

Educational technologies and practices for prevention of vertical HIV transmission

Tecnologias e práticas educativas para prevenção da transmissão vertical do HIV
Tecnologías y prácticas educativas para la prevención de la transmisión vertical del SIDA

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How to cite this article:

Lima ACMACC, Bezerra KC, Sousa DMN, Vasconcelos CTM, Coutinho JFV, Oriá MOB.

Educational technologies and practices for prevention of vertical HIV transmission. Rev Bras Enferm [Internet]. 2018;71 (Suppl 4):1759-67. [Thematic issue: Education and teaching in Nursing] DOI: <http://dx.doi.org/10.1590/0034-7167-2016-0333>

Submission: 11-04-2016

Approval: 01-27-2018

ABSTRACT

Objective: to assess available evidence on educational technologies and practices for prevention of vertical HIV transmission. **Method:** LILACS, PubMed, Scopus, BDNF, between April and May 2016, with the descriptors: "Vertical Transmission of Infectious Disease", "HIV", "Health Education" and "Technology". **Results:** there are 16 articles published between 2000 and 2014, mostly Brazilian and African, Cross-sectional and with low level of evidence. The studies covered the use of hard technologies, through video, radio and telephone, and soft, emphasizing, in particular, counseling. **Conclusion:** the studies recognize the importance of educational activities as a tool for health promotion in the context of vertical HIV transmission, despite reporting the need for constant training of professionals and urgency in the renewal of educational concepts and practices. Therefore, it is recommended to expand and consolidate health counseling and emphasize the role of nurses as an important actor in this setting. **Descriptors:** Vertical Transmission of Infectious Disease; HIV; Health Education; Technology; Nursing.

RESUMO

Objetivo: avaliar as evidências disponíveis sobre as tecnologias e práticas educativas para prevenção da transmissão vertical do HIV. **Método:** revisão integrativa, nas bases LILACS, PubMed, Scopus, BDNF, entre abril e maio de 2016, com os descritores: "Infectious Disease Transmission, Vertical", "HIV", "Health Education" e "Technology". **Resultados:** encontram-se 16 artigos publicados entre 2000 e 2014, a maioria brasileiro e africano, transversal e com baixo nível de evidência. Os estudos abordaram a utilização de tecnologias duras, por meio de vídeo, rádio e uso de telefone, e leves, enfatizando, sobretudo o aconselhamento. **Conclusão:** Os estudos reconhecem a importância das atividades educativas como ferramenta para promoção da saúde no contexto da transmissão vertical do HIV, apesar de relatar a necessidade de capacitação constante dos profissionais e urgência na renovação dos conceitos e práticas educativas. Destarte, recomenda-se a ampliação e consolidação do aconselhamento em saúde e destaca-se o papel do enfermeiro como importante ator desse cenário. **Descritores:** Transmissão Vertical de Doença Infecciosa; HIV; Educação em Saúde; Tecnologia; Enfermagem.

RESUMEN

Objetivo: evaluar las evidencias disponibles sobre las tecnologías y prácticas educativas para prevenir la transmisión vertical del SIDA. **Método:** la revisión integrativa, en las bases LILACS, PubMed, Scopus, BDNF, entre abril y mayo de 2016, con los descriptores: "Vertical Transmission of Infectious Disease", "HIV", "Health Education" e "Technology". **Resultados:** se encuentran 16 artículos publicados entre 2000 y 2014, la mayoría brasileña y africana, transversal y con bajo nivel de evidencia. Los estudios abordaron la utilización de tecnologías duras, por medio de vídeo, radio y uso de teléfono, y ligeras, enfatizando, sobre todo el asesoramiento. **Conclusión:** los estudios reconocen la importancia de las actividades educativas como herramienta para promover

la salud en el contexto de la transmisión vertical del SIDA, a pesar de relatar la necesidad de capacitación constante de los profesionales y urgencia en la renovación de los conceptos y prácticas educativas. De este modo, se recomienda la ampliación y consolidación del asesoramiento en salud y se destaca el papel del enfermero como importante actor de ese escenario.

Descriptor: Transmisión Vertical de Enfermedad Infecciosa; SIDA; Educación en Salud; la Tecnología; Enfermería.

