of the selected studies were examined as a complementary search strategy to identify relevant scientific publications.

Data extraction and analysis

After a full reading of the selected studies, the data were extracted and analyzed by two independent reviewers based on an online form completed in Excel® spreadsheets, previously validated and structured with the following data: title, author, year, country of study development, journal, type of technology, and target audience.

The data were analyzed using descriptive and analytical analysis, consistent with the scoping review design, following the JBI guidelines⁽⁷⁾. Initially, a systematic extraction of data from the included studies was carried out, considering methodological characteristics, type of technology, target audience, application context and forms of evaluation. Subsequently, the findings were organized and categorized, allowing the identification of patterns, recurrences and gaps in the literature.

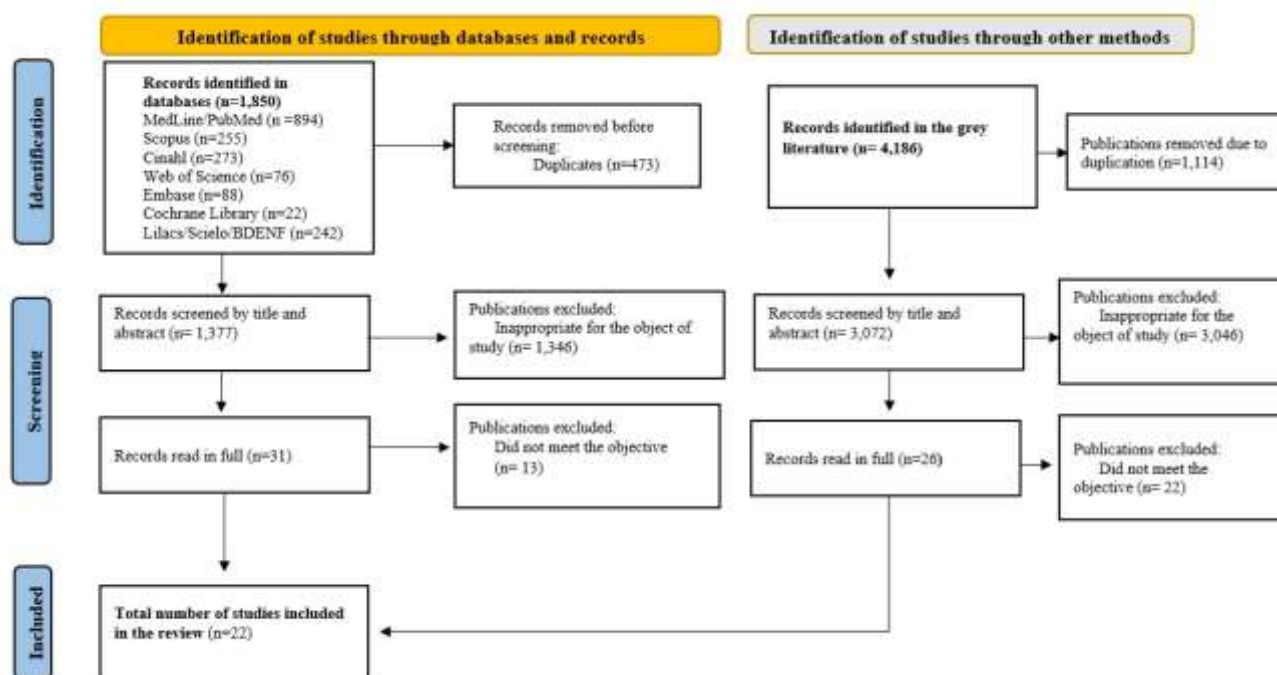
The synthesis of the results occurred in a narrative and tabular format, grouping the technologies according to their characteristics and purposes, allowing for a comprehensive view of the landscape of care-educational technologies in labor and delivery, without conducting an evaluation of the methodological quality of the studies, as is the nature of scoping reviews.

Since this is a scoping review, based exclusively on the analysis of previously published studies available in scientific databases, there was no direct involvement of human subjects, which exempted the study from being submitted to the Research Ethics Committee, in accordance with current ethical standards.

