



Id jog caregiver in action: board game development for informal caregivers of the elderly

Id jog cuidador em ação: desenvolvimento de jogo de tabuleiro para cuidadores informais de idosos

Id jog cuidador en acción: desarrollo de un juego de mesa para cuidadores informales de ancianos

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ABSTRACT

Objective: to develop a board game to promote health education carried out by nurses with informal caregivers of the elderly. **Method:** methodological research, conducted between February 2020 and April 2021 in two stages: production of the game and content and semantic validation. The content was validated by specialist nurses using the Content Validity Index, and the semantics was validated by informal caregivers of the elderly using the Semantic Concordance Index. **Results:** The Id Jog - Caregiver in action was validated with a Content Validity Index of 0.93. After this step, modifications considered relevant for the improvement of the game were made. After that, the game went through a semantic validation with a Semantic Concordance Index of 100%. Id Jog - Caregiver in Action is composed of 47 cards divided into psychosocial, physical and biological care and caregiver self-care, six pawns, one die, an instruction manual, and a board. **Conclusions and implications for practice:** The Id Jog-Caregiver in action has proven to be a valid care-educational technology for health education, as it enables exchanges of experiences and strengthens bonds between nurses and caregivers, in addition to creating a support network among caregivers.

Keywords: Caregivers; Nurses; Aged; Play and Playthings; Technology.

RESUMO

Objetivo: desenvolver um jogo de tabuleiro para favorecer a educação em saúde realizada pelo enfermeiro com cuidadores informais de idosos. **Método:** pesquisa metodológica, realizada entre os meses de fevereiro de 2020 a abril de 2021 em duas etapas: produção do jogo e validação de conteúdo e semântica. O conteúdo foi validado por enfermeiros especialistas pelo Índice de Validade de Conteúdo, e a semântica, por cuidadores informais de idosos pelo Índice de Concordância Semântica. **Resultados:** o Id Jog - Cuidador em ação foi validado com Índice de Validade de Conteúdo de 0,93. Depois desta etapa, foram realizadas modificações consideradas pertinentes para a melhoria do jogo. Na sequência, o jogo passou pela validação semântica com Índice de Concordância Semântica de 100%. O Id Jog - Cuidador em Ação é composto por 47 cartas, divididas em cuidados psicossociais, físicos e biológicos e autocuidado do cuidador, seis piões, um dado, um manual de instruções e um tabuleiro. **Conclusões e implicações para a prática:** o Id Jog - Cuidador em ação se mostrou como uma tecnologia cuidativo-educacional válida para a educação em saúde, pois possibilita trocas de experiências e fortalece vínculos entre enfermeiro e cuidadores, além de criar uma rede de apoio entre cuidadores.

Palavras-chaves: Cuidadores; Enfermeiros; Idoso; Jogos e Brinquedos; Tecnologia.

RESUMEN

Objetivo: desarrollar un juego de mesa para promover la educación sanitaria llevada a cabo por las enfermeras con los cuidadores informales de los ancianos. **Método:** investigación metodológica, realizada entre febrero de 2020 y abril de 2021 en dos etapas: producción del juego y validación de contenido y semántica. El contenido fue validado por enfermeras especializadas mediante el Índice de Validez del Contenido, y la semántica fue validada por cuidadores informales de ancianos mediante el Índice de Concordancia Semántica. **Resultados:** El Id Jog - El Cuidador en acción fue validado con un Índice de Validez de Contenido de 0,93. Tras esta fase, se realizaron las modificaciones que se consideraron pertinentes para mejorar el juego. Posteriormente, el juego se sometió a una validación semántica con un índice de concordancia semántica del 100%. El Id Jog - Cuidador en Acción se compone de 47 cartas, divididas en cuidados psicossociales, físicos y biológicos y autocuidado del cuidador, seis peones, un dado, un manual de instrucciones y un tablero. **Conclusiones e implicaciones para la práctica:** El Id jog-cuidador en acción demostró ser una tecnología válida para la educación sanitaria, ya que permite el intercambio de experiencias y fortalece los vínculos entre enfermeros y cuidadores, además de crear una red de apoyo entre los cuidadores.

Palabras clave: Cuidadores; Enfermeros; Anciano; Juego e Implementos de Juego; Tecnología.