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INTRODUCTION

In recent years, there has been great progress in the context of vertical transmission (VT) of HIV. It is now possible to reduce maternal and child transmission rates by 25% to between 1% and 2% with appropriate use of recommended prophylactic measures⁽¹⁾. In view of the possibility of this reduction as early as possible, it is recommended that health professionals work with educational activities, informing HIV-infected pregnant women and women about the risks and means of preventing transmission from pregnancy to the puerperium, as well as the monitoring of the child until the definition of their serological situation.

Among the factors indicated for non-adherence to prophylaxis of vertical HIV transmission is lack of access to information. Lack of access to information on the infection may create erroneous expectations regarding the prevention of virus transmission, clinical evolution and treatment of the disease. Consequently, it may increase the possibility of illness, since it makes it difficult to understand the damage to their health and to make changes in behavior⁽²⁾.

Studies⁽³⁻⁴⁾ show a lack of knowledge regarding the vertical transmission of HIV by seropositive pregnant women. This lack of knowledge may lead to weaknesses in the adoption of VT prophylactic measures, as well as the fact that this population is still under-assisted in its biopsychosocial aspects, requiring multiprofessional attention in aspects that go beyond a normal gestation period and obstetric procedures.

It is essential that the individuality of humanized care be implemented for seropositive mothers, in order to provide support for coping with the main difficulties experienced by them, and it is essential that the professionals approach the reality of these women, listening to them and allowing them to express all the your doubts. Health education is, therefore, the best way to overcome these knowledge deficiencies of HIV positive pregnant women⁽³⁻⁴⁾.

Thus, it is up to health professionals to be able to reduce this gap regarding the lack of access to information by women living with HIV and their lack of knowledge about HIV VT. Thus, the role of the nurse, who has, within its formative pillar, health education, can overcome the classic process of information transfer, leading the individual to reflect and decide in search of the adoption of healthy behaviors. In order to achieve this objective, it is imperative to use technologies that facilitate this teaching process.

In the practice of health education, technology should be used in a way that favors the participation of the subjects in the educational process, contributing to the construction of citizenship and the increase of the autonomy of those involved. In both education and health, educators must understand technologies as facilitators of knowledge-building processes in a creative, transformative and critical perspective⁽⁵⁾.

The types of technology that professionals can rely on are: hard technology, when using tools, standards and technological equipment; soft-hard technology, when it comes to structured knowledge (theories, care models, nursing process); and soft technologies, in which it is clearly seen that the implementation of care requires the establishment of relationships (bonding, service management and care)⁽⁶⁾.

Among the options of educational technologies, whether they are hard, soft-hard or soft, have printed educational materials (leaflets, pamphlets, booklets, serials and albums), which use audiovisual resources (such as videos, radio and telephone use) or those who use personal relationships through counseling, reception and dialogue. In one way or another, they all provide information on health promotion, disease prevention, treatment modalities and self-care⁽⁷⁾.

With this, the need and relevance of the development of technologies and educational activities in the context of the vertical transmission of HIV is realized. Thus, the following guiding question emerged: what has been produced in the national and international literature on educational technologies and practices for prevention of vertical transmission of HIV?

OBJECTIVE

To assess the available evidence on educational technologies and practices to prevent vertical transmission of HIV. It is believed that the results obtained can cooperate for the improvement of women's care in this condition.

METHOD

It is a study of the type integrative review of the literature, whose purpose is to gather and synthesize research results on a given topic or issue, in a systematic and orderly manner, contributing to the deepening of the knowledge of the subject investigated⁽⁸⁾.

To carry out this integrative review, initially, the research question was identified, allied to the selection of the descriptors, and then the criteria for inclusion and exclusion of articles were established. From this, the following steps were taken during the elaboration of this study: the selection of the sample through the search in the databases, the summarization of the information extracted from the selected articles, the evaluation of the studies the interpretation and discussion of the results and, finally, the presentation of the revision and synthesis of knowledge⁽⁸⁾.