RESULTS

Initially, the search resulted in 6,036 productions, of which 1,850 were indexed in databases and 4,186 in grey literature. 1,587 duplicate records were removed, totaling 4,449 studies for title and abstract reading. 22 studies met the inclusion criteria to compose the sample, 18 of which were published in databases and 4 in grey literature, as presented in the PRISMA flowchart⁽⁹⁾. (Figure 1)

Figure 1 - Flowchart of the study selection and eligibility process, according to PRISMA-ScR. Fortaleza, Ceará, Brazil, 2025



Source: Research data, 2025.

Table 2 presents the characterization of the 22 publications included in the study, organized according to the type of technology highlighted.

Table 2 – Characteristics of the studies included in the review. Fortaleza, CE, Brazil, 2025.

ID / Authors / Year	Magazine / Country	Type of Technology/ Study	Type of Publication / Databases	Type of Assessment	Target Audience
A1 - Campos et al., (2025) ⁽¹⁰⁾	Rev Escola de Saúde/ Brazil	Video/ Methodological	Article/ SciELO, LILACS	Content and Appearance	Pregnant women
A2 - Miluzzi (2025) ⁽¹¹⁾	Repositório da USP/ Brazil	Video/ Methodological	Thesis/ Grey Literature	Content, Appearance, and Target Audience	Pregnant women
A3 - Viana et al., (2025) ⁽¹²⁾	Rev Acervo Saúde / Brazil	Video/ Methodological	Article/ Grey literature	Content and Appearance	Pregnant women
A4 - Nieves et al., (2022) ⁽¹³⁾	Rev Fac Nac Salud Pública / Colombia	Video/ Methodological	Article/ Scopus, LILACS	Content and Appearance	Healthcare professionals

A5 - Cassiano <i>et al.</i> , (2022) ⁽¹⁴⁾	Rev Esc Enferm USP / Brazil	Video/ Almost experimental	Article/ SciELO, LILACS, PubMed	Effectiveness Evaluation	Pregnant women
A6 - Costa <i>et al.</i> , (2019) ⁽¹⁵⁾	Rev Enferm Foco/ Brazil	Video/ Methodological	Article/ LILACS	Content Evaluation	Healthcare professionals
A7 - Oliveira <i>et al.</i> , (2018) ⁽¹⁶⁾	Rev Bras Enferm/ Brazil	Video/ Methodological	Article/ SciELO, LILACS, PubMed	Content and Appearance	Healthcare professionals
A8 - Andrade <i>et al.</i> , (2019) ⁽¹⁷⁾	Rev Bras Enferm/ Brazil	Video/ Experimental	Article / SciELO, LILACS, PubMed	Effectiveness Evaluation	Pregnant women and their companions
A9 - Gonçalves <i>et al.</i> , (2024) ⁽¹⁸⁾	Rev Bras Enferm/ Brazil	Booklet/ Methodological	Article/ PubMed, SciELO	Content Evaluation	Pregnant women and their companions.
A10 - Nour <i>et al.</i> , (2022) ⁽¹⁹⁾	Rev Bras Enferm/ Brazil	Booklet/ Methodological	Article/ PubMed, SciELO	Content and Appearance	Parents, pregnant women, and healthcare professionals
A11 - Balsells <i>et al.</i> , (2023) ⁽²⁰⁾	Acta Paul Enferm/ Brazil	Booklet/ Methodological	Article/ SciELO, LILACS	Content and Appearance	Pregnant women
A12 - Teles <i>et al.</i> , (2014) ⁽²¹⁾	Rev Esc Enferm USP/ Brazil	Booklet/ Methodological	Article/ SciELO, LILACS, PubMed	Content and Appearance	Companions
A13 - Iwaya <i>et al.</i> , (2023) ⁽²²⁾	Int J Med Inform/ Sweden	Application/ Methodological	Article/ PubMed, Scopus, Web of Science	Clinical Assessment	Pregnant women and their companions.
A14 - Thomssen <i>et al.</i> , (2019) ⁽²³⁾	Reproductive Health/ Ethiopia	Application/ Qualitative	Article/ PubMed, Scopus, Web of Science	Acceptability Assessment	Healthcare professionals
A15 - Hatamleh <i>et al.</i> , (2019) ⁽²⁴⁾	Midwifery/ Jordan	Course Preparatory/ ECR	Article/ PubMed, Scopus, Web of Science	Clinical Assessment	Pregnant women
A16 - Kadioglu <i>et al.</i> , (2020) ⁽²⁵⁾	Eur Res J/ Turkey	Preparatory course/ Almost experimental	Article/ PubMed, Scopus	Effectiveness Evaluation	Pregnant women

