Use of educational technologies to promote safe childbirth

Uso de tecnologias educativas para promoção do parto seguro

Uso de tecnologías educativas para promover el parto seguro

RESUMO

Objetivo: Identificar as evidências cientificas acerca da educação em saúde sobre o parto. Método: Trata-se de uma revisão integrativa, desenvolvida em seis etapas e norteada pela seguinte indagação: Quais as tecnologias educacionais disponíveis para promoção da saúde acerca do parto?. O levantamento bibliográfico foi realizado em setembro e outubro de 2022, mediante acesso às bases de dados: Medical Literature Analysis and Retrieval System Online (Medline), Latin American and Caribbean Health Sciences Literature (Lilacs), Cumulative Index to Nursing and Allied Healh Literature (CINAHL), Web of Science e Scopus (Elsevier). Resultados: 13 estudos foram elegíveis para compor a amostra, onde identificaram tecnologias como: vídeos educacionais; software e cartilha educacional; manual educativo para acompanhantes; intervenção educacional on-line; folheto informativo ilustrado; ferramenta de aprendizado on-line; intervenção baseada em SMS e aplicativos móveis. Conclusão: As tecnologias educacionais acerca do parto são boas opções de ensino complementar.

DESCRITORES: Tecnologias Educacionais; Parto; Promoção da Saúde; Educação em Saúde.

ABSTRACT

Objective: To identify scientific evidence about health education about childbirth. Method: This is an integrative review, developed in six stages and guided by the following question: What educational technologies are available for health promotion about childbirth? The bibliographic survey was carried out in September and October 2022, through access to the following databases: Medical Literature Analysis and Retrieval System Online (Medline), Latin American and Caribbean Health Sciences Literature (Lilacs), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Web of Science and Scopus (Elsevier). Results: 13 studies were eligible to compose the sample, which identified technologies such as: educational videos; software and educational booklet; educational manual for companions; online educational intervention; illustrated information leaflet; online learning tool; intervention based on SMS and mobile applications. Conclusion: Educational technologies about childbirth are good complementary teaching options.

DESCRIPTORS: Educational Technologies; Childbirth; Health promotion; Health education.

RESUMEN

Objetivo: Identificar las evidencias científicas sobre educación para la salud en el parto. Método: Se trata de una revisión integradora, desarrollada en seis etapas y orientada por la siguiente pregunta: ¿Qué tecnologías educativas existen para promover la salud durante el parto? El levantamiento bibliográfico fue realizado en septiembre y octubre de 2022, a través del acceso a las siguientes bases de datos: Medical Literature Analysis and Retrieval System Online (Medline), Latin American and Caribbean Health Sciences Literature (Lilacs), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Web of Science y Scopus (Elsevier). Resultados: 13 estudios fueron elegibles para la muestra, que identificó tecnologías tales como: videos educativos; software educativo y folletos; un manual educativo para cuidadores; una intervención educativa en línea; un folleto informativo ilustrado; una herramienta de aprendizaje en línea; una intervención basada en SMS y aplicaciones móviles. Conclusión: las tecnologías educativas sobre el parto son buenas opciones didácticas complementarias.

DESCRIPTORES: Tecnologías educativas; Parto; Promoción de la salud; Educación para la salud.

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INTRODUCTION

Currently, much is said about the impact of Information and Communication Technologies (ICTs) on health, therefore, these are conceptualized as a set of technological and computational resources dedicated to the storage, processing and communication of information. [1] When these technologies are used in the field of health, it is seen as an important builder of an environment that interconnects contexts, subjects and knowledge, where there is care and education together[2].

ICTs are often used in the daily lives of patients and health professionals, as it is a great means of guidance and prevention of diseases and injuries, as well as for the promotion of women's health at different times of their lives, such as during pregnancy and consequently at the time of childbirth[3,4].

The moment of pregnancy is one of the most unique periods in a woman's life, as it is watered by physiological and psychological changes that trigger several questions, thus bringing many doubts and uncertainties about this entire period. Given this and the diversity of educational technologies available for pregnant women, these women seek ways to inform themselves, such as on websites, apps, or even opinions shared with other women, but they are not always the most appropriate information, as studies show that concern of health technologies due to the lack of this regulation of information and evidence[5,6,7].

