

THE USE OF EDUCATIONAL TECHNOLOGIES FOR THE ELDERLY: AN INTEGRATIVE LITERATURE REVIEW

O USO DE TECNOLOGIAS EDUCACIONAIS PARA IDOSOS: UMA REVISÃO INTEGRATIVA DA LITERATURA

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ABSTRACT:

Aging is a continuous process marked by physical and biological changes. Given this reality, educational technologies (ET) are configured as an opportunity to work on education in a more dynamic and attractive way. The objective was to analyze scientific production addressing the educational technologies developed and/or validities for the care of the elderly. It is an integrative literature review, a method that allows the synthesis of the state of knowledge and general conclusions on a given theme from the analysis of several published studies. Thus, the importance of the evaluative approach was analyzed in order to assess the inherent declines in the elderly, having the implementation of health promotion programs improves life and health. It is suggested the development of other studies that develop and validate educational technologies for elderly people capable of stimulating the domains of cognition, humor, mobility and communication.

Keywords: Educational Technology; Elderly; Aging; Validation Studies; Cognition.

RESUMO

O envelhecimento é um processo contínuo marcado por alterações físicas e biológicas. Diante essa realidade, as tecnologias educativas (TE) configuram-se como oportunidade de trabalhar a educação de forma mais dinâmica e atrativa. Objetivou-se analisar a produção científica abordando as tecnologias educacionais desenvolvidas e/ou validades para o cuidado com a pessoa idosa. Trata-se de uma revisão integrativa de literatura, método que possibilita a síntese do estado de conhecimento e conclusões gerais sobre uma determinada temática a partir da análise de vários estudos publicados. Assim, analisou-se a importância da abordagem avaliativa afim de avaliar os declínios inerentes ao ser idoso tendo a implementação de programas de promoção à saúde melhora a vida e saúde. Sugere-se o desenvolvimento de outros estudos que desenvolvam e validem tecnologias educacionais para pessoas idosas capazes de estimular os domínios da cognição, humor, mobilidade e comunicação.

Palavras chaves: Tecnologia Educacional; Idoso; Envelhecimento; Estudos de Validação; Cognição.

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INTRODUCTION

Aging is a continuous process marked by physical and biological changes inherent to all human beings, being experienced in a unique way by each individual. It is a natural phase of life, which must be seen as such.

In Brazil, since the decade of 60, aging has become a phenomenon that tends to increase more and more, due to the increase in life expectancy. Unlike other countries, however, Brazil is considered a young country, with about 9.1% (52 million) of population over the age of 60⁽¹⁻²⁾.

Among the several changes that aging can cause in the human body, the decrease in cognitive capacity is one of the main targets of complaints, especially associated with forgetfulness. The cognitive alterations frequently observed, include the difficulty in performing motor activities, treating and manipulating visual and spatial information, performing two tasks at the same time, forgetting recent facts, among others, which can result in several negative feelings on the part of the affected person⁽³⁻⁴⁾.

Given this reality, Educational Technologies (ET), characterized by a set of systematic tools in order to prepare, execute and analyze the learning process in order to make it more effective⁽⁵⁻⁶⁾, is configured as an opportunity to work on education in a more dynamic and attractive way to the elderly person, at the same time that it can be

considered effective in stimulating functions inherent to human beings, such as cognition.

This dynamism and attractiveness can be observed through integrative and participatory techniques, with the objective of involving the subjects in a more intrinsic way with regard to the construction of worked knowledge, with clarity and simplicity⁽⁷⁾.

So, the realization of ET with elderly people requires a critical and reflective thinking that requires discussions in the scope of health care, conjecturing the adoption of actions that enable a careful look of health professionals, for the applicability of these tools.

Thereby, it is believed that investigating the use of ET in caring for the elderly is relevant because it is a topic little explored by researchers and health professionals, a premise evidenced by the low number of national and international publications. Therefore, the objective of this article was to analyze the scientific production that addresses the educational technologies developed and / or validities for caring for the elderly.

METHOD

It is an integrative literature review, carried out in September 2019, a method that enables the synthesis of the state of knowledge and general conclusions on a given thematic from the analysis of several published studies, and it can also point out

gaps about knowledge of the theme that still need to be fulfilled with new studies ⁽⁸⁾.

This method was elaborated through a bibliographic survey based on the following phases: 1) definition of the theme and selection of the research question; 2) establishment of inclusion and exclusion criteria; 3) definition of the information to be extracted from the selected studies; 4) evaluation of the studies included in the review; 5) analysis and interpretation of results and 6) presentation of the review / synthesis of knowledge ⁽⁸⁾.

The guiding question was defined: “what the educational technologies and / or validation studies produced from 2015 to 2019 on care to the elderly person?” We opted for this time course, with the objective to identify and prioritize more recent studies related to the thematic.