A17 - Sanghvi <i>et al.</i> , (2019) ⁽²⁶⁾	Global Health Science Practice/ Kenya	Partogram Electronic/ Almost experimental	Article/ PubMed	Effectiveness Assessment	Healthcare professionals
A18 - Medeiros, (2022) ⁽²⁷⁾	Repositório da UFPR/ Brazil	Educational/ Methodological Guide	Dissertation/Grey Literature	Content Evaluation	Nursing professionals and students
A19 - Oliveira <i>et al.</i> , (2023) ⁽²⁸⁾	Rev Cogitare Enferm/ Brazil	Infographic/ Methodological	Article/ SciELO , LILACS	Content and Appearance	Pregnant women and their companions
A20 - Underwood <i>et al.</i> , (2012) ⁽²⁹⁾	IEEE Global Humanitarian Technology/ Kenya	Digital Pen / Qualitative	Abstract/ Grey literature	Usability Evaluation	Healthcare professionals
A21 - Franzon <i>et al.</i> , (2019) ⁽³⁰⁾	Cad Saude Publica/ Brazil	Text messages/ ECR	Article/ SciELO, LILACS, PubMed	Clinical Assessment	Pregnant women and their companions.
A22 - Vasegh <i>et al.</i> , (2012) ⁽³¹⁾	Arch Gynecol Obstet/ Iran	Educational software/ ECR	Article/ PubMed, Scopus, Web of Science	Clinical Assessment	Pregnant women

Source: Prepared by the authors, 2025

Regarding the geographical distribution of the included studies, a predominance of publications carried out in Brazil was observed, with 13 studies (59.1%). The others were developed in middle- and low-income countries, with two studies identified in Kenya (9.1%), and one in each of the following countries (4.5%): Colombia, Sweden, Ethiopia, Jordan, Turkey, and Iran.

The CET constructed and validated in the context of labor and delivery were: video (n=8)⁽¹⁰⁻¹⁷⁾, booklet (n=4)⁽¹⁸⁻²¹⁾, app (n=2)⁽²²⁻²³⁾, course (n=2)⁽²⁴⁻²⁵⁾ in addition to electronic partogram⁽²⁶⁾, educational guide⁽²⁷⁾, infographic⁽²⁸⁾, digital pen⁽²⁹⁾, text messages⁽³⁰⁾ and educational software⁽³¹⁾.

According to the typology proposed by Merhy⁽²⁾, the CET identified in this review were classified as light-hard and hard. Light-hard technologies included educational videos (n=8), educational booklets (n=4), childbirth preparation courses (n=2), educational guides (n=1), infographics (n=1) and text messages (n=1). Hard technologies corresponded to mobile

applications (n=2), educational software (n=1), electronic partogram (n=1) and digital pen (n=1). No technologies classified as light were identified in the included studies.

Methodological studies of the build-and-evaluation type (n=13), quasi-experimental studies (n=04), randomized clinical trials (n=03), and qualitative research (n=02) were analyzed. The technologies were developed for diverse audiences, including pregnant women, healthcare professionals, labor companions, and the father.

Regarding the relationship between the type of design and the stage of development of the technologies, it was observed that the methodological studies (n=13) focused mainly on the construction and evaluation of care-educational technologies, including stages of content evaluation, appearance and/or evaluation with the target audience.

In turn, quasi-experimental studies (n=4) and randomized clinical trials (n=3) used previously constructed and evaluated technologies, with the aim of analyzing their effects on outcomes such as knowledge, attitude, practice, self-efficacy, anxiety, and birth outcomes.

