

Educational technology on HIV/AIDS prevention for older adults: semantic validation

Tecnologia educacional para idosos sobre prevenção do HIV/AIDS: validação semântica Tecnología educativa para adultos mayores sobre prevención del VIH/SIDA: validación semántica

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ABSTRACT

Objective: To validate the appearance of the board game entitled "Mural do Risco" ("Risk Wall") on HIV/AIDS prevention with older adults in a school context. **Method:** A methodological study of semantic/face validation with older adults in a school context as target audience, guided by Pasquali's model. An instrument with 20 items referring to the objective, organization, writing style, appearance, and motivation domains was applied. Data collection, carried out synchronously with 10 older adults, took place in January and February 2021. For the analysis, a minimum Semantic Agreement Index equal to or above 0.80 was considered. **Result:** All the items obtained a Semantic Agreement Index equal to or above 0.80 and the suggestions were fully accepted, which made it possible to structure the final version of the game. **Conclusion:** The face validation process carried out with the aged population in a school context evidenced that the board game entitled "Mural do Risco" is adequate.

DESCRIPTORS: Validation Study; Educational Technology; Older Adult; HIV; Nursing.

RESUMO

Objetivo: Validar a aparência do jogo de tabuleiro "Mural do Risco" sobre prevenção do HIV/aids com idosos em contexto escolar. **Método:** Estudo metodológico de validação semântica/de aparência com o público-alvo/idosos em contexto escolar, guiado pelo modelo de Pasquali. Aplicou-se instrumento com 20 itens referentes aos domínios objetivo, organização, estilo da escrita, aparência e motivação. A coleta de dados, realizada de modo síncrono com dez pessoas idosas, ocorreu em janeiro e fevereiro de 2021. Para a análise, considerou-se um Índice de Concordância Semântica mínimo igual ou superior a 0,80. **Resultado:** Todos os itens obtiveram Índice de Concordância Semântica igual ou superior a 0,80 e as sugestões foram acatadas integralmente, o que possibilitou a estruturação da versão final do jogo. **Conclusão:** O processo de validação de aparência realizado com o público idoso em contexto escolar evidenciou que o jogo de tabuleiro "Mural do Risco" está adequado.

DESCRIPTORES: Estudo de Validação; Tecnologia Educacional; Idoso; HIV; Enfermagem.

RESUMEN

Objetivo: Validar el aspecto del juego de mesa "Mural do Risco" sobre la prevención del VIH/SIDA con adultos mayores en el ámbito educativo. **Método:** Estudio metodológico de validación semántica/de aspecto con público objetivo/adultos mayores en ámbito educativo, guiado por el modelo de Pasquali. Se aplicó un instrumento con 20 ítems referidos a los dominios: objetivo, organización, estilo de redacción, aspecto y motivación. La recolección de datos, realizada sincrónicamente con diez adultos mayores, ocurrió en enero y febrero de 2021. Para el análisis se consideró un Índice de Concordancia Semántica mínimo igual o superior a 0,80. **Resultado:** Todos los ítems obtuvieron un Índice de Concordancia Semántica igual o superior a 0,80 y las sugerencias fueron aceptadas en su totalidad, lo que permitió estructurar la versión final del juego. **Conclusión:** El proceso de validación de aspecto realizado con adultos mayores en un ámbito educativo demostró que el juego de mesa "Mural do Risco" es adecuado.

DESCRIPTORES: Estudio de Validación; Tecnología Educativa; Adulto Mayor; VIH; Enfermería.

INTRODUCTION

There are 36.7 million people living with HIV and 2.1 million new infections by this virus worldwide⁽¹⁾. These data evidence the extent to which AIDS continues to be a concerning public health problem⁽²⁾. The Brazilian reality is not divergent from the world's, in a such way that, from 2007 to 2018, there were 19,132 deaths due to AIDS and 247,795 cases of HIV infection, of which 42,215 (17.0%) were in the Northeast Region. In addition, it is noted that there is certain trend for a significant increase of infection incidence in older adults of both genders⁽³⁻⁴⁾.

