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VALIDATION OF THE ASSISTIVE TECHNOLOGY FOR USE THE FEMALE CONDOM FOR VISUALLY IMPAIRED WOMEN

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ABSTRACT

Objective: to validate the assistive technology *Building to learn how to use the female condom* for visually impaired women. **Method:** it is a methodological study. Pasquali was used as a methodological framework. **Results:** Participants were 100 women with visual impairment. The women's ages ranged from 18 to 75 years old. Most have blindness (55%), are not married (62%), attended high school (64%), have started sex life (81%) and have never used the female condom (89%). All items were in satisfactory agreement $\geq 72\%$ ($p < 0.0001$). **Conclusion:** we concluded that the assistive technology *Building to learn how to use the female condom* has been validated and is a valid strategy for the promotion and education on sexual health for visually impaired women.

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INTRODUCTION

In the context of sexual and reproductive health, there is lack of information and education accessible to visually impaired women. It should be emphasized the importance of transmitting information relating to sexual and reproductive rights in an accessible format, such as Braille, audio format, clear and simple language and accessible sites (Lee et al., 2015). People with Visual Impairment (VI) are at a disadvantage in relation to the media and educational materials in the field of health promotion, besides suffering with the stigma and prejudices. Commonly, the educational process uses the vision as a learning strategy, which limits access to information by people with VI. Most of the available printed resources are aimed at sighted people, as they are drawn in ink, and rarely in Braille. Materials that use touch and hearing promote accessibility for this clientele.

Information is crucial so that people with VI have safe sexual practices because, just like others, they are also exposed to sexually transmitted diseases (STDs) (Oliveira et al., 2016). Therefore, it is necessary to carry out actions aimed at the guidance on STDs and their prevention with the female condom, it favors women's independence (Oliveira et al., 2018). People with VI need to have knowledge about this issue and there is the urgent need to develop accessible methods and materials. Among these, there is the Assistive Technology (AT). The AT promotes the expansion of a limited functional ability or allows the realization of the required function that is prevented by the disability (Morash and Siu, 2016). Technologies have been used by nurses as a way to assist their customers in the various health education environments. This study's AT is called *Building to learn how to use the female condom*, which is composed of a representation of the vaginal canal and the instructions for preparing and using the female condom. The said representation is built with two sponges to wash dishes, three rubber bands, a plastic bag and a sheet of paper.

The instructions were audio recorded. By using this AT, authors did not intend that visually impaired women start to adopt the female condom as a contraceptive method, but that they come to know it and know how to use it, because, with this knowledge, they will be able to choose which contraceptive method to use. It is believed that this initiative will encourage nurses to conduct health education including visually impaired women. The AT can also be used by special education teachers in teaching visually impaired adolescents. Since it is self-instructional, the person with VI can build it and pass the knowledge to others. This study aimed to validate the assistive technology *Building to learn how to use the female condom* for visually impaired women.

MATERIALS AND METHODS

This is a methodological development study. Authors chose to adapt the method to the Pasquali's construction model of psychological tests (Pasquali, 2009). The study that preceded the construction of this one referred to the validation of content and appearance of the AT *Building to learn how to use the female condom* (Cavalcante et al., 2015). This research conducted the sixth step of the theoretical component (pilot test), as well as the empirical/experimental and analytical component, constituting the construct validity. In this study, the construct is the assistive technology of Build to learn how to use the female condom. The study was conducted in five institutions targeted to people with VI, two in Fortaleza and three in Recife. The study population consisted of visually impaired women in the age group above 18 years. The sample size was calculated by using the formula for infinite populations, amounting 49 in Fortaleza and 51 in Recife, Brazil. The inclusion criterion was having blindness or low vision, and the exclusion criterion was having hearing impairment or intellectual or physical disability in the upper limbs, associated with visual impairment. Data collection was conducted from December 2014 to September 2015, face-to-face, by two researchers and three scholars who had received previous training. The AT was submitted to a pilot test with ten women, and adjustments were made. Then, the AT was applied to a statistically significant sample of participants, who characterized the empirical/experimental component. The women who participated in the pilot test evaluated the TA in the same way as the women of the sample. The objective was to identify possible aspects in the technology that could be improved and/or modified before it was used by a comprehensive group of visually impaired women. The participants were invited during visits to institutions and received the necessary material for building and using the technology (two sponges to wash dishes, three rubber bands, a plastic bag, a sheet of paper and a female condom). Then, women built the technology and used it individually, following the instructions on MP3 audio format. It is emphasized that the said technology is self-instructional. For listening the audio record, they used computers and mobile telephones. Then, they answered the instrument on individual interviews.

