

Educational technology for pregnant women on rapid HIV testing: validation study

Tecnologia educacional para gestantes sobre o teste rápido para HIV: estudo de validação
Tecnología educativa para mujeres embarazadas sobre pruebas rápidas para el VIH: estudio de validación

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Abstract

Objective: To describe the process of validating a booklet for pregnant women on the rapid test for the Human Immunodeficiency Virus.

Method: Methodological research with a quantitative approach, with an emphasis on content and appearance validation. Data collection took place between January and August 2020, with the application of two online questionnaires, one for 14 health judges and the other for four judges from other areas. Descriptive statistics were used to obtain the Content Validity Index (minimum 0.7) and the Suitability Assessment of Materials score (minimum ten points).

Results: The Content Validity Index was 0.8 and the SAM score was 25.25.

Conclusion: The booklet was considered adequate in terms of content and appearance, and can mediate educational actions with pregnant women on rapid HIV testing.

Descriptors: HIV; Pregnant women; Educational technology.

Whats is already known on this?

Educational actions mediated by educational technologies enhance the promotion, prevention, and health care of pregnant women.

What this study adds?

It provides a specific educational tool for pregnant women on rapid HIV testing. Validation by expert judges and the use of quantitative metrics increase confidence as an educational resource.



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Resumo

Objetivo: Descrever o processo de validação de uma cartilha para gestantes sobre o teste rápido para Vírus da Imunodeficiência Humana. **Método:** Pesquisa metodológica com abordagem quantitativa, com ênfase na validação de conteúdo e aparência. A coleta de dados ocorreu no período de janeiro a agosto de 2020, com a aplicação de dois questionários via on-line, um para 14 juízes da saúde e outro para quatro juízes de outras áreas. Adotou-se a estatística descritiva para obter o Índice de Validade de Conteúdo (mínimo de 0,7) e escore Suitability Assessment of Materials (mínimo dez pontos). **Resultados:** O Índice de Validade de Conteúdo foi de 0,8 e o escore SAM de 25,25. **Conclusão:** A cartilha foi considerada adequada no que tange ao conteúdo e aparência, e pode mediar as ações educativas com as gestantes sobre o teste rápido para HIV.

Descritores: HIV; Gestantes; Tecnologia Educacional.

Resumén

Objetivo: Describir el proceso de validación de una cartilla para mujeres embarazadas sobre la prueba rápida para el Virus de Inmunodeficiencia Humana. **Método:** Investigación metodológica con enfoque cuantitativo, con énfasis en la validación de contenido y apariencia. La recolección de datos se realizó de enero a agosto de 2020, con la aplicación de dos cuestionarios en línea, uno para 14 jueces de salud y otro para cuatro jueces de otras áreas. Se adoptó estadística descriptiva para obtener el índice de Validez de Contenido (mínimo 0,7) y la puntuación de Evaluación de Idoneidad de Materiales (mínimo diez puntos). **Resultados:** El Índice de Validez de Contenido fue de 0,8 y el puntaje SAM de 25,25. **Conclusión:** El folleto fue considerado adecuado en cuanto al contenido y apariencia, y puede mediar acciones educativas con mujeres embarazadas sobre la prueba rápida de VIH.

Descritores: VIH; Mujeres Embarazadas; Tecnología Educacional.

INTRODUCTION

Infection with the Human Immunodeficiency Virus (HIV) has challenged humanity for decades and has become a serious public health issue as it is characterized as an infectious and contagious disease, causing changes and sequelae in the life of the person living with this virus and, when left untreated, accelerating the development of Acquired Immunodeficiency Syndrome (AIDS), as well as the growing number of people infected.⁽¹⁾

The progressive increase in HIV/AIDS cases in women of reproductive age has contributed to the rise in vertical transmission rates, presenting an important challenge for public health policies.⁽²⁾ The Global Report of the Joint United Nations Program on HIV/AIDS (UNAIDS) informs that, on a global scale, approximately 200 million women become pregnant each year and, of this figure, 2.5 million are infected with HIV.⁽³⁾ In this context, in Brazil, between 2000 and June 2019, the number of pregnant women notified of HIV infection was 125,144.⁽⁴⁾