The magnitude of the disease reflects the urgent need for studies that contribute to the assistance practice, while it reveals the need for scientific productions that focus on the prevention of HIV infection, especially in older adults that already face the limitations that are inherent to the immunosenescence process⁽⁵⁾.

The increase in the incidence of the disease in the aged population is also due to other factors such as inadequate use of condoms, low schooling, lack of knowledge about HIV prevention, and lack of adaptation of the health interventions in the different age groups. These factors point to the urgency of developing interventions that assist in the promotion of safe sex in this population segment⁽⁶⁾.

Consequently, attention to health education actions that focus on the prevention of HIV infection in older adults must be fostered such as, for example, construction and validation strategies for educational technologies aimed at providing knowledge and encouraging self-care regarding the prevention of HIV/AIDS in the aged population. Sharing information based

on scientific evidence can generate more efficient self-care practices, in particular, those related to the prevention of Sexually Transmitted Infections (STIs)⁽⁷⁾ since, although offering knowledge does not necessarily imply a change in behavior, its absence can generate serious risk behaviors regarding HIV infection. Educational technologies can favor the teaching-learning process, encourage changes in lifestyle, contribute to controlling modifiable risk factors, and foster adherence to treatments⁽⁸⁾. They are also mediators of health educational actions while assisting in the communication between service users and professionals, as well as they favor emotional support, attitudes and conducts in the face of AIDS. For this reason, and intending to directly contribute to the care practice, studies targeted at constructing and validating these technologies have been increasingly developed by Nursing⁽⁹⁻¹⁰⁾.

Among these educational technologies, board games stand out. Games are support tools for educational activities that favor the encouragement of cognitive skills, such as memorizing information, and promote playful, interactive, and dialogical learning⁽¹¹⁾. They are tools that facilitate approach the content and promote dynamic knowledge⁽¹²⁾. Therefore, they can be used to support health education activities that focus on the prevention of diseases such as, for example, HIV infection. Thus, before using them, educational technologies must be subjected to content and semantic/face validation processes with judges and the target audience. Validation is a fundamental aspect to verify that the technology can be used. Semantic/Face

validation is conducted by a sample of the target population, in a subjective manner, and intends to verify if all items of the technology are comprehensible for its target population and if there is any need for changes⁽¹³⁾.

In view of the above, the objective is to validate the appearance of the “*Mural do Risco*” board game on HIV/AIDS prevention with older adults in a school context. The school context chosen for the selection of the target audience was the Youth and Adult Education (*Educação de Jovens e Adultos*, EJA) modality, in order to contribute to the self-care of this population in the prevention of HIV/AIDS. To that end, the following question was asked: Is the “*Mural do Risco*” board game, created for the prevention of HIV/AIDS, an adequate tool to be used with older adults in a school context, according to the target audience?

METHOD

A methodological study of semantic/face validation with older adults in a school context as target audience, guided by Pasquali's model⁽¹⁴⁾. This type of validation is subjective and fundamental to assess understanding of the technology by its target population⁽¹³⁾. Validation took place in January and February 2021.

The participants were ten older adults who were studying in the EJA modality. The number of participants in the target audience followed Pasquali's recommendation⁽¹⁴⁾. Selection of the older adults was by means of the snowball sampling method⁽¹⁵⁾. The inclusion criteria were the following: age equal to or over 60 years old and being EJA students during the data collection period; and the exclusion criterion

consisted in not having a cellphone device with the *WhatsApp*® messenger app installed.

Recruitment occurred through the selection criteria of the EJA teachers who participated of the content validation stage of the game in question. After obtaining the students' telephone contacts, the researcher sent an individual invitation letter and two explaining audios via the *WhatsApp*® messenger application: one informing about the dynamics of the research and about the game, and the other about the Free and Informed Consent Form (FICF), asking for consent to participate in the research⁽¹⁶⁾. From consent to participation, the most convenient date and time were agreed upon for data collection.

Data collection occurred synchronously, via the *WhatsApp*® messenger application, between the researcher and the participant. The game's board and images were made available in separate PDF files. To guide data collection, a validated instrument⁽¹⁴⁾ was used with the participant's data (gender, schooling, occupation, origin, and marital status), and 20 items referring to the following domains: objective, organization, writing style, appearance, and motivation, all answered based on a *Likert* scale, where 1=Totally Adequate, 2=Adequate, 3=Partially Adequate, and 4=Inadequate.