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INTRODUCTION

Population aging is a phenomenon that has been observed worldwide, and the prospect is that the number of people over 60 years of age will triple in the next 30 years.¹ The number of elderly people in the world in 1950 was 8% of the world population; by 2020 this percentage had risen to 13.5%, and by 2100 it is expected to reach 28.2% of the world population.²

The growing trend of the elderly population imposes new demands on health services as well as on families and society. Epidemiological changes are accompanied by an increase in Chronic Noncommunicable Diseases, other comorbidities, and a decrease in the functional capacity of the elderly, causing a decrease or loss of autonomy of these individuals.³ This condition often requires the presence of a person to assist the elderly in their care, and those who assume this role, most often, are informal caregivers or family members.⁴

Informal caregivers mostly consist of a family member, friend, or neighbor who provides care, without any professional training in the health area, performing care activities according to the elderly's needs.^{5,6} This caregiver, most of the time, has no training and is the one who cares for the well-being, health, hygiene, food, leisure, and culture of the assisted elderly and, for this, in some cases he/she leaves his/her job so that he/she can perform the activity.⁵

The nurse, as a member of a team of professionals working in Primary Health Care (PHC), knows the elderly and caregivers who live in his/her area of work, in their uniqueness, and is therefore able to help them provide care safely and efficiently.³

Among the strategies to support nurses in the training of caregivers, we highlight the Care-Educational Technologies (CET), which "consist of a set of scientific and daily knowledge of nursing professionals, involving the process of caring/educating and educating/caring for oneself and for others, based on the principles of human praxis".^{7:28-26} This way, it offers the possibility of solving daily demands of professionals, qualifying the assistance as well as empowering and promoting behavioral change, besides promoting the interrelation between care and education, making them inseparable.⁷

Among the CET, there are games, which have been spreading and proving to be an important tool for health education and intervention.⁸ They are considered an active methodology for sharing values, attitudes, and knowledge, enhancing professional and personal skills.⁹

It is observed that most studies referring to educational technologies are related to digital products, such as web sites, software, hypertexts, podcasts, blogs, and wikis. The articles that present games as a teaching-learning method are still discrete, observing a gap in this type of scientific production in nursing. The game enables involvement with daily life, arousing interest in learning from a subject who is an active part in the process.⁹ Thus, this study aimed to develop a board game to promote health education performed by nurses with informal caregivers of the aged.

METHOD

This is a methodological research, carried out in two adapted stages:¹⁰ production/construction and validation. In the production/construction stage, the construction of the board game whose central theme is the care performed by informal caregivers of the elderly was performed. The choice of theme was subsidized by the authors' experience in health care of the aged in PHC. After this step, an Integrative Literature Review (IR) was performed in April 2020 using the following databases: Latin American and Caribbean Literature on Health Sciences (LILACS), PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Scopus, using the descriptors and Boolean operator "AND" in two ways: "Caregivers" AND "Home Care" AND "Health of the Elderly". In LILACS, the Descriptors in Health Sciences (DECS) system was used: "Caregivers", "Elderly" and "Home Nursing". In PubMed and Scopus, we used the Medical Subject Heading (MeSH) system: "Caregivers", "Aged" and "Home Nursing" and CINAHL with the Cinahl terms: "Caregivers", "Elderly" and "Home Nursing". We included articles available online in Portuguese, English and Spanish, published since 2006, when the Brazilian National Health Policy for Elderly People (PNSPI – in Portuguese) was approved. The exclusion criteria were duplicate articles, editorial articles, theoretical reflections, and review articles. A total of 1959 studies were found. After the first evaluation, which happened with the reading of the title and abstract, 105 articles were selected. In the second evaluation, the articles were read in their entirety. Of these, 18 articles were selected to support the organization of the information and content to be inserted in the board game. It is noteworthy that both evaluations were performed by two researchers.

After the IR, the information was organized into categories, considering the multidimensional approach of the elderly, i.e., the social and psychological dimensions (category 1) and the physiological dimension (category 2).^{11,12} The caregiver's self-care (category 3) was then included, since practical experience shows that caregivers can perform their functions better when they perceive themselves as individuals who also need care.