For the evaluation of the AT, a developed and validated tool was used – the QUATA with the attributes Objectives, Access, Clarity, Structure and Presentation, Relevance and Efficacy and Interactivity. Item 17 was excluded for evaluating the web page, which does not apply to this study (Guimarães; Carvalho and Pagliuca, 2015). The variables age group (divided according to the fertile age), type of visual impairment, marital status, education, having started sex life and, female condom use were included. Finally, the analytical component was performed the validation of the technology through an assessment scale was performed by using binomial test, when the suitability of each item was compared. For comparison of the attributes (these were composed of different numbers of items), the scale from 0 to 2 was transformed in two categories: Partially Adequate/Inadequate and Adequate. For all inferential statistical analyzes, they were considered significant when $p < 0.05$. Data were processed in the SPSS software, version 20.0, and license number 10101131007. The suggestions and contributions were analyzed and compared to the literature.

Those considered consistent were incorporated into the technology. The project was approved under protocol number 851,469 by the Ethics Committee of the Federal University of Ceará.

RESULTS

Table 1 shows the profile of women with visual impairment. Table 2 shows an analysis of each item according to the attributes. It was found that all items had satisfactory agreement $\geq 72\%$ ($p < 0.0001$). Of these, 14 items were evaluated as adequate for over 90% of women. Three items had lower percentages, namely item 1 (82%), item 7 (72%) and item 14 (82%), which correspond, respectively, to the attributes Objectives, Clarity and Relevance and Efficacy. A total of 18% of participants rated item 1 as partially adequate/inadequate, as they mentioned that the technology does not portray their daily life because the theme of female condom is not present in their daily lives, as it is a little spoken subject, surrounded by myths and taboos. Item 7 was rated by 28% as partially adequate/inadequate. This was the item that most received suggestions for the improvement of the technology. In the "Instructions to build the Representation of the Vaginal Canal", it was suggested: adding half a craft paper to replace the plastic bag, if one prefers; placing the rubber bands in the sponges before forming the tube (pilot test); replacing the instruction of size 15x15cm by the size of an open hand, as not all people with VI have access to an adapted rule to know the centimeters (pilot test); and replacing or removing words / expressions that made it difficult to understand.

In the "Adapted instructions for use of the female condom to the person with VI", it was suggested: asking to open the female condom after removing it from the packaging; asking to find the most comfortable position before putting the condom; changing the instruction of making an eight with the smaller ring, because many people with VI do not know the number eight, as in Braille it is different (pilot test); adding that one must insert the smaller ring into the vagina before pushing it; and replacing some words/expressions. Also, in item 10, it was suggested modifying the audio record, adding a greater time interval between instructions and decreasing the speed of the speaker's voice. All these suggestions were accepted and incorporated into the technology. With regard to item 14, 18% rated it as partially adequate/inadequate, as they reported not having interest in using the female condom because they are married or in a stable relationship and others because they have not started sexual life. Most women (81%) managed to build and use the technology independently, without the help of a facilitator. The final version of the AT was inserted in audio record and in plain text on the website of the *Laboratório de Comunicação em Saúde* (www.labcomsaude.ufc.br), a website that meets the accessibility principles to people with VI. The audio record contains instructions on how to handle materials for building the representation of the vaginal canal through nine steps. Instructions for using the female condom are also in the audio record, in eleven steps.

DISCUSSION

The participants' profile showed that most are not married nor live in a stable union, as also found in another study (Oliveira et al., 2015). People with disabilities express desire for intimate relationships, but report limited opportunities and difficulties in negotiating relationships (Schaafsma et al., 2017). As for education, the findings are similar to another study, in which most people with VI had low educational level (Barros and Ambiel, 2020). With regard to having sex life, a research revealed that this population wants to have an active sex life and needs attention as their sexual and reproductive health (Aragão et al., 2016). This contradicts the belief that the disabled people are not sexually active. Regarding the little use of the female condom, a study showed that the none of the people with VI had ever used a condom or any another family planning methods (Badu et al., 2019). This reinforces the importance of providing guidance on the use of contraceptive methods and addressing the issue of STDs with this clientele.