The domains were the following: block 1 - “Objectives”, which assessed the goals, purposes or aims to be reached by using the educational technology (ET) by means of three items; block 2 - “Organization”, which assessed the way to present the ET by means of six items: general organization, structure, presentation strategy, coherence and

formatting; block 3 - "Writing Style", which assessed comprehension and writing style by means of two items; block 4 - "Appearance", which assessed the signification level of the education material presented based on three items; and block 5 - "Motivation", which assessed the ability of the material to cause any impact, motivation and/or interest in the target audience by means of six items.

For the analysis, descriptive statistics was applied, determining the absolute and relative frequencies. The Semantic Agreement Index (SAI) was used. Based on the answers given by the target audience, the items were validated with a minimum agreement level of 80% in the answers for the Totally Adequate and Adequate options⁽¹³⁾. After incorporating the suggestions made by the target audience, the final version of the "Mural do Risco" board game was elaborated.

The research was approved by the Research Ethics Committee of the Health Sciences Center

at the Federal University of Pernambuco (*Universidade Federal de Pernambuco, UFPE*), under opinion number 4,258,634.

RESULTS

The sample consisted in 10 older adults from the Northeast Region, all of them females and aged from 60 to 68 years old. Regarding their current occupations, one was a caregiver of older adults, two were domestic workers, one was a seamstress, and six were retirees who worked in different functions. Regarding marital status, three were married, one was divorced, one was single, and five were widows. In the "Objectives" domain, TA was selected 26 times (0.87%); A, 4 times (0.13%); and PA and I, 0 times (0%) each. The older adults did not make any suggestions regarding this domain. The TA and A scores totaled 30, representing 100% of the valid answers. The overall SAI was 1.0 (Table 1).

Table 1 – Answers given by the target audience regarding the "Objectives" domain. Recife-PE, Brazil, 2021.

| Domain | Validation | | | | |
|--|------------|--------|---------|--------|------|
| | TA 1 | A 2 | PA 3 | I 4 | SAI* |
| 1.1 Meets the objectives of the ET's target audience. | 8 | 2 | 0 | 0 | 1.0 |
| 1.2 Assists during the daily activities of the ET's target audience. | 10 | 0 | 0 | 0 | 1.0 |
| 1.3 Is adequate to be used with older adults in a school context. | 8 | 2 | 0 | 0 | 1.0 |
| Score | 26 | 4 | 0 | 0 | 30 |
| Percentage | 0.87 | 0.13 | 0 | 0 | 100 |
| Global SAI | 1.0 | | | | |

Note: 1. TA= Totally Adequate; 2. A=Adequate; 3. PA=Partially Adequate; 4. I=Inadequate.

Source: Elaborated by the author, 2021.

In the "Organization" domain, TA was selected 54 times (0.9%); A, 6 times (0.1%); and PA and I, 0 times (0%) each. The suggestions were related to the intensity of the colors and to the size of the images in order to

favor better understanding. The TA and A scores totaled 60, representing 100% of the valid answers. The overall SAI was 1.0 (Table 2).

Table 2 – Answers given by the target audience regarding the "Organization" domain. Recife-PE, Brazil, 2021.

| Item | Validation | | | | |
|---|------------|--------|---------|--------|------|
| | TA 1 | A 2 | PA 3 | I 4 | SAI* |
| 2.1 The game is appealing and indicates the content for the prevention of HIV/AIDS infection. | 10 | 0 | 0 | 0 | 1.0 |
| 2.2 The size of the title and images is adequate for older adults to see them. | 8 | 2 | 0 | 0 | 1.0 |
| 2.3 There is coherence between the game's dynamics and goal. | 8 | 2 | 0 | 0 | 1.0 |
| 2.4 The material (magnetic board) is appropriate for the game. | 10 | 0 | 0 | 0 | 1.0 |
| 2.5 The number of images is sufficient. | 10 | 0 | 0 | 0 | 1.0 |
| 2.6 The topics portray important aspects. | 8 | 2 | 0 | 0 | 1.0 |
| Score | 54 | 6 | 0 | 0 | 60 |
| Percentage | 0.9 | 0.1 | 0 | 0 | 100 |
| Global SAI | 1.0 | | | | |

Note: 1. TA=Totally Adequate; 2. A=Adequate; 3. PA=Partially Adequate; 4. I=Inadequate.