To achieve the proposed objective, a bibliographic survey was carried out containing the chosen thematic, using the crossing of the following descriptors: “educational technology” AND “elderly” AND “aging” AND “validation studies” AND “cognition”. Moreover, filters related to the thematic were used, such as: cognition, cognitive disorders and aging.

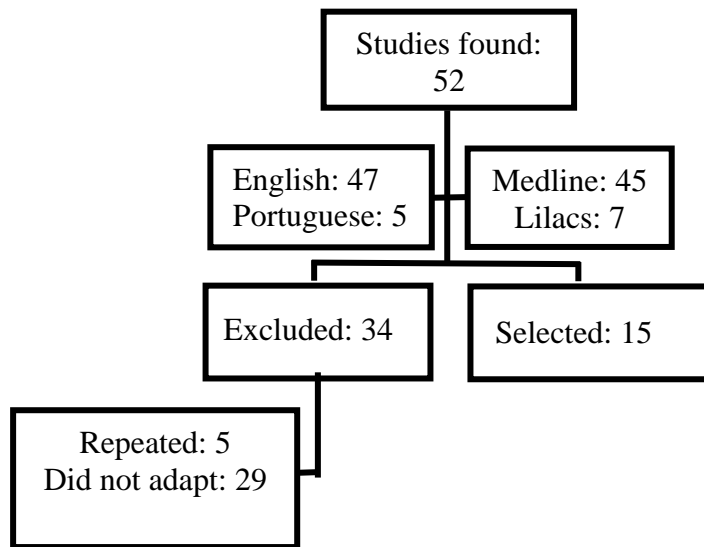
The searches were carried out in the Scientific Electronic Library Online (SciELO) and in the Virtual Health Library (BVS - BRAZIL) in the databases, Medical Literature

Analysis and Retrieval System Online (MEDLINE), Nursing Data base (BDENF) and Latin American and Caribbean Health Sciences Literature (LILACS).

Articles available in full and free of charge, published in Portuguese, English, Spanish or German, Between the years 2015 and 2019 were considered eligible, excluding theses, dissertations, monographs, books, revisions of any style and articles that did not address the theme of research or that did not answer the guiding question.

During the research in the Scientific Electronic Library Online (SciELO) and Nursing Data base (BDENF), it was not possible to find any study in accordance with the criteria and crossing of the established descriptors, as well as there were no productions in Spanish and German in none of the bases. In the MEDLINE and LILACS databases, 52 articles were found. Aiming ensure rigor with the selection of these articles, all authors participated in this process. The abstracts of the 52 articles were read and, of these, 31 were excluded because they did not fit the guiding question and 5 because they were duplicated (found in more than one database consulted, remaining only in one base), according to the flowchart in Figure 1.

Figure 1: Flowchart representative of the search in the Medline and Lilacs databases.



Source: The authors.

For evaluation in full, 15 articles were selected, which after characterization, that considered the variables title, objective, technology / innovation and outcome of the articles, 3 categories were established, by content similarity: “educational care actions”, “evaluative instruments that assist in understanding of the declines of third Age

”and“ the care-educational technology and the nursing ”.

RESULTS

The results found were organized in a synthesized way in Frame 1, in order to describe the main information found in the publications and the categories that originated them.

Frame. 1 Presentation of the list of topics and publications and summary of the studies presented in the Integrative Review.

Educational care actions				
1	Szturm, T; Sakhalkar, V; Boreskie, S; Marotta, JJ; Wu, C;	Integrated testing of standing balance and cognition: Test–retest reliability and construct validity	The objective of this study was to establish test–retest reliability and construct validity of a dual-task computer	Creation of a platform based on dual task games. The assessment tool extends other testing



	Kanitkar, A.		game-based platform (TGP) that integrates head tracking and cognitive tasks with balance activities.	tools by providing an integrated approach to assess balance, gaze stability and specific executive cognitive functions. Mixed analyzes of balance, gaze and cognition will contribute to a better understanding of the functional consequences of the decline in the physical and mental abilities that occurs with age and in the early stages of diseases.
2	Caprara, M; Fernández-Ballesteros, R; Alessandri, G.	Promoting aging well: evaluation of Vital-Aging-Multimedia Program in Madrid, Spain (2016)	Vital Aging-Multimedia objective to promote healthy lifestyles, provide strategies to compensate for cognitive decline and optimize affective and social skills and participation. The objective of this study was to evaluate the effectiveness of the program, employing a pre-post-intervention project with a treatment and a control group and focusing on the four	Vital Aging-Multimedia. After implementing the VA-M program, participants reported better health; better memory; higher frequency of cultural, intellectual and social activities; greater physical exercise and healthier diets. In addition, they experienced fewer negative emotions since the positive ones prevailed over the