In view of this, it is essential to identify which educational technologies are available to promote childbirth and whether they are effective in their objectives. In this context, the study is relevant since it will promote an update on new educational technologies and their association with the promotion of childbirth, being able to contribute to the expansion of scientific knowledge and future development or implementation of these technologies in the assistance or daily routine of the population and professionals.

For this, the study aims to identify the scientific evidence about educational technologies in health about childbirth..

METHOD

This is an integrative review, developed in six stages: 1. elaboration of the research question; 2. definition of databases and criteria for inclusion and exclusion of studies; 3. definition of the information to be extracted from the selected studies; 4. evaluation of the studies included in the review; 5. interpretation of results; 6. presentation of knowledge review/synthesis. [8]

The research question of the study was constructed, based on the mnemonics that helped to identify the key topics: Problem, Interest and Context (PICo): where P- Educational Technology, I- Health promotion and Co- Childbirth. Thus, the following research question was addressed: What are the educational technologies available for health promotion regarding childbirth?

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The eligibility criteria are part of the first sampling sub-step, the following inclusion criteria were defined: primary studies related to educational technologies available to promote childbirth, without temporal or language delimitation and as exclusion criteria: studies that do not answer the research question.

The bibliographic survey was carried out in September and October 2022, through access to the databases: Medical Literature Analysis and Retrieval System Online (Medline) accessed through the PubMed portal, Latin American and Caribbean Health Sciences Literature (Lilacs) via the Virtual Health Library (VHL), Cumulative Index to Nursing and Allied Health Literature (CINAHL) via the Thomson Reuters main collection, Web of Science via the main collection (Clarivate Analytics) and Scopus (Elsevier). Access to the databases occurred from the journal portal of the Coordination for the Improvement of Higher Education Personnel (Capes), through remote access from the Federated Academic Community (CAFe).

To carry out the search in the databases, controlled descriptors of Health Sciences Descriptors (DeCS) and Medical Subject Headings (MeSH) and CINAHL Titles were selected. In addition, synonyms of controlled descriptors were used, which are called uncontrolled descriptors.

For systematization of sample collection, the advanced search form was used, respecting the singularities of each database used, in addition to not using time and language restriction filters. The descriptors were combined with each other with the Boolean OR connector, within each set of terms of the PICo strategy, and then crossed with the Boolean AND connector (Chart 1).

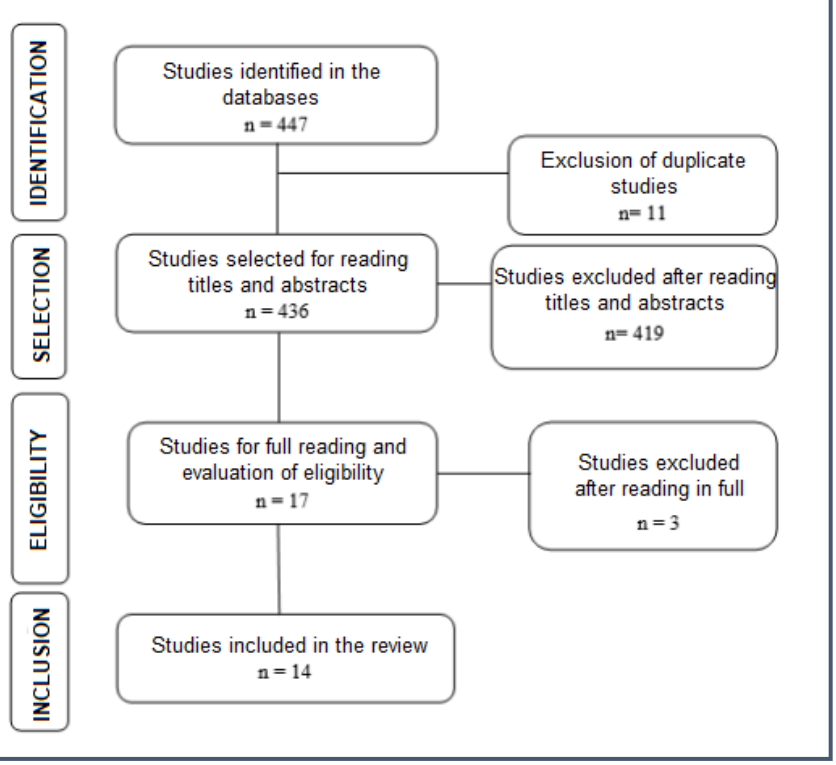
The search was carried out by two independent researchers, standardizing the sequence of use of the descriptors and the crossing of the databases. References obtained through the search strategy were managed by EndNote software, a free online version of EndNote (Basic), for organization, ordering and verification of duplicate references obtained. [9] After the studies found, the RAYYAN reference manager, developed by the Qatar Computing Research Institute