The guiding question for this study was: "What educational technologies and practices are used to prevent vertical transmission of HIV?" The construction of the question involved the acronym PICO⁽⁹⁾, being: P for population (pregnant and postpartum women with HIV); I for intervention (technologies and educational practices used to prevent the vertical transmission

of HIV); C for control (no terms were used for comparison); O for outcomes (educational technologies used).

Four databases were analyzed: LILACS (Latin American and Caribbean Literature in Health Sciences), PubMed (Public/Publish Medline), Scopus and Nursing Database (BDENF). The inclusion criteria of the articles in the review were: original research article, complete and published in Portuguese, English or Spanish; address the use of educational technologies, health education, health counseling or some kind of educational practice related to the prevention of vertical transmission of HIV. Studies that did not fit the mentioned characteristics were excluded from this review. There were no limitations on the year of publication of the articles during searches.

The controlled descriptors (DECS descriptors) were used: "Infectious Disease Transmission Vertical", "HIV", "Health education" and "Technology". The choice of the descriptors "Health education" and "Technology" is justified by the fact that the objective of this study is to seek both evidence that addresses educational technologies and educational practices to prevent vertical transmission of HIV. In addition, the descriptor "Technology" was restricted in the results of the searches in certain databases when compared to "Health education", which during the search extended the number of studies found.

A combination of the descriptors with the boolean operator "AND" was used for each of the selected databases, due to its specific characteristics, having as its guiding axis the question and inclusion criteria established, without the use of filters. The search was performed by online access, in the month of April and May 2016.

For the selection of studies, the recommendations of PRISMA⁽⁹⁾ were followed, as shown in Figure 1, with 16 articles included in this review.

For the data collection, an adapted tool⁽¹⁰⁾ was used to highlight the characteristics of the research, such as: identification (article title, journal title, authors, country, language and year of publication), level of evidence, type of study, objective, methodology, topic categorization, results, conclusions and databases.

The evidence found in the literature was categorized according to the type of educational approach: "use of soft technologies and educational practices to prevent vertical transmission of HIV" and "use of hard educational technologies to prevent vertical transmission of HIV." In the topic "Use of soft technologies and educational practices for prevention of vertical transmission of HIV" are articles that address educational practices in general, assessing their use or only verifying the importance of counseling, guidance, dialogue and delivery of education in health care providers and women with HIV in the context of vertical transmission of HIV. In the topic "use of hard educational technologies to prevent vertical transmission of HIV" is used in the studies technological equipment, such as video, radio and telephone, which are classified as hard technologies.

The articles were classified as level of evidence at: 1, when evidence was from a systematic review or meta-analysis of all randomized controlled trials, relevant or from clinical guidelines based on systematic reviews of randomized controlled trials; 2, if the evidence was derived from at least one well-delineated randomized controlled trial; 3, when the evidence was obtained from well-delineated clinical trials without randomization; 4,

evidence from well-delineated cohort and case control studies; 5, evidence from a systematic review of descriptive and qualitative studies; 6, evidence derived from a single descriptive or qualitative study; 7, evidence originating from the opinion of authorities and/or report of expert committees⁽¹¹⁾.

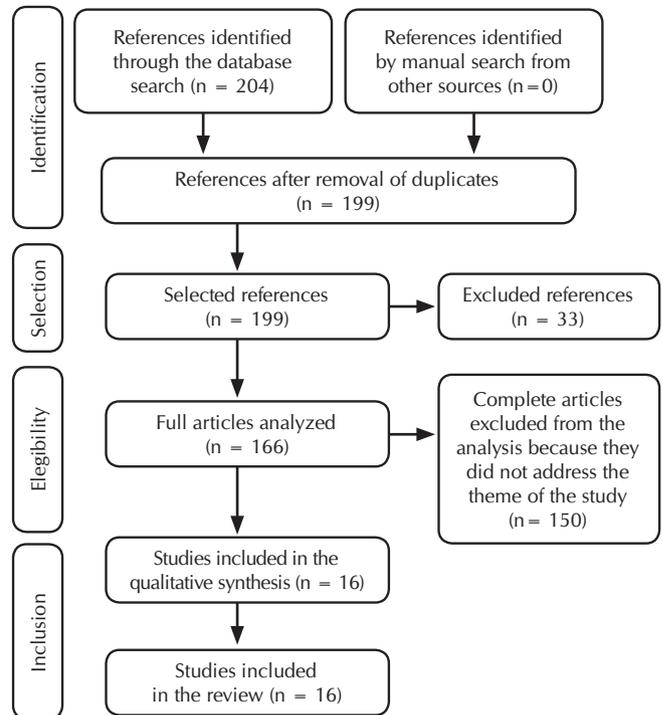


Figure 1 – Flowchart of the process of identification, selection and inclusion of the studies, based on the PRISMA recommendation, Brazil, 2016