			main domains of experience commonly associated with aging.	negative ones. These findings contrast with the ideas and stereotypes of the elderly as being unable to learn and change.
3	Williams, KN; Perkhounkov, Y; Herman, R; Bossen, A	A Communication Intervention to Reduce Resistiveness in Dementia Care: A Cluster Randomized Controlled Trial (2017)	To assess whether an intervention to improve nursing home team communication by reducing <i>elderspeak</i> would reduce resistance to care in elderly people with dementia.	The Changing Talk - CHAT / Change in the form of communication. It was observed that to make use of simple language with the elderly, however not making the individual or the situation infantilizing, helped in reducing resistance to care. The study proves the importance of communication as a care technology, although resistance has not been eliminated completely.
4	Denny, MC; Vahidy F; Vu, KYT; Sharrief, AZ; Savitz, SI.	Video-based educational intervention associated with improved stroke literacy, self-efficacy, and patient satisfaction (2017)	- Assessing the feasibility of implementing video-based educational interventions for patients with stroke in the hospital; - Assessing the degree of initial knowledge of	Educational video. Most patients reported being able to identify symptoms of the disease after watching the video and satisfaction was noticed immediately after watching and 30

			<p>CVA patients and;</p> <p>- Assessing the impact of video on the patient's knowledge of CVA, self-efficacy in recognizing CVA symptoms and their influence on education.</p>	<p>days later. It emphasizes the importance of health education for the public to occur effectively, so that they are able to improve their self-care, as well as carry out self-prevention.</p>
5	<p>Dallimore, RK; Marxengel, LAT; Chan, D; Hussain, S; Willett, C; Zainuldin, R.</p>	<p>A randomised, double-blinded clinical study on the efficacy of multimedia presentation using an iPad for patient education of postoperative hip surgery patients in a public hospital in Singapore (2017)</p>	<p>Determine whether patient education in physical therapy, provided through iPad apps, was effective in achieving greater patient recall and satisfaction compared to patient education provided through a paper booklet, in a cohort of patients undergoing surgery hip.</p>	<p>Use of iPad / Booklet. After the interventions, patients in the 2 groups improved their level of recall / assimilation regarding what has been shown, in addition to showing satisfaction. However, this was greater in group A (iPad) than in group B (booklet). Thus, although both methods were effective, the use of iPad was considered more effective for the education of patients in physical therapy.</p>
6	<p>Li, DM; Li, XX.</p>	<p>The effect of folk recreation program in improving symptoms: a study of Chinese elder dementia patients (2017)</p>	<p>This study aimed to evaluate the effects of a folk recreation program on the symptoms of people with dementia. The program was tailored to the</p>	<p>Recreational activities. The folk recreation program has the potential to improve cognitive function, ability of daily living and behavioral and</p>

			<p>participants' interest and derived from their traditional culture background.</p>	<p>psychological symptoms of the elders with dementia. The folk leisure activities, which embed in the participants' cultural background, will motivate their positive feelings and memories, can delay the progression of disease and improve the symptoms.</p>
7	<p>Golino, MTS; Schelini, PW; Golino, HF; Pereira, BLS; Felix, LM.</p>	<p>Investigating Evidence of Content and Structural Validity in Cognitive Training Tasks for the Elderly (2017)</p>	<p>The article aims to report the results of two validity studies conducted in a cognitive training for the elderly.</p>	<p>Cognitive training. According to the revealed factorial model, there is evidence supporting that the proposed cognitive training achieved predominant stimulation for the skills intended by the theoretical model, however, with a partial agreement of the tasks that made up each domain.</p>
8	<p>Cardoso, RSS. Sá, SPC; Domingos, AM; Sabóia, VM; Maia, TN; Padilha, JMFO;</p>	<p>Educational technology: a facilitating instrument for the elderly care (2018)</p>	<p>To develop educational technology with caregivers of older people based on the needs, difficulties and concerns related to the</p>	<p>Development of printed and digital material as an aid for guidance and information on care for the elderly. Developed, with</p>