It can be seen that the moment of counseling and guidance during prenatal care is decisive for carrying out rapid tests (RT) to detect HIV, as well as to mitigate the negative elements of a possible diagnosis during pregnancy and the explanations related to infection by the virus. With this in mind, health education actions related to the importance of HIV testing are key elements for promoting the health of pregnant women, for the prevention, timely diagnosis, and appropriate treatment of HIV infection.

These actions can be mediated by Educational Technologies (ET), especially when they are built and evaluated with theoretical and methodological rigor.⁽⁵⁾ Thus, when considering that health education can be mediated by ET, we highlight the feasibility of using a booklet, a type of didactic material that can reinforce verbal guidance and serve as a guide at home in case of doubts.⁽⁵⁾ Thus, a study that surveyed the production of ET aimed at pregnant women showed that despite the increase in publications on the construction, validation, and application of ET, there is still a shortage in the context of prenatal care, and that among the subjects that still need to be addressed more are Sexually Transmitted Infections (STIs).⁽⁶⁾

In this sense, an ET was proposed in the form of a booklet based on empirical evidence obtained in a study on the social representations of pregnant women, which highlighted the importance of carrying out interventions with pregnant women using ET about HIV and RT for HIV. These approaches not only strengthen personal empowerment but are also aimed at the dissemination and greater publicity in the social context. The aim is for the population to recognize the relevance and availability of HIV testing, thus promoting an increase in testing coverage in the general population.⁽⁷⁾

The booklet was produced by undergraduate nursing students at the Federal University of Amapá (UNIFAP). Its purpose is to mediate the teaching-learning process with pregnant women, related to the importance of performing ET for HIV during prenatal consultations, as recommended by the Ministry of Health. After production, the booklet was validated. It was considered that there is a growing use of ET in health education and that they have proved to be important in mediating the teaching-learning process.

Therefore, this study aimed to describe the process of validating a booklet for pregnant women on RT for HIV.

METHODS

This is a methodological study with a quantitative approach, in which the technical-scientific validation of content (Stage 1) and didactic-pedagogical appearance (Stage 2) were carried out. This study is based on the Pasquali Model.⁽⁸⁾ Validation took place between January and August 2020.

Content validation aims to assess the technical-scientific aspects related to the information included in the technology and the extent to which the instrument/device/tool is, in fact, appropriate to be applied according to the established objective. A group of judges, experienced in the area of the content covered, analyze and judge the comprehensiveness and representativeness of the information, and whether what is contained in each item is related to what was assigned.⁽⁹⁾

Appearance validation aims to assess the didactic-pedagogical aspects related to the ET format. A group of expert judges from different areas, experienced in the technological modality, for example, pedagogues, social communicators, graphic designers, anthropologists, and computer technicians, among others, will check whether the language, interface, communication, and other items are satisfactory.⁽⁹⁾

To select the judges, we opted for a 95% confidence level and a sampling error of 25%, defining a minimum of 13 judges⁽¹⁰⁾ for the two stages. In stage 1, the content expert judges took part. As inclusion criteria, the selected judge had to meet at least two of the following requirements: have participated in the evaluation boards of theses, dissertations, or undergraduate or specialization monographs involving the subject in the area of interest of this research; have teaching experience in a subject in the area of interest of this study; have practical experience with pregnant women; have practical experience with people living with HIV/AIDS; be the author of a thesis or dissertation in the area of interest of this research; be the author of at least one paper published in an indexed journal in the area of interest of this study; have participated in groups/projects involving the subject in the area of interest of this research.

The following were considered to be areas of interest: care for pregnant women or care for people with HIV/AIDS or ET in health. The exclusion criterion was: not responding to electronic contact for 15 days during the data collection period.