The qualitative studies (n=2) also relied on existing technologies, analyzing the experiences, perceptions, and acceptability of the use of these resources by users, without involving stages of construction or initial evaluation of the technologies.

The synthesis of the included studies, presented in Table 3, shows that the care-educational technologies were directed at different audiences and presented positive results related to increased knowledge, self-efficacy, and reduced anxiety in the context of labor and delivery.

Table 3 - Summary of articles included in the review. Fortaleza, Ceará, Brazil, 2025.

ID	OBJECTIVE	MAIN RESULTS
Type of technology: Video		
A1 ⁽¹⁰⁾	To build and validate an audiovisual educational technology for pregnant women about the stages of labor and their rights as parturients.	The video was aimed at guiding pregnant women about the stages of labor and their rights, contributing to increased knowledge, reduced insecurity, and better preparedness for experiencing childbirth.
A2 ⁽¹¹⁾	To build and validate an educational technology focused on birth plans.	Technology supports the development and understanding of the birth plan, promoting autonomy, informed decision-making, and dialogue with the healthcare team.

A3 ⁽¹²⁾	To build and validate an audiovisual educational technology for pregnant women about the stages of labor and their rights.	The video helps in recognizing the stages and strengthening female empowerment, promoting greater confidence and active participation of pregnant women.
A4 ⁽¹³⁾	Validate an educational video about childbirth and birth for healthcare professionals.	Technology contributes to raising awareness among healthcare professionals regarding humanized practices, supporting the improvement of care and respect for maternal rights.
A5 ⁽¹⁴⁾	To analyze the influence of a video on knowledge about the signs of labor and obstetric risk.	The video proved useful in assisting pregnant women in recognizing the signs of labor and obstetric risks, facilitating a timely decision to seek healthcare services.
A6 ⁽¹⁵⁾	Produce a <i>video case study</i> about the Safe Childbirth Checklist.	Technology supports the continuing education of professionals, contributing to adherence to best practices and increased safety in childbirth care.
A7 ⁽¹⁶⁾	To construct a hypermedia document about nursing care during low-risk childbirth and to perform content and appearance validation.	Hypermedia contributes to enhancing the technical knowledge of nursing professionals, supporting the improvement of care during low-risk childbirth.
A8 ⁽¹⁷⁾	To evaluate the effects of an educational video on the knowledge, attitude, and practice of pregnant women regarding active childbirth.	The video fostered positive changes in the knowledge, attitudes, and practices of pregnant women, encouraging active participation and resilience during labor.
Type of technology: Booklet		
A9 ⁽¹⁸⁾	To construct and identify evidence of the validity of an educational booklet about labor and childbirth.	The booklet supports the guidance of pregnant women and their companions, contributing to an understanding of the birthing process and reducing anxiety.
A10 ⁽¹⁹⁾	To develop and validate an educational booklet to promote fathers' involvement in labor and childbirth.	Technology promotes the inclusion of the father in labor and delivery, strengthening support for the mother and shared care.
A11 ⁽²⁰⁾	To develop and validate an educational booklet on non-pharmacological methods for pain relief during labor and delivery.	This booklet helps guide pregnant women on pain relief strategies, promoting autonomy and comfort during labor.

A12 ⁽²¹⁾	Describe the process of constructing and validating an educational manual for companions during labor and delivery.	The technology was geared towards preparing companions to act during childbirth, promoting continuous support and more humanized care.
Type of technology: Application		
A13 ⁽²²⁾	Develop a mobile application to support early labor.	The app assists pregnant women during the initial stages of labor, helping to reduce fear and stress and improve preparation for childbirth.
A14 ⁽²³⁾	To explore user experiences with the use of the "Safe Delivery App" and its influence on safer childbirth.	The app supported the updating of professional knowledge and skills, strengthening the safe management of childbirth and the confidence of the healthcare team.
Type of Technology: Preparatory course		
A15 ⁽²⁴⁾	To examine the effectiveness of a childbirth preparation course based on perinatal outcomes.	The course contributed to better preparing pregnant women, promoting the spontaneous onset of labor and arrival at the maternity ward in the active phase of labor.
A16 ⁽²⁵⁾	To verify the impact of prenatal classes on pregnant women in determining the type of delivery and coping with pain during childbirth.	The classes helped reduce anxiety, encouraged vaginal delivery, and facilitated pain management, contributing to a more positive birth experience.
Type of technology: Electronic partogram		
A17 ⁽²⁶⁾	To evaluate the effectiveness of the "ePartogram" versus a paper partogram in resource-limited settings, focusing on perinatal outcomes.	Technology has supported systematic monitoring of labor and clinical decision-making, contributing to a reduction in adverse outcomes.
Type of technology: Educational Guide		
A18 ⁽²⁷⁾	Develop a guide to best nursing practices for women in labor.	The guide assisted the nursing team in their work, supporting evidence-based care and continuing education.
Type of technology: Infographic		
A19 ⁽²⁸⁾	Describe the process of creating and validating an educational infographic with guidelines for pregnant women and their companions.	The infographic helps to disseminate clear information to pregnant women and their companions, promoting the prevention of complications and strengthening self-care.