	Nogueira, GA.		elderly care expressed by the caregivers themselves.	caregivers, educational technologies, printed and digital material, contributed to guidance and information on care for the elderly and for caregiver decision-making. It can be used by the caregiver, population and nurse, mediating educational practice with caregivers.
Evaluative instruments that help in the understanding of the declines of the elderly				
9	Cornelie, DA.; Scharloo, M; Ramondt, S; Tiemensma, J; Husson, O; Llahana, S; Alberto, MP; Kaptein, ADA; Kamminga, NGA; Biermasz, NR.	The development and validation of the Leiden Bother and Needs Questionnaire for patients with pituitary disease: the LBNQ-Pituitary (2016)	To develop and validate a disease-specific questionnaire for patients with pituitary disease which incorporates patient perceived bother related to the consequences of the disease, and their needs for support.	Scored questionnaire. The questionnaire led to a better understanding of the professionals who care for patients with pituitary diseases, observing their biggest complaints, difficulties, and their support needs. Paying attention to this leads to an improvement in the patient's quality of life.
10	Teixeira, CR; Scortegagna, SA; Pasian, SR; Portella, MR.	Subjective Well-being of Institutionalized and Non-Institutionalized Older Adults Using Pfister's Test (2019)	This study investigated the subjective well-being (SWB) of institutionalized and non-institutionalized older adults using	Scales. The study of the groups showed signs of depressive experiences (GDS-SF). The findings contribute to an understanding of

			Pfister's Colors Pyramid Test (CPT).	psychodynamics in aging and to the future planning of intervention strategies that encourage SWB in older adults.
11	Swagerman, SC; Geus, EJC; Kan, KJ; Bergen, EV; Nieuwboer, HA; Gur, RE; Gur, RC; Koenis, MMG; Pol, HEH; Boomsma, DI.	The Computerized Neurocognitive Battery: Validation, Aging Effects, and Heritability Across Cognitive Domains (2016)	To estimate validity and reliability of the battery's Dutch translation, second investigate effects of age across cognitive domains, and to estimate how these cognitive abilities are influenced by environmental and genetic factors.	Computerized Neurocognitive Battery. CNB is a reliable and valid instrument in the Dutch population, with scores comparable to studies in the United States. CNB is a valuable tool not only for research, but also for clinical purposes, clinical examinations that include neuropsychological intelligence and cognitive tests regularly, because cognitive dysfunction is often a characteristic of psychiatric disorders.
12	César, KG; Yassuda, MS; Porto, FHG; Brucki, SMD; Nitrini, R.	Addenbrooke's cognitive examination-revised: normative and accuracy data for seniors with	To provide ACE-R norms for seniors within a lower education, including illiterates. An additional aim was to examine the accuracy of	Addenbrooke's Cognitive Examination - Revised (ACE-R). The current results confirm the high precision of the

		heterogeneous educational level in Brazil (2017)	the ACE-R to detect dementia and cognitive impairment no dementia (CIND).	instrument in the diagnosis of dementia, even among the elderly with low education. ACE-R has also proven to be an appropriate tool for the diagnosis of cognitive impairment without dementia.
13	Tam, BWH; Lo, DRT; Seah, DWH; Lee, JX; Foo, ZFY; Poh, ZYY; Thong, FXJ; Sim, SKY; Chee, CS.	Developing and validating a localised, self-training mindfulness programme for older Singaporean adults: effects on cognitive functioning and implications for healthcare (2017)	To develop a localised, self-training mindfulness programme, guided by expert practitioners and usability testing, for older Singaporean adults to make mindfulness more available to those who would otherwise not have access to traditional classroom training in the classroom due to various restrictions.	Mindfulness program, self-training. There was a general improvement in the attention and executive functions of the participants. However, the improvement in the training group was not significantly greater than in the control group. Nevertheless, the overall improvement in mindfulness was in line with the training objective.
14	Rodrigues, JC; Muller, JL; Esteves, C; Fonseca, RP; Parente, MAMP; Salles, JF.	Effect of age and schooling in the NEUPSILIN Brief Neuropsychological Assessment Instrument (2018)	It has investigated the effects of age and schooling and their interactions on the performance of adults in the NEUPSILIN Brief Neuropsychological Assessment Instrument,	Evaluation questionnaire. In which the results highlighted that aging and schooling impact cognitive functions heterogeneously, and that Brazilian

			<p>which evaluates time and space orientation, attention, perception, memory, language, calculation, motor functions, and executive functions.</p>	<p>neuropsychological tests should always consider the influence of these variables to produce their normative data.</p>
Care-educational technology and the nursing				
15	<p>Goes, TM; Polaro, SHI; Gonçalves, LHT.</p>	<p>Growing the elderly's good living and caring-educational technologies of nursing (2016)</p>	<p>To perform a diagnostic evaluation of living conditions and health of the elderly living in family and community, and users of a Basic Health Unit – UBS, and also test the development of a care-educational technology to the same elderly, considering the meeting of the needs detected in the diagnostic evaluation.</p>	<p>Application of health care-educational technologies in aging. The study presented beneficial results to the elderly who underwent the experience, and also for the nurses, by the possibility of taking innovated caring-educational actions in favor of self-care in aging.</p>
16	<p>Silva, LMC; Surniche, CA; Sicsú, NA; Mitano, F; Nogueira, JÁ; Santos, CB et al.</p>	<p>Design and semantic validation of a new instrument to assess policy transfer of directly observed treatment for tuberculosis (2015)</p>	<p>To design and semantically validate an instrument to evaluate the transfer of directly observed therapy (DOT) as a policy for tuberculosis control, taking into consideration the experience of mid-</p>	<p>Instrument to evaluate the transfer of directly observed therapy (DOT) as a policy for tuberculosis control. The instrument was considered important for the work. Where the process and responses</p>