Table 1. Characterization of visually impaired women. Fortaleza-CE/Recife-PE, Brazil, 2015

| Characteristic | Women with VI* |
|--|----------------|
| | N |
| Age group | |
| 18-40 | 54 |
| 41-75 | 46 |
| Type of visual impairment | |
| Blindness | 55 |
| Low Vision | 45 |
| Marital status | |
| No partner (single / widowed / divorced) | 62 |
| With partner (married / common-law marriage) | 38 |
| Education | |
| Up to high school | 64 |
| Higher Education | 36 |
| Having started sex life | |
| Yes | 81 |
| No | 19 |
| Use of female condom | |
| Yes | 11 |
| No | 89 |

VI* = Visual Impairment

Table 2 - Assessment of the items corresponding to the attributes Objectives, Access, Clarity, Structure and Presentation, Relevance and Efficacy and Interactivity. Fortaleza-CE/Recife-PE, Brazil, 2015

| Item | Part. Adeq./ Inadequate | Adequate | p* |
|--|-------------------------|----------|---------|
| | N | N | |
| Attribute Objectives | | | |
| 1 Relates the content covered in their daily routine | 18 | 82 | <0.0001 |
| 2 Clarifies doubts about the content addressed | - | 100 | <0.0001 |
| 3 Stimulates learning about the content addressed | - | 100 | <0.0001 |
| 4 Stimulates learning of new concepts and facts | - | 100 | <0.0001 |
| Attribute Access | | | |
| 5 Allows searching for information without difficulty | 1 | 99 | <0.0001 |
| 6 Offers the appropriate and necessary resources to its use | 4 | 96 | <0.0001 |
| Attribute Clarity | | | |
| 7 Presents information needed to better understand the content | 28 | 72 | <0.0001 |
| 8 The information content is suitable for their needs | 2 | 98 | <0.0001 |
| 9 Displays information in a simple manner | 3 | 97 | <0.0001 |
| Attribute Structure and Presentation | | | |
| 10 Displays the content in an organized manner | 4 | 96 | <0.0001 |
| 11 Has attractive presentation strategy | 4 | 96 | <0.0001 |
| Attribute Relevance and Efficacy | | | |
| 12 Allows reflecting on the content presented | 1 | 99 | <0.0001 |
| 13 Awakes interest to use it | 1 | 99 | <0.0001 |
| 14 Encourages behavior change | 18 | 82 | <0.0001 |
| 15 Plays the content addressed in different contexts | - | 100 | <0.0001 |
| Attribute Interactivity | | | |
| 16 Offers interaction, active involvement in the educational process | - | 100 | <0.0001 |
| 18 Provides autonomy to the user in relation to its operation | 6 | 94 | <0.0001 |

p* = binomial test.

It was found in the attribute Objectives that, even after use, the female condom does not make part of the daily lives of participants. Women's lack of intimacy with their own body may decrease the interest in this method, which requires an intimate contact with the genital organ. Thus, this may hinder the decision-making process for using the method. In view of this, the nurse must have the resources to make knowledge accessible (Oliveira *et al.*, 2018). Regarding the attribute Access, the audio record was approved to be available in mp3 file and the materials used for build and use the technology were considered adequate for being low cost and of easy access. Health education for people with VI can become more effective with the use of technologies that use touch and hearing combined with the dialogue between the facilitator and the participant. In the attribute Clarity, authors held adjustments in the instructions to build and use the technology. So that people with VI can become more independent and participatory in their health, it is necessary that health information and guidelines are clear and detailed (Rebouças *et al.*, 2016). As for the attribute Structure and Presentation, the AT was classified as organized and attractive. Technologies are creative and attractive ways to disseminate information, can favor the promotion of the teaching-learning process and facilitate the nursing work (Áfio *et al.*, 2014).

Using unattractive and inadequate strategy to the context can cause avoidance of participants due to lack of motivation. Therefore, planning is an important step so that health education is effective. A study that used the same methodological reference, with a similar objective of validating a technology for people with visual impairment, evidenced that it should be elaborated in an attractive way (Oliveira *et al.*, 2017). In the attribute Relevance and Efficacy, some participants expressed the lack of interest in using the female condom because they were married or in a stable relationship and others for not having started sex life.

A study revealed that women approved the female condom as a contraceptive method, particularly to replace hormonal contraceptives, as these present many side effects. However, the partner often disapproves it, which does not generate replacement in practice (Moore *et al.*, 2015). The last attribute, Interactivity, found that the AT offers interaction when used by a teacher or nurse and can be used independently, without the presence of a facilitator. Technologies can make life easier for people with VI because, as besides contributing to their social inclusion, they can favor independence and human interaction.

Conclusion

The AT *Building to learn how to use the female condom* for women with visual impairment has been validated as a promotion and education strategy on sexual health for women with visual impairment. It can be used by nurses during nursing visits and health education actions for people with VI. It is believed that the AT will help reducing risk behaviors and increasing knowledge about the female anatomy. The AT may also be used by special education teachers for teaching young people and adolescents with visual impairment in schools and institutions. After being made available in the Internet, the AT can be accessed by the people with VI in an independent manner. It is hoped that this study instigates the construction of new, easy access and low cost technologies in the various themes and that it raises health professionals' awareness to enhance their knowledge on the disabled people and to achieve inclusive and effective health education. Among the limitations of this study, it was found that the theme of the female condom has inhibited some women to participate in the research. Another limiting factor was the lack of female condoms in various health units, necessary for women to use the developed technology.