Type of technology: Digital pen		
A20 ⁽²⁹⁾	<i>PartoPen</i> " digital pen.	Technology has supported the recording and monitoring of labor, promoting the adoption of partograms in resource-limited settings.
Type of technology: Text messaging		
A21 ⁽³⁰⁾	To determine whether communication via SMS contributes to women feeling better prepared for the childbirth experience.	The messages supported pregnant women's preparation for childbirth, contributing to greater confidence, a perception of their ability to give birth, and informed decision-making.
Type of technology: Educational software		
A22 ⁽³¹⁾	To determine the effect of educational <i>software</i> on pregnant women's self-efficacy in coping with labor.	The <i>software</i> contributed to increasing the self-efficacy of pregnant women, assisting them in coping with labor and reducing the likelihood of cesarean section.

Source: Prepared by the authors, 2025.

DISCUSSION

The findings of this review showed that the development of CET has been expanding, with a predominance of digital and printed productions, identified by: videos, booklets, applications, preparatory courses, electronic partograms, educational guides, infographics, digital pens, text messages, and educational software.

Educational videos, also called hypermedia, are a technology that integrates text, sound, images, and interaction, promoting a multisensory experience and learning. Studies conducted in Brazil have shown their effectiveness for pregnant women, companions, students, and health professionals. Quasi-experimental research⁽¹⁷⁾ with primiparous women demonstrated a positive influence of an educational video on knowledge about the signs of labor and obstetric risk. Another study⁽¹⁴⁾ showed that the use of educational videos promoted statistically significant results in the knowledge, attitudes, and practices of pregnant women regarding active childbirth, standing out as a valid and effective technology. In addition, hypermedia and *video cases* developed for nursing students and health professionals showed high levels of content and face validity, both in studies conducted in Ceará and in the Central-West region of Brazil^(12,15). In the international context, an educational video on humanized childbirth developed in Colombia obtained high levels of content validity and agreement

among experts and the target audience, being considered a useful and valid tool for strengthening care practices and respect for the rights of pregnant women⁽¹³⁾.

Regarding educational booklets, four technologies aimed at pregnant women, companions, parents, and health professionals were identified^(18–21). These tools act as mediators of care between the health team and the target audience, promoting behavioral change and access to information, since they can be used in both printed and digital formats, including during health consultations⁽²⁰⁾. In Northeast Brazil, the booklet *Preparing to Accompany Normal Childbirth: What is Important to Know?* was constructed and evaluated by specialists and the target audience, with the objective of preparing companions for participation in childbirth and promoting humanized care for the parturient, presenting a minimum agreement of 81.8% and a global content validity index of 0.94, being considered valid⁽²¹⁾.

Another booklet, aimed at pregnant women and addressing non-pharmacological methods for pain relief during labor and delivery, showed agreement levels between 83.3% and 100% among the judges, being considered valid, innovative and relevant for use in prenatal consultations⁽¹⁸⁾. Furthermore, the booklet *Father's Presence: an educational booklet for father involvement in labor and birth* obtained a global score of 0.97 in the evaluation process, proving to be suitable for promoting paternal participation from prenatal care onwards⁽¹⁹⁾. In addition to the booklets, educational infographics aimed at pregnant women and their companions were developed in the Southern region of Brazil, with the objective of disseminating updated and evidence-based information on obstetric care, with the potential to positively impact childbirth assistance⁽²⁸⁾.