After this stage, the production of the game itself took place, i.e., choosing the model (based on the Ludo board game), choosing the name (Id Jog – Caregiver in action), producing the cards, and having the graphic part of the game produced by a designer, including production of the logo, choice of figures, colors, construction of the board, assembling the cards and creation of the instruction manual.

The first version of the game was composed of 48 cards, a board, an instruction manual, six colored pawns (green, red, blue, yellow, white, and black), and a die.

The second stage of the methodological research consisted of content and semantic validation of the board game, which took place from December 2020 to April 2021. Participants in the content validation were experts selected based on the following inclusion criteria: being a nurse and meeting at least two of the following criteria: having clinical and care experience with the target audience (elderly) of at least three years, having papers

published in journals and/or events on the subject; having papers published in journals and/or events on the production and validation of CET in the subject area, having postgraduate studies (*Lato Sensu or Stricto Sensu*) on the topic of aging, being a member of a Scientific Society in the subject area.^{13,14}

Nurses linked to the Scientific Department of Gerontological Nursing of the Brazilian Association of Nursing (ABEN- in Portuguese) were invited to participate in the research. The invitation was sent to 251 nurses, 13 of whom agreed to participate in the research and met the inclusion criteria. They received the Informed Consent Form (ICF) and an adapted form⁹ via Google Forms. As for the number of specialists, it was considered that it should be between six and 20.¹⁵

The form was composed of 22 questions, which were divided into six blocks, as follows: block 01: related to the purposes, goals, or ends to be achieved with the application of the game; block 02: related to the way the information is presented; block 03: related to the relevance of the game; block 04: referred to the way of presenting the guidelines, general organization, structure, presentation strategy, and formatting; block 05: referred to the central figure (logo) of the board game, block 06: referred to the linguistic characteristics, comprehension, and style of writing the game.

Each question was answered, considering a Likert-type scale of four points, being: 1-fully adequate, 2-adequate, 3- partly adequate and 4-inadequate. For answers 3 and 4, the experts justified and suggested improvements.

The data from the validation with experts were organized in a Microsoft Excel spreadsheet (Office 365 package) and the Content Validity Index (CVI) calculation was applied: Number of responses 1 and 2 divided by the total number of responses.¹⁰ Based on the calculation, the items were analyzed individually, by blocks of questions, and in relation to the total agreement.

After the content validation stage, the ID Jog- Caregiver in action went through changes according to the specialists' recommendations. It is now composed of 47 cards, a board, an instruction manual, six colored pawns (green, red, blue, yellow, white, and black), and a die.

Still in the second stage of the method, the semantic validation^{16,17} was performed by six informal caregivers of the elderly who met the following inclusion criteria: being 18 years old or older, not having any professional training in the health field, caring for the elderly at least five days a week, being in the activity for at least six months, living in the city, place of research located in the west of the state of Santa Catarina. As it was a game built to be mediated by the nurse, it was not considered a minimum level of schooling for the caregivers. The sampling was by convenience.

To perform this step, the researcher invited the caregivers through the WhatsApp application and by phone call, scheduling a date and time for the face-to-face meeting and the application of the game. This stage took place in April 2021 in a meeting room of a Basic Health Unit. First, the responsible researcher introduced herself to the caregivers, explained about the meeting,

read the ICF, which was signed by all present, presented the board game *Id Jog – Caregiver in Action* to the informal caregivers of the elderly, and then the game was applied.

After the applicability of the game, the caregivers answered the adapted form,⁹ composed of nine blocks, which totaled 22 questions related to game mechanics, functionality, accessibility, consistency, concepts and information, challenge, fantasy, curiosity, and interpersonal motivation. Each question was answered considering a Likert-type scale of four points, being: 1-fully adequate, 2-adequate, 3- partially adequate, and 4-inadequate.

The data obtained in the semantic validation were organized in a Microsoft Excel spreadsheet (Office 365 package), and then the Semantic Concordance Index (SCI) was calculated, as follows: Number of responses 1 and 2 divided by the total number of responses.^{10,16}

For this study, the minimum score for the individual CVI was 0.90,¹⁰ and for the SCI it was considered 0.80.^{10,16}

The study followed the ethical precepts in effect in Resolutions 466/2012 of the National Health Council and was approved by the Research Ethics Committee in September 2020 with Opinion Number 4,296,382.