The results were described by means of frequencies, presented in the form of a table and discussed according to the pertinent literature, allowing the reader to evaluate the applicability of the elaborated integrative review, in order to reach the objective of this method.

RESULTS

Chart 1 presents a summary of the characteristics, the categorization of the study, the level of evidence, the objectives, the results and the conclusions of the productions found.

According to Chart 1, the 16 articles found were published between 2000 and 2014. Of the articles included for analysis, 7 were produced in Brazil and 7 in Africa (2 in Kenya, 1 in Ghana, 1 in Uganda, 1 in Botswana, 1 in Sudan and 1 in South Africa), 1 in Jamaica (Central America) and 1 in place was not reported in the article.

Regarding the type of methodology, most of the articles were cross-sectional with a descriptive and exploratory design, 4 presented a qualitative approach and 1 study was of the cohort type. There was a low level of evidence from the studies, 15 of them presented level of evidence 6 and only 1 presented level 4.

Of the 16 studies analyzed, 4 addressed the use of hard-type educational technologies in order to promote health education for the population through video, radio and telephone, and fall under the topic “use of hard educational technologies for vertical prevention transmission of HIV”, and 12 addressed general educational practices, mainly based on counseling and dialogue between health professional and user of the service, and belong to the topic “Use of soft technologies and educational practices to prevent vertical transmission of HIV.”

In soft technologies, it is seen that the implementation of care requires the establishment of relationships, such as bonding

and welcoming⁽⁶⁾, as mentioned in some articles on the topic “use of soft technologies and educational practices to prevent vertical transmission of HIV” the use of counseling, guidance and dialogue between the health professional and the service user, it can be said that some of these studies have used soft technologies.

It is emphasized that in none of the review articles was the use of soft-hard technologies and hard-technology technologies found no study addressing the use of printed educational materials such as booklets, booklets, booklets and manuals or software use and scales.

Chart 1 – Presentation of the synthesis of articles included in the integrative review, 2016