TABLE 1. Search strategy in the Medline/ PubMed database. Peaks, PI, Brazil, 2022.

DATABASE	RESEARCH STRATEGY
Medline/ PubMed	((((((((("Technology"[MeSH]) OR ("Biomedical Technology"[MeSH])) OR ("Educational Technology"[MeSH])) OR ("Communications Media"[MeSH])) OR ("Education, Distance"[MeSH])) OR ("Instructional Film and Video"[MeSH])) OR ("Teaching Materials"[MeSH])) OR ("Audio-Video Demonstration"[MeSH])) OR ("Instructional Technology"[MeSH])) OR ("Online Teaching"[MeSH])) OR ("eLearning"[MeSH]) AND ((((((("Parturition"[MeSH]) OR ("Humanizing Delivery"[MeSH])) OR ("Home Childbirth"[MeSH])) OR ("Natural Childbirth"[MeSH])) OR ("Labor Pain"[MeSH])) OR ("Delivery, Obstetric"[MeSH])) OR ("Labor, Obstetric"[MeSH]) AND ((((((((((("Health Education"[MeSH]) OR ("Education"[MeSH])) OR ("Health Communication"[MeSH])) OR ("Education, Special"[MeSH])) OR ("Video-Audio Media"[MeSH])) OR ("Teaching"[MeSH])) OR ("Population Education"[MeSH])) OR ("Community Health Education"[MeSH])) OR ("Education, Health"[MeSH])) OR ("Health Education, Community"[MeSH])) OR ("Educational Technics"[MeSH])) OR ("Educational Techniques"[MeSH])) OR ("Techniques, Educational"[MeSH])) OR ("Education of Patients"[MeSH])) OR ("Education Patient"[MeSH])

Source: Research Data, 2022.

Figure 2. Flowchart for selection of primary studies, based on the PRISMA recommendation. Picos, PI, Brazil, 2022



Source: Research Data, 2022.

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(QCRI) was imported. [10]

The process of screening the studies was based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Figure 1). [11] In the extraction and synthesis of information from the selected studies, an instrument adapted from the Ursi and Gavão form was used. [12] Therefore, the review variables were focused on information about: year, country and journal of publication, method and level of evidence of the study and main results regarding the use of educational technologies.

The assessment of the methodological quality of the studies was carried out based on the level of evidence: I - meta-analyses of controlled and randomized studies; II - experimental studies; III - quasi-experimental studies; IV - descriptive/non-experimental or qualitative studies; V - experience and case reports; VI - expert opinions or consensus. 13 The articles were analyzed using the data reduction method, through critical reading and classification of studies into subgroups, according to the types of technologies identified. Furthermore, the theoretical support was given through the analysis of the results and the theoretical foundation from the scientific literature.

Therefore, the presentation of the results took place in a descriptive way, with the aim of promoting greater evidence and remedying gaps in knowledge.

RESULTS

The search resulted in 447 studies, of which 11 were excluded due to repetition and 422 for not meeting the defined inclusion criteria, thus, 14 studies were eligible to compose the sample for this article. All studies were published in English (n=13; 100%); this finding can be justified by the high number of studies published in international journals and carried out in foreign countries (n=11; 78.5%). Regarding the period of publication, it was possible to verify that the studies initially dated from the year 2018 (n=4; 28.5%).

Regarding the technologies used, the following were identified: educational videos [14,15,16,17]; software and educational booklet [18,19]; educational guide for companions [20]; online educational intervention [21]; illustrated information leaflet [22]; SMS-based intervention [23,24] and mobile apps. [25,26]

When it came to the method used in the articles, ten (71.4%) were classified as level II - experimental studies; and four (28.5%) as level IV - descriptive/non-experimental or qualitative studies (Chart 2).