REFERENCES

- Áfio ACE, Balbino AC, Alves MDS, Carvalho LV, Santos MCL, Oliveira NR. 2014. Analysis of the concept of nursing educational technology applied to the patient. *Rev Rene*; 15(1):158-65. doi: 10.15253/2175-6783.2014000100020
- Aragão JS, França ISX, Coura AS, Medeiros CCM, Enders BC. 2016. Vulnerability associated with sexually transmitted infections in physically disabled people. *Ciênc Saúde Coletiva*; 21(10):3143-52. doi: 10.1590/1413-812320152110.20062016
- Badu E, Mensah I, Gyamfi N, Agyei-Okyere E, Eric A, Adusei-Nkrumah J. 2019. Knowledge and sources of accessing sexual and reproductive health information among visually impaired women in Ghana. *BMC Res Notes*; 12(529):1-8. doi: 10.1186/s13104-019-4568-6
- Barros LO, Ambiel RAM. 2020. "Não tem nada para fazer lá": trabalho e pessoas com deficiência visual. *Psico*; 51(1):1-12. doi: 10.15448/1980-8623.2020.1.31320
- Cavalcante LDW, Oliveira GOB, Almeida PC, Rebouças CBA, Pagliuca LMF. 2015. Assistive technology for visually impaired women for use of the female condom: a validation study. *Rev Esc Enferm USP*; 49(1):14-21. doi: 10.1590/S0080-6234201500100002
- Guimarães FJ, Carvalho ALRF, Pagliuca LMF. 2015. Elaboration and validation of an assistive technology assessment questionnaire. *Rev Eletr Enf [Internet]* [cited 16 July, 2016];17(2):302-11. Available from: <https://www.fen.ufg.br/revista/v17/n2/pdf/v17n2a14.pdf> doi:10.5216/ree.v17i2.28815
- Lee K, Devine A, Marco MJ, Zayas J, Gill-Atkinson L, Vaughan C. 2015. Sexual and reproductive health services for women with disability: a qualitative study with service providers in the Philippines. *BMC Womens Health*; 15(87). doi: 10.1186/s12905-015-0244-8
- Moore L, Beksinska M, Rumphs A, Festin M, Gollub EL. 2015. Knowledge, attitudes, practices and behaviors associated with female condoms in developing countries: a scoping review. *Open Access J Contra*; 6:125-42. doi: 10.2147/OAJC.S55041
- Morash VS, Siu Y-T. 2016. Social predictors of assistive technology proficiency among teachers of students with visual impairments. *ACM Trans Access Comput*; 9(2). doi: 10.1145/2999569
- Oliveira GOB, Cavalcante LDW, Feitoza AR, Pagliuca LMF, Almeida PC, Rebouças CBA. 2018. Assistive technology for people with visual impairment in the prevention of Sexually Transmitted Infections: clinic validation. *HelthMED*; 123:98-103.
- Oliveira GOB, Cavalcante LDW, Pagliuca LMF, Almeida PC, Rebouças CBA. 2016. Prevention of Sexually Transmitted Diseases among visually impaired people: educational text validation. *Rev Latino-Am Enfermagem*; 24:e2775. doi: 10.1590/1518-8345.0906.2775
- Oliveira PMP, Mariano MR, Pagliuca LMF, Silva JM, Almeida PC, Oliveira GOB. 2015. Socio-economic profile of people with disabilities: a health impact. *Health*; 75:633-8. doi: 10.4236/health.2015.75075
- Oliveira PMP, Pagliuca LMF, Cezario KG, Almeida PC, Beserra GL. 2017. Breastfeeding: validation of assistive audio technology for the visually impaired individual. *Acta paul. enferm*; 30(2):122-8. doi: 10.1590/1982-0194201700020
- Pasquali L. Psychometrics. 2009. *Rev Esc Enferm USP*; 43(Esp):992-9. doi: 10.1590/S0080-62342009000500002
- Rebouças CBA, Araújo MM, Braga FC, Fernandes GT, Costa SC. 2016. Evaluation of quality of life of visually impaired. *Rev Bras Enferm*; 69(1):72-8. doi: 10.1590/0034-7167.2016690110i
- Schaafsma D, Kok G, Stoffelen JMT, Curfs LMG. 2017. People with intellectual disabilities talk about sexuality: implications for the development of sex education. *Sex Disabil*, 35(1):21-38. doi:10.1007/s11195-016-9466-4