Professors from federal, state, and private universities in the five regions of Brazil were sought. Subsequently, the "snowball" technique was used, in which one participant nominates the next.⁽¹¹⁾ Afterwards, the Lattes CVs of potential participants were consulted to check that they met the established criteria. All the judges were invited through an invitation letter sent by e-mail. Once they had accepted, the Free and Informed Consent Term (FICT) was sent electronically, followed by the evaluation instrument and a copy of the booklet. Access to the instrument and booklet was conditional on signing the FICT.

For data collection, a validated instrument was applied, organized into blocks related to objectives (five items), structure and presentation (12 items), and relevance (five items), with a Likert-type scale, ranging from one to four points (1- Totally adequate, 2- Adequate, 3- Partially adequate, 4- Inadequate), with spaces for comments after each block.^(9, 12)

For data analysis, descriptive statistics were used to calculate the Content Validity Index (CVI). A minimum of 0.70 (70%) agreement was established for validation.⁽⁹⁾ The CVI measures the proportion of judges who agree with a given aspect of the instrument. The index is calculated by adding up the agreement of the items marked as "1 - totally adequate" and "2 - adequate" by the experts, divided by the total number of responses.

In stage 2, the appearance expert judges took part; autonomous professionals in the fields of Design, Pedagogy, and Public Relations were sought. The snowball technique was then used. The inclusion criteria were: at least two years' experience in the field. The exclusion criterion was not responding to electronic contact for 15 days during the data collection period.

For data collection, the instrument used was the adapted Suitability Assessment of Materials (SAM).⁽¹²⁾ The instrument contains 13 items related to the content, writing style, appearance, motivation, and cultural appropriateness of the educational material, organized on a Likert-type scale, ranging from zero to two points (2- Adequate, 1-Partially Adequate, 0- Inadequate), with spaces for comments. Descriptive statistics were used to calculate the SAM score. A minimum of ten points was established for validation. The average was calculated from the sum of the total points obtained on the instrument by each judge, divided by the number of judges.⁽¹²⁾

The study was submitted to UNIFAP's Ethics Committee and approved under Opinion No. 3.749.514, CAAE: 22989319.6.0000.0003.

RESULTS

Profile of the participants

A total of 25 specialist health judges were contacted and 14 completed the process. As for the profile, the age ranged from 26 to 61 years, 92.85% (n=13) were female, 92.85% (n=13) had a degree in nursing, 71.43% (n=10) had a doctorate in maternal and child health, HIV, and health technologies. The scope was national and covered three of the country's five regions (North, South, and Southeast): North with 57.14% (n=8), South with 28.57% (n=4), and Southeast with 14.29% (n=2). It should be noted that three judges are CNPq PQ (*Produtividade em Pesquisa* - Research Productivity) recipients.

Concerning judges from other areas, four were contacted and all responded to the data collection instrument. As for the profile, 100% (n=4) were female, aged between 26 and 59, with degrees in Design, Pedagogy, and Public Relations. The scope was local, as they all lived in Macapá (AP).

Technical and scientific validation of content (Stage 1)

Block 1, which covers the objectives of the booklet, had a CVI of 0.842. Block 2, referring to the structure and presentation, had a CVI = 0.755, and block 3, concerning the relevance of the booklet, had a CVI = 0.914. The booklet was rated with an overall CVI of 0.837 (Table 1).

Table 1. Technical-scientific evaluation of content by specialist health judges. Macapá, AP, Brazil (n=14).