DISCUSSION

According to Machado and Lima [27] educational technologies are at the center of the learning process, since they are considered tools for the mutual construction of knowledge based on contextualized education, in

Chart 2. Characterization of selected studies. Picos-PI, 2022.

Nº	AUTHOR	YEAR/ COUNTRY	JOURNAL	STUDY TYPE	RESULTS ABOUT THE USE OF EDUCATIONAL TECHNOLOGY TO PROMOTE SAFE CHILDBIRTH.	LEVEL OF EVIDENCE
A1	MOK HTA RI et al.	2021/ USA	Obstetrics & Gynecology	Controlled Randomized Study	Watching an educational video on pain management is an acceptable and innovative approach to reducing opioid use after cesarean section without compromising pain scores and satisfaction with pain control.	II
A2	ABB ASI; MOH AMM AD- ALIZ ADE H CHA RAN DABI ; MIRG HAF OUR VAN D	2021/ Iran	Journal of Obstetrics and Gynecology	Randomized Clinical Study	State and trait anxiety in both groups (educational software and educational booklet groups) was significantly lower than the control group. Furthermore, the level of anxiety was significantly lower in the educational software group than in the educational booklet group.	II
A3	DHA KAL et al.	2022/ Brazil	Revista Latino – Americana de Enfermagem	Randomized Clinical Study	Companions in the intervention group performed a greater number of support actions (7.2 vs 4.6, p: 0.001) and had higher satisfaction scores (72.4 vs 64.2; p = 0.00). The mothers in the intervention group in the educational manual were more satisfied with the delivery (119.6 vs. 107.9; p: 0.000).	II
A4	ABB ASI; MOH AMM AD- ALIZ ADE H CHA RAN DABI ; MIRG HAF OUR VAN D	2018/ Iran	The Journal of Maternal- Fetal & Neonatal Medicine	Randomized Controlled Clinical Trial	After the intervention, the mean CBSE scores in the educational booklet group (adjusted mean difference: 113.4; 95% confidence interval: 100.7-126.1) and e-learning group (159.3; 146.5 - 172.0) was significantly higher than the control group. Furthermore, the average CBSE score in the e-learning group had a significant increase compared to the educational booklet group (45.9; 33.0-58.7).	II

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A5	KIM MICH ; ZIMMER MAN N; KREF T	2018 Switzer-land	Swiss Medi-cal Weekly	Prospective observatio-nal study	Video analysis of obstetric procedures in the delivery room is an easy-to-use and very useful tool for teaching and learning purposes. Contributes to show and improve the quality of Procedures and team interactions and can be used for team evaluation.	II
A6	BURNS et al	2019 England	Midwifery	Experimen-tal Study	Across all volumes, estimation accuracy was significantly improved at posttest 1. Participants rated the online tool positively.	II
A7	MUNRO et al.	2018 Canada	Journal of Obste-trics And Gynaecology Canadá	Experimen-tal Study	An illustrated information leaflet can significantly increase women's knowledge of the benefits and risks of epidural analgesia, but is not associated with changing preference. Women prefer to receive comprehensive prenatal infor-mation to support informed choices in labor and delivery.	II
A8	OMO LE et al.	2018 / Nigeria	The Interna-tion al journal of health planning and manageme nt	Experimen-tal Study	SMS-based intervention has a positive effect on home bir-th and mothers accept its use during pregnancy.	II
A9	PURC ELL-JONE S et al.	2019 / South Africa	Anesthesia & Analgesia	Pilot study	It is easily implemented and demonstrates a new use of mobile health technology. A high level of patient recom-mendation for the video suggests that this is an enjoyable practice.	II
A10	MAS OI; KIBU SI	2019 / Tanzania	Reproduct ive health	Quasi-ex-perimental study	The interactive mobile message alert system has been shown to be effective in increasing women's knowledge of danger signs and improving their childbirth preparedness practices.	III
A11	CASS IAN; TEIX EIRA; DE MEN EZES	2022 / Brazil	Revista da Escola de Enfermage m da USP	Quasi-ex-perimental study	The results suggest that ET had a positive influence on the primigravidae's knowledge about the signs of labor and obstetric risk. This is because there was a statistical difference between the before and after of the animated video, both in the total performance of the resolution of the questions, as well as in specific questions.	III
A12	LOV ELL; HAR RIS	2021 / United Kingdom	Midwifery	Cross-sec-tional online survey	A large amount of women are using apps during labor, with potential benefits. However, the use of technology should not replace the individual evaluation of the parturient.	III
A13	FRA NZO N et al	2019 / Brazil	Cadernos de Saúde Pública	Randomi-zed trial by parallel clusters	PRENACEL can contribute to expanding women's access to information that is strategic for them to feel more pre-pared for the childbirth experience.	III