			and higher level health care workers.	generated changes in structure and content resulted in an instrument elaborated and validated semantically.
17	Simon, CM; Klein, DW; Schartz, HA.	Interactive multimedia consent for biobanking: a randomized trial (2016)	The aim of this study was to test the effectiveness of separate face-to-face and multimedia interaction to improve the participant's understanding and confidence in understanding informed consent.	Face-to-face interactivity and through multimedia and interactivity allow greater interaction between the participant and the researcher, however, the method allows for more elaborate feedback, although it is not immediate. The results of this study suggest that the method is as good as, and perhaps better than, the standard BioBanco consent process in promoting understanding of the information.
18	Paim, AE; Nascimento, ERP; Bertoncello, KCG; Sifroni, KG; Salum, NC;	Validation of an instrument regarding nursing intervention in patients in vasoactive therapy (2017)	To validate the content of a Standard Operational Procedure, regarding nursing interventions in emergency patients treated with vasoactive	Standard Operating Procedure (SOP). In the global evaluation, it was found that the instrument obtained 99% agreement from the evaluators, thus

Nascimento, KC.		drugs.	meaning that the proposed SOP is reliable. The instrument was considered appropriate, fractionally and globally, for nursing care for the patient treated with vasoactive drugs in emergency, in a safe and reliable way.
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Source: The authors.

DISCUSSION

EDUCATIONAL CARE ACTIONS

Several factors are inserted as perceptions and subjectivities inherent to the human being and it does not differ when referring to the third age, a phase of life that needs close attention, since aging causes a natural decline in the elderly, which can interfere in the quality of life, affecting it in the cognitive, behavioral, physical and communicative domains, determining the expansion of limitations ⁽⁹⁾.

Therefore, it is undeniable that the existence of compromises can arise over time and be circumvented, worked and mitigated, making it possible for the elderly to live independently and autonomously, using health promotion programs, such as physical exercise, healthy eating habits and activities

with memory stimulation that help in the management of negative facts and in enjoying positive emotions, nurturing confidence in oneself and in the other, through experiences of dominance and rewarding relationships that promote and strengthen healthy habits and self-confidence ⁽¹⁰⁾.

The use of tools that enable educational care actions is configured as a work and leisure instrument, innovating the acquisition and sharing of information, that is, communication becomes essential to maintain the personality, a sense of identity and connection. However, each individual has their specificities and particularities experienced, which can influence the way in which a professional analyzes and builds an interaction or action strategy ⁽¹¹⁾.

These tools help to demystify outdated conceptions and paradigms of society, which

labels the elderly as being unable to learn to live independently and autonomously, performing and running their daily activities. Glimpsing, thus, a viable, easy and practical alternative to work educational care actions in health in the third age, as popular recreational activities, where the participants motivate their feelings and positive memories and interact socially ⁽¹²⁾.

Educational activities that use clear language, considering the instruction of the elderly and not infantilizing them, are more effective. The use of technologies, such as videos, iPad or educational books, enable the understanding and detection of symptoms, assisting in decision making, regarding the search for health care services. Recreational activities stimulate the cognitive domain and mood, favoring greater social interaction that enables bodily and mental activity ⁽¹³⁻¹⁴⁾.

In this way, in order to have a good efficiency in the use of educational technologies with the elderly, it is necessary to know/prepare not only about the technology, but also about the human aging process, the physical and mental functions, as well as the care that this age group may need.

Hence, there is a need for a good bond with the elderly, combined with the preparation and quality guidance of the caregiver and also of family members, who are often the caregivers of the elderly. This relationship stimulates the caregiver's

perception in the following aspects: knowing the limitation of the elderly and encouraging autonomy, allowing their personal growth and maintaining an environment conducive to their education. In addition, the professional's technical preparation is essential for the provision of qualified and effective care ⁽¹⁵⁾.

For an essential communication process with the elderly, professionals need to adopt interactional mechanisms that encourage the participation of the elderly in the interaction, considering the individual changes arising from the human aging process. Soon, it can adopt strategies for writing, reading, geometric shapes, in order to develop cognitive functioning and psychomotor skills ⁽¹⁶⁾.