Categorization	Author and year/method / country/level of evidence / database	Objective	Results/conclusions
Use of hard educational technologies to prevent vertical transmission of HIV	Kuhlmann AKS, <i>et al.</i> , 2008 ⁽¹²⁾ Cross-sectional Botswana Level: 6 PubMed	To evaluate the association between exposure to a long-term radio drama series that encourages use of the HIV vertical transmission prevention program and HIV testing during pregnancy.	Along with other supporting elements, radio serial dramas could contribute to HIV prevention, treatment and early care.
	Murdaugh C, Russell RB, Sowell R., 2000 ⁽¹³⁾ Exploratory, with focus group methodology Country not informed Level: 6 PubMed	To develop an educational video of guidelines for HIV-positive women on pregnancy and antiretroviral use.	The information obtained from the focus groups was successfully used to develop a video to be used in a multicenter intervention study. Focal group methodology is a useful strategy for developing educational interventions.
	Jennings L, <i>et al.</i> , 2013 ⁽¹⁴⁾ Qualitative Kenya Level: 6 PubMed	To examine what content and forms of mobile communication are acceptable to support vertical transmission of HIV (VTP) prevention.	It was concluded that the current use of mobile communications platform for VTP has a significant potential. This pre-intervention evaluation produced valuable information about the complexities of the project and its implementation. An effective platform for PMTCT will need to address contexts of confidentiality, sharing of cell phones and connection with current services.
	Dean AL, <i>et al.</i> , 2012 ⁽¹⁵⁾ Exploratório Sul da África Level: 6 PubMed	To investigate the feasibility of using cell phone text messaging (SMS) to promote adherence to antiretroviral therapy among pregnant women newly diagnosed with HIV.	Four post-intervention interviews with participants revealed general satisfaction and recommended that the SMS group be offered in the future.
Use of soft technologies and educational practices to prevent vertical transmission of HIV	Omwega AM, Oguta TJ, Sehmi JK, 2006 ⁽¹⁶⁾ Cross-sectional Kenya Level: 6 PubMed	To determine maternal knowledge about vertical transmission of HIV in the rural environment and to examine viable alternatives of breast milk for HIV positive mothers.	It is recommended that health education and nutritional counseling be intensified in order to improve mothers' knowledge about the vertical transmission of HIV, because they have low levels of knowledge.
	Mahmoud MM <i>et al.</i> , 2007 ⁽¹⁷⁾ Cross-sectional Sudan Level: 6 PubMed	To investigate the knowledge of pregnant women and their attitude towards the vertical transmission of HIV, as well as voluntary counseling and testing.	There is a need to broaden the voluntary counseling and testing program and to increase the level of education and health awareness about HIV and vertical transmission.
	Boateng D, Kwabong GD, Agyei-Baffour P, 2013 ⁽¹⁸⁾ Cross-sectional Gana Level: 6 PubMed	To investigate women's knowledge, attitudes and perceptions about antiretroviral therapy (ART) and VTP.	There was inadequate knowledge about ART and VTP. Knowledge and understanding of mothers about ART and VTP may influence their adherence to ART. Educational interventions are needed to develop positive behaviors and improve ART adherence for women with HIV, whether literate or not.

To be continued

Chart 1 (concluded)

Category	Author and year/method / country/level of evidence / database	Objective	Results/conclusions
Use of soft technologies and educational practices to prevent vertical transmission of HIV	Moore J, <i>et al.</i> , 2008 ⁽¹⁹⁾ Descriptive study Jamaica Level:6 LILACS	To assess the effectiveness of HIV testing and counseling program in prenatal clinics.	The voluntary HIV testing and counseling program proved to be an important intervention that improved HIV awareness, prevention and control in pregnant Jamaican women, and increased acceptance and empowerment to care for themselves and their children.
	Feliciano KVO, Kovacs MH, 2003 ⁽²⁰⁾ Exploratory study Brazil Level:6 LILACS	To elucidate the fecundity of educational practice focused on the prevention of maternal-fetal transmission of AIDS to promote the communication of users and services.	It was found that educational work is focused on providing information during the consultation. The small supply of prenatal educational activities and the “technocratic monologue” that prevails in the relations between users and health services have negative repercussions on the vulnerability of the female population and their children.
	Nogueira SA, <i>et al.</i> , 2001 ⁽²¹⁾ Prospective cohort Brazil Level: 4 LILACS	To determine the rate of vertical transmission of HIV and risk factors associated with the use of zidovudine and education in child care in Brazil.	Vertical HIV transmission in Brazil was reduced using a multidisciplinary team approach. The high level of use of antiretroviral drugs, the provision of health education and the use of infant formulas for exposed children were achieved.
	Silva MR, Alvarenga WA, Dupas G, 2014 ⁽²²⁾ Qualitative Brazil Level: 6 BDENF	Know the experience of caregivers of children exposed vertically to HIV.	It was observed that the public health service of the municipality studied tried to follow the established protocol requirements, however, improvements in the quality of counseling are necessary.
	Teixeira SVB, <i>et al.</i> , 2013 ⁽²³⁾ Exploratório e Qualitative Brazil Level: 6 BDENF	To analyze the perception of HIV-positive women about the decision to become pregnant; Investigate this knowledge about care in the prevention of vertical transmission.	Health professionals should be available for dialogue. Thus, the decision and the desire to have children should be discussed in the care, in order to provide women with adequate information on the safest recommendations for family planning, as well as on the necessary care during pregnancy, childbirth and the puerperium, and respect for rights as citizens.
	Feitosa JA, <i>et al.</i> , 2010 ⁽²⁴⁾ Descriptive and qualitative Brazil Level: 6 BDENF	To analyze the perceptions and feelings of the pregnant women related to the serological test for HIV in prenatal care.	Nurses, as health education professionals, need to invest in sensitization strategies, and can base them on workshops and collective counseling, giving them the opportunity to reflect on risk practices and prevention.
	Praça NS, Barrancos JTG, 2007 ⁽²⁵⁾ Cross-sectional Brazil Level: 3 BDENF	Check that women have received pre- and post-test HIV counseling in prenatal care.	It was concluded that there is a need for greater involvement of health professionals in the provision of pre- and post-test HIV counseling to pregnant women in prenatal care.
	Moura EL, Praça NS. 2006 ⁽²⁶⁾ Descriptive and qualitative Brazil Level: 3 BDENF	Identify the pregnant woman's expectations and actions regarding pregnancy and the concept.	It was concluded that there is a need to implement a health orientation aimed at women with a focus on the vertical transmission of HIV/AIDS.
	Byamugish R, <i>et al.</i> , 2010 ⁽²⁷⁾ Cross-sectional Uganda Level: 3 Scopus	To assess the attitude toward HIV testing and counseling for pregnant women in prenatal care, as well as their knowledge of mother-to-child transmission of HIV.	Most pregnant women had positive attitudes towards routine HIV counseling and testing. More than 60% had correct knowledge about mother-to-child transmission of HIV.