ITEMS	Scores (n=14) Score x100				Index of agreement per item by TA+A x100 Total number of judges
	TA+A+PA=	Percentage by score	TA	A	
Block 1. Objectives:					
1.1 The information/content is consistent with the pregnant woman's needs.	6	5	3	0	0.785
1.2 The information/content is important for the pregnant woman's quality of life.	9	3	2	0	0.857
1.3 The information/content invites and/or instigates changes in behavior and attitude.	5	7	1	1	0.857
1.4 The information/content can circulate in the scientific environment of the area.	8	5	1	0	0.928
1.5 The information/content meets the objectives of institutions working with pregnant women.	6	5	3	0	0.785
Score per block.	34	25	10	1	59
Percentage per block.	48.571	35.714	14.285	1.428	84.285
Content Validation Index					0.842
Total percentages		99.99			84.28
Block 2. Structure and presentation:					
2.1 The booklet is suitable for pregnant women.	4	7	3	0	0.785
2.2 The messages are presented clearly and objectively.	3	3	7	1	0.428
2.3 The information presented is scientifically correct.	4	7	3	0	0.785
2.4 The material is appropriate to the socio-cultural level of pregnant women.	5	5	4	0	0.714
2.5 There is a logical sequence to the proposed content.	6	8	0	0	1
2.6 The information is well structured in terms of agreement and spelling.	4	5	5	0	0.642
2.7 The writing style corresponds to the level of knowledge of the target audience.	5	5	4	0	0.714
2.8 The information on the cover, presentation, table of contents, and final words is coherent.	5	5	4	0	0.714
2.9 The size of the title and topics is appropriate.	3	7	4	0	0.714
2.10 The illustrations are expressive and sufficient.	1	8	5	0	0.642
2.11 The material (paper/print) is appropriate.	5	9	0	0	1
2.12 The number of pages is adequate.	7	6	1	0	0.928
Score per block.	52	75	40	1	127
Percentage per block.	30.952	44.642	23.809	0.595	75.594
Content Validation Index.					0.755

Total percentages.		99.99				75.59
Block 3. Relevance						
3.1 The themes portray key aspects that should be reinforced.	8	5	1	0		0.928
3.2 The booklet allows learning to be transferred and generalized to different contexts (hospital and home).	8	5	1	0		0.928
3.3 The material proposes the construction of knowledge for the target audience.	7	5	1	1		0.857
3.4 The material covers the subjects necessary for the target audience to know and do.	7	5	2	0		0.857
3.5 The material is suitable for use by any health professional.	6	8	0	0		1
Score per block.	36	28	5	1		64
Percentage per block.	51.428	40	7.142	1.428		91.428
Content Validation Index.						0.914
Total percentages.		99.99				91.428

*(TA= Totally adequate, A= Adequate, PA= Partially adequate, I= Inadequate).

Source: Prepared by the authors (2021).

Didactic-pedagogical validation of appearance (Stage 2)

The SAM score was 25.25 (Table 2). Block 1, "Content", refers to the quality and relevance of the information presented in the booklet, with three items to be validated. Block 2, "Language", relates to the relevance of the terms and words used, observing the alignment with the target audience, with three items to be validated.

Block 3, "Graphic illustrations", concerns the graphic images used to illustrate the cover and the information throughout the booklet, with two items to be assessed. Block 4, "Motivation", concerns the ability to make an impact, provide interaction, and motivate learning, with three items to be assessed. Block 5, "Cultural appropriateness", refers to the socio-cultural adaptability of the material for the target audience, with two items to be evaluated.

Table 2. Evaluation by judges from other areas of the didactic-pedagogical suitability of the booklet's appearance, according to the SAM (Suitability Assessment of Material) score. Macapá, AP, Brazil (n=4).

Block	Content			Language			Graphic Illustrations		Motivation			Cultural propriateness		SAM Score
Judge	1.1	1.2	1.3	2.1	2.2	2.3	3.1.	3.2	4.1	4.2	4.3	5.1	5.2	
1	2	2	2	2	2	2	2	2	2	2	2	2	2	26
2	1	2	2	2	2	2	1	1	2	2	2	2	2	23
3	2	2	2	2	2	2	2	2	2	2	2	2	2	26
4	2	2	2	2	2	2	2	2	2	2	2	2	2	26

Source: Elaborated by the authors (2021).