Source: Research Data, 2022.

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this case, these technologies provide opportunities for the population to acquire knowledge and improve decision-making in health. In addition, technologies present a good learning option for professionals as well as nurses, as they will promote improved patient care delivery. [28]

Among the observed technologies, educational videos are recognized in view of the benefits of teaching and learning with the use of audiovisual, as they constitute resources that enable the construction of multidimensional knowledge.[29] However, like other technologies, the production of a video must meet several criteria, in order to reach as many people as possible. In this case, one of the analyzed studies highlights the concern with the construction of a video also translated into pounds and with a short period of time (5 minutes). [14]

Furthermore, Kimmich, Zimmermann and Kreft [15] emphasize the difficulty in carrying out this type of production for this audience, since the woman is in a unique period of her life, where she seeks autonomy and the desire for an uncomplicated delivery, establishing the search for information whether from professionals or by other means, such as the use of technologies. In this sense, all analyzed studies showed positive results regarding the use of educational videos to promote childbirth, however, researchers highlight in their findings that the educational video should never be used in isolation for the acquisition of knowledge, thus, it should be implemented together with professional health interventions. [30]

Only one study used a software, and that same made comparisons between the adherence of the software and an educational booklet, in relation to its results there was no statistically significant variation between the reduction of pain among pregnant women during childbirth, however, the reduction of anxiety among pregnant women was greater in the software group. [18] The same authors performed a comparison of the e-learning effect and the educational booklet, and in this study the e-learning group had a significant increase compared to the educational booklet group. [19]

Although these studies show greater significance for the use of software and e-learning, several studies point out that educational booklets for the promotion of health for pregnant women are easy to understand and recommend their applicability. [31,32,33,34]

Regarding the use of printed pamphlets, the study's findings are in line with the need for women to receive verbal and/or paper information from a care provider during childbirth. Other studies such as that of Hidaka and Callister [35] consistently found that women often have misinformed expectations about pain in childbirth and the experience of pain relief in labor, and the leaflet succeeds in meeting these women's need for information.

In addition, the companion is part of the entire delivery process and has the role of reassuring the woman, as the use of printed educational material is also efficient for his knowledge. [20]

Despite the printed technologies, the studies also pointed to the use of SMS [23,24] which show positive results, in line with the benefits found by Bonifácio, Souza and Vieira [36], where the SMS were beneficial to teaching and promoting greater participation of partners in the pregnancy-puerperal context, enabling safer motherhood.

Finally, mobile applications were also highlighted in recent studies that even with positive results, as well as in another study that observed that pregnant women who used the application were more present in prenatal consultations and were less anxious during childbirth. In addition to being a great option for professionals, aiming at improving maternal health indicators in Primary Health Care. [25,26,2]

These educational technologies are considered ways to improve the accessibility of pregnant women, since they provide faster and more accurate information, in addition, these means serve to bring the care provider and the pregnant woman closer together, facilitating adherence to self-care. Therefore, it is essential that these technologies be used in a complementary way, since they do not exclude the need for a qualified professional to monitor and resolve doubts of pregnant women. [4,37]

CONCLUSION

Studies were identified that evaluated the effectiveness of educational technologies about childbirth, showing that these are good options for complementary education, therefore, it is suggested that the objective of this study was achieved.

Among the highlighted technologies were: educational videos; software and educational booklet; educational manual for companions; online educational intervention for students on respectful motherhood care; illustrated information leaflet; online learning tool; intervention based on SMS and mobile applications. In this case, it is important to emphasize that these must be used in association with professional guidance, so under no circumstances do the aforementioned technologies rule out the monitoring of health professionals.

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