However, such types of strategies need to be validated regarding their effectiveness and the achievement of the proposed objectives. In general, the validation is made from an analysis made by judges, in order to verify the degree of agreement in relation to the adequacy of the training tasks to the intended skills ⁽¹⁷⁾.

The evaluation model should be specified, — in this case, the evaluator's questionnaire and the theoretical perspective — explaining the methodological definition of the area during the construction and testing of the technology programs in order to provide robust evidence of the validity of the elaborated tasks ⁽¹⁷⁾.

Thus, the articles grouped in this category (1-8) demonstrated that the evaluative approach helps to better understand the inherent declines in the elderly and that the implementation of health promotion programs improves the life and health of the elderly, who are able to discover, assimilate and transform. Wherefore, integrating the elderly person's doing, thinking and acting, in an attempt to empower them to adopt lifestyle changes.

As soon, this category presented technologies that vary, from a computer program, evaluated by psychological instruments before and after treatment (2); A platform that integrates head tracking and cognitive tasks with balance activities based on computer games (1); An intervention program through drawings, to check the basal capacity and to perform tasks under different domains (7), in addition to another popular recreation, aimed at improving cognitive function (6).

In addition, it was also observed in the articles (3-5) respectively, the communicative interaction, through simple and non-infantilized language; the use of educational videos, iPads and booklets; and the development of printed and digital material for guidance and information on care for the elderly (8).

EVALUATIVE INSTRUMENTS THAT HELP IN THE UNDERSTANDING OF THE DECLINES OF THE ELDERLY

The use of evaluation instruments contributes positively to the identification of the health condition of the elderly for health professionals. One of the most used methods is the questionnaires, as they are easy to apply and low cost, however there is still a deficiency in these instruments in terms of multidimensionality vis-à-vis the elderly, being frequently observed in developing countries, as they have different characteristics. To obtain better results in the collection of information, such instruments must know the elderly individual in an effective and generalized way⁽¹⁸⁾.

For the elderly to have a good health condition, it is necessary to understand what changes imply in their well-being⁽¹⁹⁾. In this way, from the understanding of the health condition of the elderly, through the information collected from the instruments, it is possible for the professional to implement intervention measures and health promotion in a more efficient way, always aiming at the quality of life of the elderly.

From the understanding that the elderly person should not be seen only with a clinical eye, for others and for himself, family support is of utmost importance, as well as the subjective perception of health and life satisfaction, being possible a positive

experience of this phase, when thinking in terms of prevention and health promotion, there is a consequent influence on the physical and mental well-being of the elderly⁽¹⁹⁾.

With the declines of the third age, it is necessary to seek the best way to work with these individuals, always aiming at quality of life. The inclusion of the elderly person in family and social life is of great importance⁽²⁰⁾. In this way, it is possible to have a closer relationship with health professionals and caregivers.

The set of articles presented in this category (09-11), shows the importance of offering assistance based on the use of evaluative instruments that contribute to the reliable detection of the real health condition of the elderly, favoring the implementation of intervention measures and promotion of health, in addition to making it possible to strengthen the bond between the elderly and health professionals, as well as caregivers.

In this category, a questionnaire developed specifically for patients with pituitary diseases was found during the analyzes (9); A study that investigates the Subjective Well-Being (BES) of institutionalized and non-institutionalized elderly people through the Pfister's Colored Pyramids Test (TPC) (10).

In addition, another study related to cognition was identified, the Revised

Addenbrooke Cognitive Exam (ACE-R), which in turn measures the cognitive level of elderly with low education, as well as those who are not literate. Furthermore, the study also sought to detect dementia and cognitive impairment without dementia (11).

CARE-EDUCATIONAL TECHNOLOGY AND THE NURSING

Currently, nursing plays a fundamental role when talking about care and, inherent to this; there is a need to be constantly updating the knowledge and techniques of professionals, making them able to work with new means that allow the best care. Nursing has been evolving as a science and profession, and this is due to new technological means, which emanate the need for adaptation and knowledge of auxiliary tools for care.

Based on the analysis of the researched studies, there is a visible need for knowledge on the use of educational technologies aimed at the health of the elderly, in which, due to the intense process of demographic transition, a care plan directed to the specificities of the elderly can be made possible for the use of educational care technologies.

Therefore, the importance of diversified strategies and transformative practices is shown, such as the use of health care-educational technologies (TCESs),

which are important tools in the scope of nursing care, as it allows the elderly to be monitored at the health unit for application of technology, promoting health education and encouraging self-care⁽²¹⁻²²⁾.

Thereafter, when using a TCES, one must have a plan and, in addition, know how to manage it as an instrument of practice by the professional nurse. Therefore, in view of the need for the elaborated instrument to have fidelity for its application, a research question called “Standard Operating Procedure” (SOP) was elaborated, aiming at orienting the interventions with the target patient and aiming at the validity of the content, in order to become a safe tool in care⁽²³⁾.