RESULTS

The *Id Jog - Caregiver in action* addresses care performed by informal caregivers in homes where elderly people live. It includes activities focused on elderly care and self-care for the caregiver, who needs to be well to perform the tasks.

Initially, the construction of the game was performed, following the steps of choosing the theme, IR, organizing the information through the multidimensional approach of the elderly, and production of the game. The first version, which was sent for validation by experts, consisted of 48 cards, a board, an instruction manual, six colored pawns (green, red, blue, yellow, white, and black), and a die.

The validation of the game content was performed by 13 experts, nine of whom were PhDs, one post-doctoral, and three master's degree holders, aged between 32 and 64 years, and female. The time of experience in the elderly health theme was from four to 32 years, and the time of experience with technology development and validation was between two and 20 years.

The results of the CVI are presented in Table 1.

Based on the content validation, the items that individually obtained a CVI lower than 0.90 were revised and adjusted.

As observed in Table 1, item 2.3, "The content of the material is appropriate for the sociocultural profile of the target audience" and obtained a CVI lower than desired, in the suggestions, the experts indicated that the writing form of some cards should be modified to make them suitable for the understanding of informal caregivers of the elderly.

The cards were modified according to the suggestions of specialists, i.e., terms and writing forms were changed, such as: changing the words actions for attitudes, useful for active, indwelling urinary catheter for catheter to urinate, pressure injury for wounds/scabs. In addition, the meaning of some words

Table 1. Content Validation with Experts

DESCRIPTION	CVI
Block 1: Purposes, goals, or purposes to be achieved with the game	1.0
Block 2: Presentation of information (general organization, structure, presentation, coherence, and formatting)	0.92
2.1 Presentation of the game (board and cards) as to the favoring of health education	1.0
2.2 Information of the 48 cards regarding clarity and comprehension (average of all cards individually evaluated)	0.91
2.3 Appropriateness of the game to the target audience's sociocultural profile	0.69
2.4 Attractiveness and appearance of the game	1.0
2.5 Scientificity of the content of the cards	1.0
Block 3: Relevance of the game (possible impact of the content on health education)	0.96
3.1 The material allows for the transfer and generalization of learning in different contexts	1.0
3.2 It proposes to the participant to acquire knowledge for the care of the elderly, especially the dependent ones	0.92
3.3 It addresses important knowledge for the understanding of the care needed for the health of the elderly	1
3.4 It is suitable for use by nurses in health education for informal caregivers of older adults	0.92
Block 4: Guidelines presentation, general organization, structure, presentation strategy and formatting	0.96
4.1 The game is attractive and covers the proposed content	1
4.2 The size of the game title (on the board) and the content of the cards are adequate	0.92
Block 5: Refers to the central figure (logo) of the board game	0.88
5.1 The figure can demonstrate the central idea of the game	0.77
5.2 The set of colors used to construct the figure can draw the caregivers' attention	1
Block 6: Refers to the linguistic features, comprehension, and style of the game writing	0.85
6.1 The writing is in a style appropriate for the target audience	0.69
6.2 The title is consistent with the purpose of the game	1
6.3 Vocabulary is accessible	0.77
6.4 Information is well structured in agreement and spelling	0.92
TOTAL CVI OF THE GAME	0.93

Source: Prepared by the authors (2022).

was described, such as: autonomy - the ability to decide about one's life, where it talked about self-care, self-care actions were described - bathing and brushing the teeth. These modifications were made, having in mind the sociocultural adequacy for the target audience.

In relation to the game logo (block 05), it was not validated, because four experts evaluated it as not very adequate or inadequate. Of these, two made suggestions and/or justified their answers. Thus, it was decided to reformulate the logo, considering one of the suggestions, which was to remove the central figure and keep the colors, which were considered appropriate. Figure 1 shows the before and after of the logo.

Block 06, referring to linguistic characteristics also did not obtain adequate CVI in the items that concern writing and

accessible vocabulary, thus, with the modification of the cards, adequacy was obtained, in view of the understanding of the informal caregivers of the elderly.