DISCUSSION

The technology is present in all stages of Nursing care, being considered at the same time, process and product. Moreover, it is present in the way in which the relationships between the

agents are established and in the way health care is given, which is understood as living work in act⁽²⁸⁾.

Nurses, as health education professionals, have been using technologies to mediate the care provided to the assisted individual, and two types of technologies have been identified in

the studies analyzed regarding educational practices to prevent vertical transmission of HIV: soft and hard, which will be better discussed in the following topics.

Use of soft technologies and educational practices to prevent vertical transmission of HIV

Most of the evidence in the review is in this category, totaling twelve articles. Of these, seven^(16-17,19,22,24-25,27) evaluated the counseling or reported the use and importance of this practice for the implementation of preventive actions regarding mother-to-child transmission of HIV, showing that type has been the most preponderant among those used in this context.

The establishment of human relations is essential when it comes to the issue of vertical transmission of HIV, since supporting a seropositive woman does not only involve a set of techniques. Technology should not be seen only as something concrete, as a palpable product, but may be the result of a work involving a set of abstract actions that have a specific purpose, in this case the prevention of vertical transmission of HIV⁽²⁹⁾.

It was also verified among the analyzed publications that the educational practices related to the prophylaxis for the VT of HIV are very focused for the pre- and post-test HIV diagnosis counseling. During counseling, especially if the test result is positive, all phases susceptible to vertical transmission should be reinforced, from the preconceptional to the postpartum period, in order for pregnant women and puerperal women to become aware of the specific care of each phase.

Nurses must understand the practices related to the reduction of vertical transmission of HIV integrally⁽³⁰⁾. Health professionals should be available for dialogue and linked to issues of gender, sexuality and reproductive health, without losing sight of the ethical, social and cultural dimensions that normalize the lives of HIV positive women. The decisions and desires of women should therefore be discussed in order to provide women with adequate information on the safest recommendations for family planning, as well as on the care needed during pregnancy, delivery and puerperium, and respect for their rights as citizens⁽²³⁾.

Some review studies have reported that educational interventions are necessary to develop positive behaviors and increase adherence to HIV vertical transmission prophylaxis^(18,21,26), as well as the need for greater professional involvement with health education and clientele⁽²⁵⁾. An article also showed that one of the most important actions to be developed by the nurse in the context of vertical transmission of HIV is health counseling, since it has allowed the improvement of HIV sensitization, prevention and control in pregnant women in Jamaica, besides the increase acceptance and empowerment to care for themselves and their children⁽¹⁹⁾.

These data are corroborated by studies that emphasize the relevance of education in the continued health of HIV positive pregnant women, orchestrated to the level of understanding them, making them aware of their right to choose care with their body and advising on the importance and adverse effects of treatment, and that such effects are only phases that are necessary to be addressed as part of stages of coping with the disease^(4,31).