Source: Elaborated by the author, 2021.

In the "Writing style" domain, TA was selected 20 times (1.0%); and A, PA and I, 0 times (0%) each. There were no suggestions in this domain. According to the assessment by the target audience, TA and A together totaled

20 selections, representing 100% of the valid answers. The overall SAI was 1.0 (Table 3).

Table 3 – Answers given by the target audience regarding the “Writing style” domain. Recife-PE, Brazil, 2021.

| Item | Validation | | | | |
|---|------------|--------|---------|--------|------|
| | TA 1 | A 2 | PA 3 | I 4 | SAI* |
| 3.1 The title is inherent and adequate to the content. | 10 | 0 | 0 | 0 | 1.0 |
| 3.2 There is an association of each image's topic with the corresponding theme. | 10 | 0 | 0 | 0 | 1.0 |
| Score | 20 | 0 | 0 | 0 | 20 |
| Percentage | 1 | 0 | 0 | 0 | 1 |
| Global SAI | 1.0 | | | | |

Note: 1. TA=Totally Adequate; 2. A=Adequate; 3. PA=Partially Adequate; 4. I=Inadequate.

Source: Elaborated by the author, 2021.

In the “Appearance” domain, TA was selected 25 times (0.84%); A, 5 times (0.16%); and PA and I, 0 times (0%) each. The suggestion for changes in this domain was regarding the expressiveness of the images. One of the

participants suggested intensifying the color of the X that symbolizes non-use of condoms. The TA and A scores totaled 30 selections, representing 100% of the valid answers. The overall SAI was 1.0 (Table 4).

Table 4 – Answers given by the target audience regarding the “Appearance” domain. Recife-PE, Brazil, 2021.

| Item | Validation | | | | |
|---|------------|--------|---------|--------|------|
| | TA 1 | A 2 | PA 3 | I 4 | SAI* |
| 4.1 The images are organized. | 8 | 2 | 0 | 0 | 1.0 |
| 4.2 The illustrations are simple – preferably drawings. | 10 | 0 | 0 | 0 | 1.0 |
| 4.3 The illustrations are expressive and sufficient. | 7 | 3 | 0 | 0 | 30 |
| Score | 25 | 5 | 0 | 0 | 30 |
| Percentage | 0.84 | 0.16 | 0 | 0 | 1.0 |
| Global SAI | 1.0 | | | | |

Note: 1. TA=Totally Adequate; 2. A=Adequate; 3. PA=Partially Adequate; 4. I=Inadequate.

Source: Elaborated by the author, 2021.

In the "Motivation" domain, TA was selected 28 times (0.97%); A, 2 times (0.03%), and PA and I, 0 times (0%) each. The suggestion for change in this item was only related to the need

to intensify the color of the symbol that represents AIDS. The TA and A scores totaled 60 selections, representing 100% of the valid answers. The overall SAI was 1.0 (Table 5).

Table 5 – Answers given by the target audience regarding the "Motivation" domain. Recife-PE, Brazil, 2021.

| Item | Validation | | | | |
|---|------------|--------|---------|--------|------|
| | TA 1 | A 2 | PA 3 | I 4 | SAI* |
| 5.1 The material is appropriate to the profile of the older adults. | 9 | 1 | 0 | 0 | 1.0 |
| 5.2 The game contents are presented in a logical manner. | 10 | 0 | 0 | 0 | 1.0 |
| 5.3 The images foster interaction, which suggests actions. | 10 | 0 | 0 | 0 | 1.0 |
| 5.4 The game addresses the issues that are necessary for the older adults' daily routine. | 10 | 0 | 0 | 0 | 1.0 |
| 5.5 Invites/Fosters behavioral and attitudinal changes. | 9 | 1 | 0 | 0 | 1.0 |
| 5.6 The game provides knowledge to the older adults. | 10 | 0 | 0 | 0 | 1.0 |
| Score | 58 | 2 | 0 | 0 | 60 |
| Percentage | 0.97 | 0.03 | 0 | 0 | 100 |
| Global SAI | 1.0 | | | | |