After the changes were made, which corresponded to the second version, the game had 47 cards, divided into three categories: psychosocial care (12 yellow cards), physical and biological care (23 blue cards), and caregiver self-care (12 green cards), a board, an instruction manual, six colored pawns (green, red, blue, yellow, white, and black), and a die. The second version of *Id Jog - Caregiver in Action* was printed to be validated by informal caregivers of the elderly - the target audience of the game.

The profile of the six caregivers who participated in the semantic validation is characterized by: six (100%) women, five

(83.33%) of them were married and one (16.67%) was in a stable union. Their ages ranged from 49 to 58 years old.

The Id Jog - Caregiver in Action obtained an SCI of 1.0, in other words, the caregivers participating in the study validated the game in 100% of its criteria, thus considering it a valid game for the proposed objective.

Figure 2 shows the final version of the board and cards (one of each color is shown) that make up the Id Jog - Caregiver in Action.

DISCUSSION

Care coordination performed by nurses in PHC is essential for the follow-up of individuals in their territory, since it provides

social support and strengthens formal, informal, and family support networks.¹⁸ In this context, nurses need to develop ways to support informal caregivers,⁸ and the Id Jog - Caregiver in Action is an CET that can help in the health education of this public.

Id Jog - Caregiver in Action had its content validated by experts, with a CVI of 0.93, which is considered adequate according to studies, because for a technology to be considered adequate, it must obtain a total CVI greater than 0.90.¹⁰

The validation of a technology consists of measuring its accuracy and precision,¹⁹ which makes the validation step essential for its development.²⁰ The validation step provides greater security regarding the use of the technology and ensures that



Figure 1. Before and after the logo.

Source: Elaborated by Authors (2021).

Note: Original version of the figure in the Portuguese language, because the board game Id Jog was built and validated only in this language.

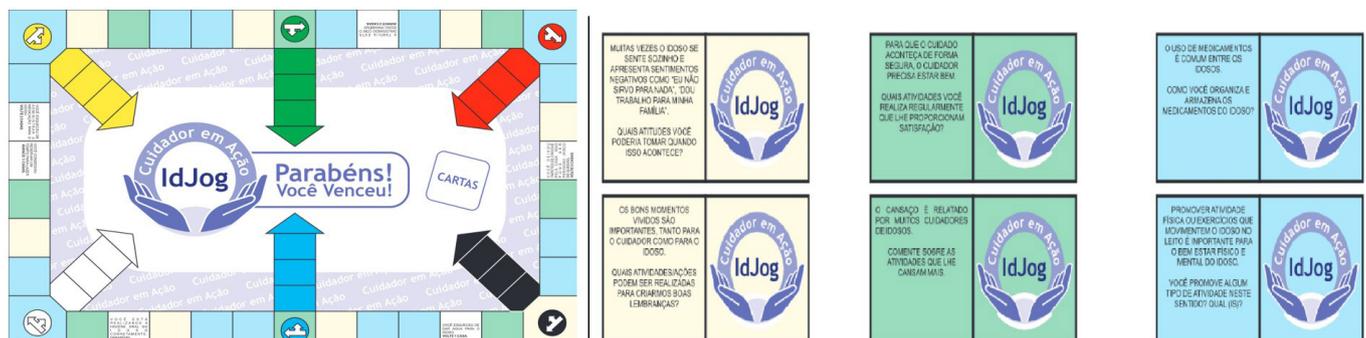


Figure 2. Board and cards (final version).

Source: Elaborated by Authors (2021).

Note: Original version of the figure in the Portuguese language, because the board game Id Jog was built and validated only in this language.

it is suitable for practice.²¹ Thus, when the board game passed through this stage and obtained adequate CVI, it became valid for the purpose it was created.

In the *Id Jog - Caregiver in Action*, cards 01, 10, 39, 43, and 45 were not validated by the specialists due to the language used. It is observed that in other studies the authors talk about the importance of the language present in the technology being adequate for the target audience.^{16,21,22} Therefore, we decided to exclude letter 43 and adapt the writing of the others to the suggestions of the specialists, so that the cards had an accessible and adequate language, facilitating the understanding by the target audience. In addition, the writing of other cards was revised according to the experts' suggestions.