In a study carried out in the city of Campina Grande, Paraíba State, it was verified that the health education was shown as the best way to fill the knowledge deficiencies of the seropositive

pregnant women, being pointed out the Groups of Pregnant women as an important tool for the exchange of information between professionals and patients, as well as among the participants themselves⁽³²⁾.

Despite this, it was verified that the educational work is focused on providing information during the consultation⁽²⁰⁾. The small supply of prenatal educational activities and the "technocratic monologue" that prevails in the relations between the users and the health services have negative repercussions on the vulnerability of the female population and their children⁽¹⁷⁾. Another study also showed this difficulty, reporting that improvements in the quality of health counseling are needed⁽²²⁾.

Ratifying these results, in a study that sought to identify the conceptions and practice of promoting the health of the multidisciplinary team in specialized HIV/AIDS care service, among the actions carried out, there was emphasis on traditional health education, based on the acquisition of knowledge related to disease to change lifestyles considered unhealthy. However, current health demands require changes in these paradigms, both in the services and in the education and teaching of the professionals who will work in these services⁽³²⁾.

It is also highlighted the barriers faced by health professionals for the realization of educational practices. Among them, the challenges related to the workload, the resources, the scientific update, as well as the need to adjust to the frequent changes in the recommendations are highlighted^(24,33). However, nurses who are adequately trained and trained in health education in the context of vertical transmission of HIV can play a key role in delivering successful services⁽¹⁹⁾.

Many factors culminate in the fragility of consistent proposals for the reorganization of healthcare practices in the field of health promotion, such as difficulties in working with the collective body through the implementation of self-help groups, as well as the lack of infrastructure and human resources for services. In addition to the difficulties related to the motivation of the HIV infected client as responsible for their health, due to their difficulty in accepting the disease, the chronic nature and the repercussions of stigma and prejudice still strongly linked to infection. Issues of vulnerability, especially impoverishment, low level of schooling and difficulty in accessing health services were also mentioned. It is necessary to advance the proposals of the health system that express an expanded vision of health, so that the care is not only focused on aspects of cure and prevention of diseases, but also goes in the field of health promotion. Therefore, it is pertinent to change the attitude of the professionals through processes of continuing education, training and new organizational processes of work⁽³²⁾.

Four studies^(16-18,27) also had among their objectives assess maternal knowledge about the vertical transmission of HIV. Two of them showed that women's knowledge is still low, while the other two studies revealed adequate knowledge of mothers, but could be increased. Nevertheless, all studies reinforced the importance of educational interventions to improve knowledge about vertical transmission and adherence to vertical transmission prophylaxis.

In contrast to studies that found adequate knowledge of women, two recent researches that aimed to analyze the knowledge

of seropositive pregnant women about the vertical transmission of HIV showed that mothers have a lack of knowledge regarding VT. However, both corroborate with the four studies of this review that health education should be an important tool in order to improve this knowledge⁽³⁻⁴⁾.

In view of these results, the development of educational and health actions imbricated in an acknowledged effective public policy⁽²⁾, in order to potentiate educational practices within the perspective of the vertical transmission of HIV with a view to promoting the health of the binomial mother-son.

Use of hard educational technologies to prevent vertical transmission of HIV

In relation to the four studies that used hard technology as a tool for health education for prophylaxis of vertical transmission of HIV, video⁽¹²⁾, the use of a radio series⁽¹³⁾, the telephone⁽¹⁴⁾ and the use of SMS⁽¹⁵⁾ were reported. However, other types of hard technology such as printed educational materials, software or use of scales were not mentioned in any of the studies found in the review.

One of the studies in this category⁽¹²⁾ aimed to develop an educational video of guidelines for HIV positive women on care in pregnancy and antiretroviral use, using the focal group methodology for this. The study revealed that the information obtained from the focus groups was successfully used to develop a video to be used in a multicenter intervention study.

Educational video deserves to be highlighted as a hard technology that can be used in primary, secondary and tertiary care. It is a playful teaching-learning method that, besides allowing the rapid dissemination of information, can be easily made available to reach any person, regardless of social class or educational level. In addition, this tool enables the stimulation of critical thinking and the development of skills and abilities in the individuals reached by it⁽³⁴⁾.