As such, the “Directly Observed Treatment” (DOT), the instrument used as a policy, would be focused on tuberculosis control in which three dimensions are intrinsically linked, being: the information received by the professionals responsible for the application of the policy/action/instrument; their knowledge of the implementation policy, as well as the assimilation of the information received; and the innovation, or mode of implementation and execution itself, of this new policy/action⁽²⁴⁾.

This category (12-15) showed how the use of technologies makes it possible to care for several health professionals,

among them nurses, who, from that, can undertake educational-care actions that allow safe and effective care.

The technologies of this category are instruments of written evaluation (12-14), used for different functions. The article (15), on the other hand, uses multimedia resources to assess the difference in understanding of information between it and face to face.

CONCLUSION

It was identified, in this integrative review, that the educational technologies developed and/or validities for the care for the elderly were diverse, with predominance for digital platforms such as educational videos, iPads and booklets, in addition to the use of evaluative instruments that enable care and closer ties with the elderly, family and community, with nurses being the professionals who most use the technologies.

The theme most addressed by the studies was the use of technologies aimed at assessment and cognitive stimulation, ranging from screening computer programs, analysis of cognitive impairment, and means of guidance or interventionist practice of activities aimed at the elderly. As lack of knowledge, the lack of articles addressing the validation of TECS directed to the cognitive care of the elderly is pointed out.

It is suggested the development of other studies that develop and validate educational

technologies for elderly people capable of stimulating the domains of cognition, humor, mobility and communication, aiming at active and healthy aging able to of enabling self-care, self-worth, autonomy and independence of the elderly.

REFERENCE

- 1 - Faller JW, Teston EF, Marcon SS. Estrutura conceptual do envelhecimento em diferentes etnias. *Rev. Gaúcha Enferm.* 2018; 39(66144).
- 2- Instituto Brasileiro de Geografia e Estatística. Contagem populacional: censo demográfico 2010. Brasília, DF.
- 3 - Rocha MRC, Araújo, JC, Farias TPF, Barros AMS. Avaliação Funcional e Cognitiva do Idoso. In: Congresso Internacional de Enfermagem. 2017; 1(1).
- 4 - Bezerra, PK, Rodrigues KA, Felix KD, Sotero RC, Ferreira AP. Déficit cognitivo: proposição de cartilha para atenção ao idoso. *Revista Brasileira de Pesquisa em Ciências e Saúde.* 2016; 3(1): 1-10.
- 5 - Moreira, APA Sabóia VM, Camacho ACLF, Daher D V, Teixeira E. Jogo educativo de administração de medicamentos: um estudo de validação. *Rev. Bras. Enferm.* 2014 Ago; 67(4): 528-34.
- 6- Guia de Tecnologias Educacionais da Educação Integral e Integrada e da Articulação da Escola com seu Território 2013. Organização Paulo Blauth Menezes. Brasília: Ministério da Educação, Secretaria de Educação Básica; 2013.
- 7 - Gadelha MMT, Andrade ME, Silva JMA, Bezerra ICB, Carmo, AP, Fernandes MC. Tecnologias educativas no processo formativo: discurso dos acadêmicos de enfermagem. *Rev. enferm. UFPE online.* 2019; 13(1):155-61.
- 8 - Mendes KDS, Silveira, RCCP, Galvão, CM. Revisão integrativa: método de pesquisa para a incorporação de evidências na saúde e na enfermagem. *Texto contexto – enferm.* 2018 Dez; 17(4): 758-64.
- 9 - Santos ALS, Santos AIPSS, Lourenço NLR Souza MO, Teixeira VPG. A importância do uso de tecnologias no desenvolvimento cognitivo dos idosos. *GEP NEWS.* Jan/Mar 2018; 1(1): 20-4.
- 10 - Caprara MG, Fernández-Ballesteros R, Alessandri, G. Promoting aging well: evaluation of vital-aging-multimedia program in Madrid, Spain. *Health promotion international.* 2016; 31(3): 515-22.
- 11 - Williams KN, Perkhounkova Y, Herman R, Bossen A. A communication intervention to reduce resistiveness in dementia care: A cluster randomized controlled trial. *The Gerontologist.* 2017; 57(4):707-18.
- 12 - Li DM, Li, XX. The effect of folk recreation program in improving symptoms: A study of Chinese elder dementia patients. *International journal of geriatric psychiatry.* 2017 Ago; 32(8): 901-08.
- 13 - Dallimore RK, Asinas-Tan ML, Chan D, Hussain S, Willet C, et al. A randomised, double-blinded clinical study on the efficacy of multimedia presentation using an iPad for patient education of postoperative hip surgery patients in a public hospital in Singapore. *Singapore Medical Journal.* 2017; 58(9): 562.
- 14 - Denny MC, Vahidy F, Vu KYT, Sharrief, Savitz SI. Video-based educational intervention associated with improved stroke literacy, self-efficacy, and patient satisfaction. *PloS one.* 2017 Mar 23; 12(3): 0171952.