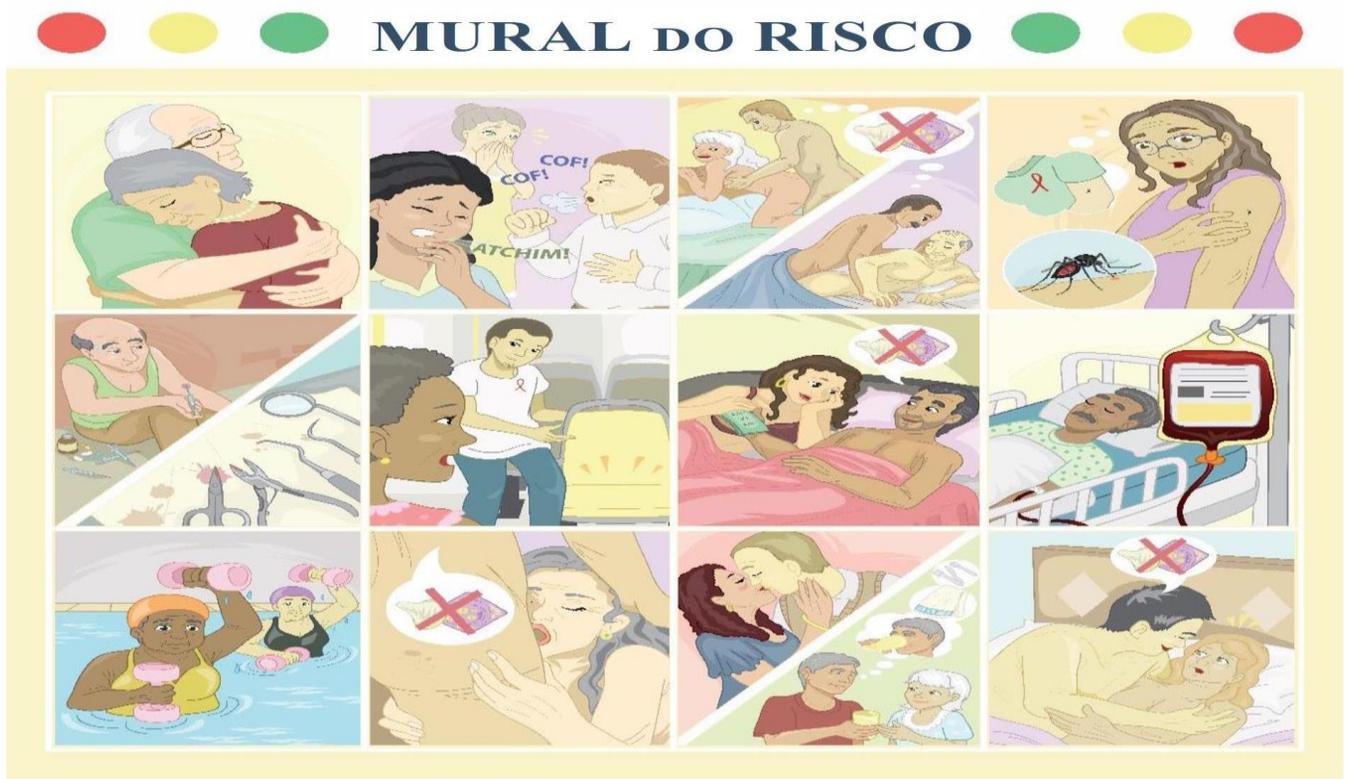
Note: 1. TA=Totally Adequate; 2. A=Adequate; 3. PA=Partially Adequate; 4. I=Inadequate.

Source: Elaborated by the author, 2021.

The version of the game board available for semantic validation was the one adjusted after content agreement by the specialist judges. The adjustments were only related to the intensification of the color of the X that symbolizes non-use of condoms, in relation to the color of the AIDS symbol, and with respect to increasing the size of the images in the

game's board. In the semantic/face validation process, all the considerations were fully accepted and the final version was achieved (Figure 1).