Regarding mobile health technologies (mHealth), two applications developed in an international context were identified, one in Sweden⁽²²⁾ and the other in Ethiopia⁽²³⁾. These applications are configured as digital channels for disseminating health information, with the advantage of allowing rapid content updates. The *Early Labour App*, developed and evaluated in Sweden, aims to support pregnant women and their companions during labor, assisting in coping with fear and stress in the birthing process, and is considered innovative and easy to use after being evaluated by a multidisciplinary team⁽²²⁾. *Safe Delivery*, on the other hand, is an application for healthcare professionals, developed in Ethiopia, which aims to improve knowledge and skills in obstetric care through animated videos and clinical instructions, and has been identified as a useful tool for updating knowledge, strengthening professional confidence and improving the quality of care provided⁽²³⁾.

The use of mobile telephony for the dissemination of information about childbirth and birth was identified through the PRENACEL program, which uses text messages directed to pregnant women, contributing to expanding access to strategic information and helping women feel more prepared for the childbirth experience⁽³⁰⁾. Regarding technologies aimed at health professionals, a guide to good nursing practices was developed in Brazil to support care for parturients from admission to the maternity ward to the immediate postpartum period⁽²⁷⁾.

In an international context, in Kenya, the PartoPen digital pen was developed to monitor labor and reduce complications in resource-limited settings, being considered a flexible, intuitive and innovative tool, aligned with World Health Organization protocols⁽²⁸⁾. Regarding technologies in the form of courses and *software*, studies conducted in Jordan and Turkey showed that childbirth preparation courses contributed to the spontaneous onset of labor, the arrival of pregnant women at the maternity ward in the active phase, the reduction of anxiety and the encouragement of vaginal delivery, in addition to stimulating early breastfeeding and reducing cesarean rates⁽²⁴⁻²⁵⁾. In Iran, educational software aimed at pregnant women proved effective in promoting self-efficacy in relation to childbirth⁽³¹⁾.

It is important to highlight that health education about childbirth is fundamental during prenatal care and has been implemented through groups for pregnant women in primary health care. The objective of such methodologies is to instruct pregnant women, increasing their capacity to make decisions that are appropriate to their individual circumstances.

The literature has already identified a number of positive effects of childbirth education on maternal outcomes, such as better recognition of the onset of labor, decreased early admissions, greater likelihood of arriving at the hospital in active labor, higher rates of vaginal delivery and consequently, decreased cesarean rates⁽¹⁹⁾.

Although the review results indicate progress in the construction and evaluation of CET for labor and delivery, it was observed that most interventions remain centered on product-type technologies, focusing on the transmission of information and the strengthening of cognitive knowledge. This pattern is also described in the international literature⁽³²⁻³³⁾, which points to the widespread use of apps, educational videos and digital platforms in maternal health, with benefits related to access to information, reduced anxiety and increased self-efficacy.

However, these studies highlight that the impact of these technologies tends to be limited when not combined with interactive approaches and continuous professional monitoring. This finding puts pressure on the purposes of the CET, which presuppose the

inseparable integration of educating and caring, including relational dimensions such as dialogue, active listening, bonding, and co-responsibility—aspects that are still poorly explored in a systematic way in the identified technologies.

Additionally, research⁽³⁴⁻³⁵⁾ warns of structural and socio-technical limitations that interfere with the effectiveness of technologies in maternal health, especially in contexts marked by social inequalities. Barriers related to internet access, the use of digital devices, health literacy, and the cultural appropriateness of content can compromise the applicability of CET and deepen inequities in care.

Studies evaluating user-centered digital interventions indicate that better results are achieved when these technologies are adapted to local needs and accompanied by professional support strategies⁽³⁶⁾. Thus, although the CET represent promising tools for humanizing childbirth and strengthening female autonomy, their implementation requires critical planning, incorporation of international benchmarks on digital education and health literacy, and continuous evaluation of their applicability in different scenarios, preventing technological innovation from being restricted to specific contexts or reproducing existing inequalities.