The expert judges' comments and suggestions regarding language and illustrations were fully accepted in the restructuring of the booklet. Concerning language, it was suggested that the technical terms AIDS and immunological window be explained/clarified. In the final version, every time a technical term appears, an explanation has been written after it in language that is accessible to the socio-cultural context of the target audience. For example: next to the expression "oral fluid", the word "saliva" was added; next to the expression "HIV reagent", "positive test for HIV" was added; the phrase "everyone is vulnerable to HIV" was replaced by "everyone can acquire/get HIV".

As for the illustrations, some were considered vague or not in keeping with the context of the information; it was requested that in addition to the picture of the non-reactive HIV test, a picture of a reactive test be added; in addition to the picture showing the male condom, it was requested that a picture of the female condom be inserted; it was requested that all the images be captioned and that changes be made to the size and type of font in the text, as well as the colors of the background and letters to make them easier to read.

The final version of the booklet was 20 pages long with the following topics: introduction, information topics on: what is HIV; what is AIDS; the difference between HIV and AIDS; who can get/catch HIV; how to get it; how not to get it; how to prevent it; diagnosis; rights; where pregnant women can

take the Rapid Test; what the Rapid Test is; immunological window; what to do if the result is reactive for HIV; and references (Figure 1).

Figure 1. Illustrations of the booklet's cover, table of contents, and one page. Macapá, AP, Brazil.



Source: Elaborated by the authors (2021).

Legend:

LET'S GET TO KNOW THE HIV RAPID TEST.
(Information and tips for pregnant women)

SUMMARY

Presentation
What is HIV?
What is AIDS?
Is HIV different from AIDS?
Who can get HIV?
How can you get it?
You can't get it that way
How to prevent it?
Diagnosis
It's your right!
Where can you, as a pregnant woman, get tested?
What is the rapid test?
Immune window
HIV reactive, now what?
References

That's how it goes:

Vaginal, anal, or oral sex without a condom (yes, use a condom for oral sex too!);
Use of a syringe by more than one person (don't share needles!);
Transfusion of contaminated blood;
From an infected mother to her child during pregnancy, childbirth, or breastfeeding;
Unsterilized piercing or cutting instruments, be careful with tattoos and nail pliers!)

You can't catch it that way:

Sex WITH a condom;
Kissing on the cheek or mouth;
Sweat and tears;
Insect bites;
Shaking hands or hugging;
Soap/cloth/wipes;
Cutlery/cups;
Bus seat;
Swimming pool and bathroom;
Through the air.

DISCUSSION

It is important to emphasize that although the booklet was well evaluated, with a CVI from the health judges of 0.8 (minimum required: 0.7), and an average SAM score obtained from judges in other areas of 25.25 points (minimum of 10 and maximum of 26 points), the judges recorded their suggestions and comments to ensure that the necessary details were adjusted, contributing to the improvement of the final version of the Educational Technologies. The judges' suggestions were considered and adjustments were made to the writing to make the language easier to understand for the booklet's target audience, and to the size and font of the letters. Some illustrations were changed to make them more appropriate to the information on the pages. Therefore, the second version produced after the adjustments resulted in an educational booklet that is easy to understand and use, making it a tool for health promotion.

In a study that validated a booklet on the safe use of medicines in pregnant women, it was pointed out that this stage of adjusting the educational material based on the judges' suggestions is essential to improve the quality of the content.⁽¹³⁾

The care provided by primary antenatal care needs to be organized in such a way that it meets the access needs of pregnant women and takes demand into account. In this case, as a general premise, primary care is the gateway to the public health system and needs to be attentive to the control and prevention of STIs, ensuring adequate care and the availability of appropriate technologies for the target audience to be served. In this way, it fulfills its role of offering information and services at the right time.⁽¹⁴⁾

In order to identify the user's weaknesses, the health service relies on the professional's skills, effort, and dedication. Being attentive and sensitive when welcoming patients, attending to them responsibly within their demands, and having the appropriate tools make actions and health care more effective.⁽¹⁴⁾