- 15 - Cardoso RSS, Sá SPC, Domingos AM, Sabóia VM, Maia TN, Padilha JMFO, et al. Tecnologia educacional: um instrumento dinamizador do cuidado com idosos. *Revista Brasileira de Enfermagem*. 2018; 71(2): 786-92.
- 16 - Szturm T, Sakhalkar V, Boreskie S, Marotta JJ, Wu C, Kanitkar A. Integrated testing of standing balance and cognition: Test-retest reliability and construct validity. *Gait & posture*. 2015; 41(1): 146-52.
- 17 - Golino, MTS Schelini PW, Golino HF, Pereira BLS, Felix LM. Investigando Evidências de Validade de Conteúdo e Estrutural em Tarefas de um Treino Cognitivo para Idosos. *Avaliação Psicológica*. 2017; 16(3): 278-92.
- 18 - Pedreira RBS, Rocha SV, Santos CA, Vasconcelos LRC, Reis MC. Validade de conteúdo do Instrumento de Avaliação da Saúde do Idoso. *Einstein*. 2016; 14(2):158-77.
- 19 - Nakano TC, Machado, WL, Abreu, ICC. Relações entre estilos de pensar e criar, bem-estar, saúde percebida e estresse na terceira idade. *Psico-USF*. 2019 Set; 24(3): 555-68.
- 20 - Bittencourt AM, Machado LFO, Almeida MBde, Pires DR. Software: recurso terapêutico ocupacional para estimulação cognitiva do idoso. *Estudos Interdisciplinares sobre o Envelhecimento*. 2017; 22(10): 31-49.
- 21 - Goes TM, Polaro SHI, Gonçalves LHT. Cultivo do bem viver das pessoas idosas e tecnologia cuidativo-educacional de Enfermagem. *Enfermagem em Foco*. 2016; 7(2): 47-51.
- 22 - Simon CM, Klein DW, Schartz HA. Interactive multimedia consent for biobanking: a randomized trial. *Genetics in Medicine*. 2016; 18(1): 57-64.
- 23 - Paim, AE, Nascimento ERP, Bertoncillo KCG, Sifroni KG, Salum NC, Nascimento KC. Validação de instrumento para intervenção de enfermagem ao paciente em terapia vasoativa. *Revista Brasileira de Enfermagem*. 2017; 70(3): 453-60.
- 24 - Silva LMC, Surniche CA, Sicsú AN, Mitano F, Nogueira JdeA, Santos, CB. Elaboração e validação semântica de um instrumento de avaliação da transferência do tratamento diretamente observado como política de controle da tuberculose. *Revista Panamericana de Salud Pública*. 2015; 38(2): 129-35.
- 25 - Andela CD, Scharloo M, Ramondt S, Jitske T, Olga H, Sofia L et al. The development and validation of the Leiden Bother and Needs Questionnaire for patients with pituitary disease: the LBNQ-Pituitary. *Pituitary*. 2016; 19(3): 293-02.
- 26 - César KG, Yassuda MS, Porto FHG, Brucki SMD, Nitri R. Addenbrooke's cognitive examination-revised: normative and accuracy data for seniors with heterogeneous educational level in Brazil. *International psychogeriatrics*. 2017; 29(8): 1345-53.
- 27 - Teixeira CR, Scortegagna SA, Portella MR, Pasian SR. Bem-estar subjetivo de longevos institucionalizados e não institucionalizados por meio do Pfister. *Avaliação Psicológica: Interamerican Journal of Psychological Assessment*. 2019; 18(1): 86-95.
- 28 - Rodrigues JC, Muller JL, Esteves C, Fonseca RP, Parente MAMP, Salles JF de. Efeito de idade e escolaridade no instrumento de avaliação Neuropsicológica Breve NEUPSILIN. *Psico-USF*. 2018; 23(2): 319-32.
- 29 - Swagerman, SC et al. The Computerized Neurocognitive Battery: Validation, aging effects, and heritability across cognitive domains. *Neuropsychology*. 2016; 30(1): 53.
- 30 - Tam BWH, Lo DRT, Seah DWH, Lee JX, Foo ZFY, Poh ZYY et al. Developing and

validating a localised, self-training mindfulness programme for older Singaporean adults: effects on cognitive functioning and implications for healthcare.

Singapore Medical Journal. 2017; 58(3): 126. 2017.

Submission: 2020-12-08

Approval: 2021-03-25