Figure 1 – Screenshots from the final version of the “*Mural do Risco*” board game about HIV/AIDS prevention for older adults. Recife, Pernambuco, Brazil, 2021.



Source: Elaborated by the author, 2021.

DISCUSSION

The answers to the data collection instrument intended for the target audience showed that the “*Mural do Risco*” board game was considered adequate regarding its ability to provide knowledge about HIV/AIDS prevention among older adults, considering that a SAI of 0.1 was obtained.

The evidence reveal that the use of educational resources facilitates offering care and promotes better understanding of the topic by the older adults. These resources can mediate the educational process by objectively translating in simple terms diverse information considered fundamental in the context of care targeted at AIDS^(9,10).

The significant acceptance of the “*Mural do Risco*” board game by older adults attending

EJA reiterates and awakens the need for expanding the care and educational perspective toward the aged population in this context, considering the deficits in the pedagogical training of the teachers to approach these themes about sexual health, the fragility of the curricular composition on the theme in question, and the debate and care for sexual health, still precarious in this setting⁽¹⁷⁾.

“*Mural do Risco*” stands out for incorporating in the board's images older adults performing activities in their social context, which favors the identification of the target audience with the game and the theme, as well as it fosters dialog by exchanging knowledge, information, and clarifications with respect to the ways of infection or not by HIV, all in a playful and

constructive fashion, in order to empower them regarding self-care.

In that sense, a particular piece of evidence showed that the most adequate technological resources to promote education in health are those that associate illustrations, simple language, and content adequate to the target audience's schooling and cultural levels, since these characteristics aim at the stimulus and greater effectiveness regarding skill, autonomy and greater adherence to prevention conducts and treatments⁽¹⁸⁾.

The proposal of "*Mural do Risco*" is also in accordance with the good practices that should be focused on health education actions with the aged population such as, for example, social participation, dialogicity, playfulness and empowerment, especially when the theme involves issues directed to sexual health, as it is still a taboo in this population segment.

Based on the speeches of these aged individuals during validation, it was perceived that, in addition to verifying the game's adequacy to the educational context, these people indicate lack of health care and of a space for verbal expression since, although education in health should be a social and dialogical practice accessible to everyone, there is still limited diffusion of these actions to the aged population and, also, little appreciation of the older adults' knowledge.

Thus, aiming at contributing to a more dialogical, accessible and playful health education practice, this study avails the entire community the board game entitled "*Mural do Risco*", an educational resource which, by means of scientific knowledge along with the older adult's knowledge, will be able to provide

uplifting moments of knowledge, taboo-breaking, information exchange and discussions on HIV/AIDS prevention. It is believed that, by using this game, the aged population will feel more motivated to learn about the theme and, consequently, will adopt preventive self-care behaviors regarding their sexual health.

It is expected that intervention studies about HIV/AIDS prevention be developed with older adults in school contexts and that the use of educational resources, such as the "*Mural do Risco*" board game, be increasingly encouraged.

This study was limited by the fact that validation occurred synchronously. It is understood that, if conducted face to face, face validation would provide a better view and understanding by the participant in relation to the game's dynamics, as well as greater interaction between the participant and the researcher. However, due to the pandemic context during the data collection period, the synchronous modality was chosen.

The contributions of this study to the clinical and educational practices and for the scientific community of the health area consist of offering a board game validated by specialist judges and by the aged population attending EJA for the prevention of HIV/AIDS in a playful and dialogical manner and, from this experience, give visibility to the older adult in an educational context. The practical applicability of this educational resource can occur in primary health contexts and in educational spaces such as, for example, groups of active older adults.

CONCLUSION

The semantic/face validation process conducted with the target audience in a school context evidenced that the “*Mural do Risco*” board game is adequate regarding the following domains: objective, organization, writing style, appearance, and motivation. It is

recommended that this educational technology be implemented in different school contexts that offer the EJA modality. The educational technology enhances educational and preventive actions, encourages sexual self-care, and, thus, contributes to the reduction of the STI indexes in this age group.

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