The CET are important tools to mediate health education, which is a challenge to make them suitable for its transmission to the target audience.¹⁶ Thus, the use of popular language can favor the acceptance and use of technology by the participants.²¹ The content of the material was not considered appropriate by experts for the understanding of the target audience due to the vocabulary used, so changes were made in the writing of the cards, so that they present understandable language, which was proven by semantic validation, indicating that the technology developed is suitable for the intended audience.¹⁶

The informal caregiver of the elderly is usually a woman,²³⁻²⁵ which is due to a cultural issue in which the caregiving role is seen as being female.^{25,26} However, the game's logo was considered inappropriate because, according to one of the experts, the image with two women reinforces the feminization of care as well as the position of the women (caregiver standing and elderly woman sitting), which denotes power of one over the other, thus, as suggested, it was decided to remove the image and leave only the name of the game.

In *Id Jog - Caregiver in Action*, as in another board game, "the participants' answers contributed to improve the game by including suggestions".²⁷ It is also reinforced that creativity in the construction of health education tools is responsible for promoting changes in behavior and improving the quality of care for individuals.²⁸

Health education, considering the traditional model, can be merely informative, and can be considered a monologue between professional and user.²⁹ When allied to an CET for care, playfulness and innovation are added to the teaching-learning process, favoring health interventions.²¹ The board game favors the interaction between nurses and caregivers, besides having the possibility of providing meaningful learning. When played in groups, there are exchanges of experiences among the players.

Following the order of validation, first with experts and then with the target audience ensures that the content is up to date, correct, attractive, and organized.¹⁶ Therefore, this order was followed in the development of *Id Jog - Caregiver in Action*, ensuring the legitimacy of the board game.

As a mediator and facilitator of the teaching-learning process, the nurse instigates discussions of interest to the target audience, providing moments of dialogue that bring up doubts

and questions.²² Health education favors the bond between professional and caregiver, provides opportunities to speak and listen, encourages the participation of all and, consequently, leads to the learning process.²⁹

The *Id Jog - Caregiver in Action* is configured as an CET that can help the nurse to empower the caregiver to lead him/her to perform care safely and make him/her alert in the face of complications, which favors the support to the elderly, especially when accompanying him/her to routine appointments, becoming the link between the elderly and the health team.²⁹

The support networks for caregivers of the elderly are important tools for the satisfaction of this caregiver, so it is essential to recognize in the community - family, neighbors, friends, and in the health services - who are the people who are part of this support network for the caregiver.³⁰ When the *Id Jog - Caregiver in Action* is played with a group of caregivers, the support network of this public is expanded, strengthening the care activities provided to the elderly.

As limitations, we have the reduced number of experts for content validation, however, it is observed that the body of experts was composed of experts of the highest level and from various regions of the country. As for the reduced number of caregivers, it is because we were living in the middle of the covid-19 pandemic, which generated insecurity and the need to follow care recommendations, because, due to the level of education and understanding of the public, it was not possible to perform the semantic validation online.

CONCLUSIONS AND IMPLICATIONS FOR PRACTICE

This study made it possible to present the board game development process - construction, content validation, and semantic validation. The methodology adopted is widely used for the development of CET, which contributed to adequately subsidize the study.

The validation stage showed that the board game *Id Jog - Caregiver in Action* is a valid CET that can be used by nurses to support health education with informal caregivers of the elderly.

It was observed in practice that, in addition to health education, the act of playing made it possible to build a support network between players, informal caregivers of the elderly, and strengthened the bond between the nurse and these caregivers.

AUTHORS' CONTRIBUTIONS

Study design. Camila Soligo Bernardi. Carla Argenta. Elisangela Argenta Zanatta.

Data collection. Camila Soligo Bernardi. Carla Argenta.

Data analysis. Camila Soligo Bernardi. Carla Argenta. Elisangela Argenta Zanatta.

Interpretation of results. Camila Soligo Bernardi. Carla Argenta. Elisangela Argenta Zanatta.

Writing and critical revision of the manuscript. Camila Soligo Bernardi. Carla Argenta. Elisangela Argenta Zanatta.

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Responsibility for all aspects of the content and integrity of the published article. Camila Soligo Bernardi. Carla Argenta. Elisangela Argenta Zanatta.

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