The fact that only product-type care-educational technologies were identified may be mainly related to the criteria adopted in the review and the way in which scientific production has addressed this topic. The decision was made to include technologies that were explicitly constructed and evaluated, which favored the identification of concrete and structured materials. Process technologies, in turn, are directly linked to daily practice, interaction, and the professional's intentionality, and are less frequently systematized as technology in scientific articles.

Thus, the predominance of product-type technologies reflects a characteristic of the available literature, and not the absence or lesser importance of process technologies in labor and delivery care.

One of the study's strengths is the methodological rigor demonstrated by adopting the recommendations of the JBI and PRISMA-ScR, the clear definition of the research question, the structured search strategy, and the prior registration of the protocol, which ensured transparency and reproducibility. The breadth and systematization of the search are also noteworthy, including multiple databases and grey literature, without temporal restrictions, which allowed for a comprehensive mapping of the **CET related** to labor and delivery. Furthermore, the study contributes to systematizing and organizing a still-emerging field, distinguishing and characterizing constructed and evaluated technologies, highlighting

knowledge gaps, and supporting the development of new research and the improvement of care practices.

However, the possibility of missing relevant studies and potential publication bias, especially related to grey literature, is acknowledged, since not all publications may be indexed or accessible. The predominance of Brazilian studies is also observed, which, while highlighting national production in the area, may indicate geographical bias and limit the generalizability of the findings. Added to this is the methodological heterogeneity of the included studies, characteristic of scoping reviews, which hinders more consistent comparisons. Furthermore, the absence of methodological quality assessment, not mandatory in this type of review but recommended by PRISMA-ScR, should be highlighted; such assessment could strengthen the interpretation and robustness of the evidence presented.

Based on the identified gaps, it is recommended that future studies advance the development and evaluation of process CET, integrated into workflows and care practices, in order to promote sustainable changes in labor and delivery care. Investigations that link education, care, and management can contribute to greater incorporation of these technologies in health services.

It is further suggested that research with more robust methodological designs be conducted, including ECR, mixed methods studies, and longitudinal evaluations, which would allow for the analysis not only of the immediate effectiveness of the technologies, but also of the maintenance of their effects over time. Increasing the sample size and using more representative samples can strengthen the generalizability of the findings.

The review findings show that clinical trials can be incorporated into professional practice as strategies to support health education, strengthen the autonomy of pregnant women, and improve the quality of care during labor and delivery.

However, for such technologies to be effectively applicable, it is essential that healthcare professionals consider aspects related to cultural appropriateness, health literacy levels, the availability of institutional resources, and team training. Integrating these technologies into work processes can promote the humanization of care and improve the care experience, reinforcing the role of professionals as mediators of knowledge and empowering women in the birthing process.

CONCLUSION

This review revealed that care-educational technologies focused on labor and delivery present a wide diversity of formats, such as animated videos, educational booklets, apps,

preparatory courses, educational guides, infographics, electronic partograms, text messages, digital pens, and educational software.

In general, these technologies were aimed at preparing pregnant women and their companions to recognize the signs of labor, reducing anxiety, strengthening self-efficacy, and encouraging active participation in the birthing process, being mostly applied during the prenatal period and at the beginning of labor.

Technologies such as videos, booklets, infographics, courses, and text messages had the main purpose of informing, guiding, and supporting pregnant women's decision-making, contributing to a greater understanding of the stages of labor, the rights of the parturient woman, and strategies for coping with pain.

In turn, apps, educational software, electronic partograms, and digital pens were primarily aimed at supporting professional practices during labor monitoring, focusing on clinical monitoring, standardization of procedures, updating knowledge, and improving the quality of obstetric care, especially in resource-limited settings.

Thus, the identified care-educational technologies differ not only in format, but above all in purpose and timing of use throughout obstetric care, configuring themselves as complementary strategies that can strengthen the preparation of pregnant women, support professional practice, and contribute to safer, more participatory, and humanized practices in labor and delivery.

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Availability of data and material

Access to the dataset may be obtained by requesting it from the corresponding author.

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