A review study on the types of technologies that nurses have developed for the promotion of breastfeeding found that among the types of hard technologies developed, the most prominent was the use of video⁽²⁹⁾, revealing that this type technology is well used within educational practices.

In a randomized controlled clinical trial that sought the effects of an educational video on maternal self-efficacy in preventing childhood diarrhea, it was shown that video had a significant effect on maternal self-efficacy, demonstrating the efficacy of using this type of technology⁽³⁵⁾.

The second study in this category⁽¹³⁾ evaluated the association between exposure to a long-term radio drama series that encourages use of the HIV vertical transmission prevention program and HIV testing during pregnancy. It was evidenced in the study that along with other supporting elements, radio serial dramas can contribute to HIV prevention, treatment and early care of the infection.

The last two researches of this category sought to investigate the viability of the use of the cellular as a means of promoting the prevention of HIV VT, both being the results of the research favorable to the use of this technology medium.

A systematic review⁽³⁶⁾ about "telephone follow-up" as a post-operative nursing intervention of patients undergoing facotomy surgery evidenced the need to increase the production of

research on the subject in the Nursing area and in our sociocultural context. In addition, he observed that the use of telemonitoring can be considered a viable and low cost alternative for the continuity of postoperative care in their homes.

It is important to highlight that new technologies are reaching the health sector and impart changes in the attributions of the various professional categories. In this context, Nursing needs to update the knowledge and incorporate such advances in its practice. Among the nurses' multiple actions, health promotion actions can be highlighted, aiming at the quality of life of HIV patients⁽²⁸⁾. Thus, it is imperative that nurses seek the development of new technologies to improve their practice in the context of vertical transmission of HIV, especially with regard to guaranteeing the autonomy of HIV-positive women.

Study limitations

It can be said that the small diversity of educational technologies found, coupled with the presence of methodologically limited studies and with a low level of evidence, made it difficult to evaluate the effectiveness of the interventions used. In addition, there was a sample of very different studies to allow comparisons, making it difficult to categorize and a small number of researches on educational technologies within the theme limited the discussion with similar articles. One can also mention as a limitation, the inclusion of articles available only in English, Portuguese and Spanish.

Contributions of the study

Recognizing what has been produced at national and international level about educational practices and technologies to prevent vertical transmission of HIV, it is possible to identify in which aspect there is a greater lack of nurse's actions, what kind of technology has been developed and what their failures are and reported successes, as well as new perspectives from these results begin to emerge. With this study, it is possible to verify what has been suggested in the literature for improvement of educational practices, allowing a better direction of new studies and offering more scientific basis for a safer methodological path.

This integrative literature review allows the incorporation of evidence into clinical practice in a clear and summarized way, based on the synthesis of the results of the research found, contributing to the deepening of the knowledge and to the improvement of the educational practices about the vertical transmission of the HIV.

CONCLUSION

From this review, it was possible to verify that almost all the studies found were carried out in Brazil and in Africa between 2000 and 2014, with low level of evidence and Cross-sectional methodology.

It was evidenced that the published studies on educational practices in the context of vertical transmission of HIV addressed the use of hard technologies, through video, radio and telephone, and light, emphasizing, above all, counseling, besides recognizing the importance of educational activities as a tool to promote health. However, no light-hard educational

technology was produced in this context, as well as, among hard technologies, no study was found that addressed the use of printed educational materials, for example.

In addition, it was evident the need for constant training of professionals who attend HIV positive women, pregnant women and postpartum women, and that it is urgent to renew educational concepts and practices, which are still carried out vertically and without prioritizing the dialogue and empowerment of clients attended. Thus, the studies recommend the expansion and consolidation of health counseling within practices for prophylaxis

of vertical transmission of HIV and highlight the role of nurses as an important actor in this setting.

With this study, we hope to encourage further research in this area, as well as to encourage the development of new educational technologies and to test the effectiveness of those that have been developed in order to implement them in clinical practice. Finally, it is recommended the development of studies with methodological designs with a higher level of evidence, thus contributing to consolidated and evidence-based health practice.

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