ET is increasingly present in the nursing care process, whether in establishing a relationship between the user and the professional or in the care itself, considering product and process as one. Furthermore, among the types of technology, the booklet is a technology that facilitates the educational process in health and health promotion, contributing to the actions of those who recognize the real needs of the population being applied to, be they patients and their families, or health professionals.⁽¹⁵⁾

Given the context related to the target audience's lack of information and the need to change behavior, there is a need to intervene to change the current reality through educational strategies for prevention and health promotion. From this perspective, ET have proved to be an efficient, practical, and objective tool to help in the health education process.⁽¹⁶⁾

In a validation of an educational tool for the prevention of hypertension in pregnancy, the professionals who evaluated it concluded that tools of this type can be a guide for health education during prenatal care, and can both facilitate the work of health professionals and encourage women's self-care, helping them to promote their health.⁽¹⁷⁾

Because of the perception that health is a set of particularities in balance, considering the patient's context in health education has become indispensable. Therefore, analyzing lifestyle habits, and biological, mental, and social aspects are relevant to achieving satisfactory care in primary care. Health education can foster analytical thinking about reality and build active participation by the person in their care process, aware of their actions that directly affect their own health.⁽¹⁸⁾

There are several reasons for non-adherence to the prevention of mother-to-child transmission of HIV, one of which is the lack of access to information.⁽¹⁹⁾ As well as making it difficult to adhere to prophylaxis, the lack of access to information can lead to mistaken assumptions about the progression of the disease and treatment, all of which increase vulnerability to risk situations.

Many pregnant women, especially teenagers, show no interest in educational activities. This may be due to a lack of prior knowledge about the subject and even embarrassment at sharing doubts with other people involved.⁽²⁰⁾ The advantage of using ET (manuals, booklets, and leaflets) is that they are accessible and can be handled whenever necessary by the pregnant woman, without the need to be in the presence of a professional or a group of people, which makes the tool more interesting and adaptable.⁽²¹⁾

The limitations of this study were the difficulty (delay) in reaching the required number of specialist health judges, due to meeting the deadlines set for returning the evaluation tool, and the fact that the data was collected remotely, which made it difficult to control the deadlines set. However, distance data collection made it possible to select and include specialist health judges with great expertise on the subject of the booklet from different regions of the country, contributing to the improvement and quality of the booklet.

The booklet can help to improve the autonomy of pregnant women by enabling professionals to mediate in the educational process. It should be noted that the materials, in this case, the booklet, that are used to develop the educational actions are considered ET when they are built and validated systematically. In general, validation refers to the degree to which an instrument actually measures the variable in question, in order to make it appropriate and pertinent to its purpose. It is noteworthy that the validation process was seen by the judges as a positive and aggregating initiative for health education.

CONCLUSION

The booklet was considered adequate in terms of content and appearance and can mediate educational actions with pregnant women on HIV. ET can encourage the adoption of similar strategies in other areas of health and promote best educational practices for different audiences. Future studies should focus on the application of ET with the target audience (pregnant women), to verify the effectiveness of the booklet in terms of knowledge, attitudes, and practices in the field of HIV/AIDS. It is recommended that other ETs be developed to address the other STIs and the RTs available.

CONTRIBUTIONS

Contributed to the conception or design of the study/research: Sousa MM, Cardoso APC, Feitosa BRS, Silva MP, Teixeira E, Pena FPS, Nemer CRB. Contributed to data collection: Sousa MM, Cardoso APC, Feitosa BRS. Contributed to the analysis and/or interpretation of data: Sousa MM, Cardoso APC, Feitosa BRS, Silva MP, Teixeira E, Pena FPS, Nemer CRB. Contributed to article writing or critical review: Sousa MM, Cardoso APC, Feitosa BRS, Silva MP, Teixeira E, Pena FPS, Nemer CRB. Final approval of the version to be published: Sousa MM, Cardoso APC, Feitosa BRS, Silva MP, Teixeira E, Pena FPS, Nemer CRB.

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