



RESEARCH ARTICLE

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HEALTH INTECHNOLOGIES AND THEIR APPLICABILITY FOR NURSING PRACTICE IN ELDERLY

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ABSTRACT

Objective: To analyze the national literature on the production of health technologies and its applicability to nursing practice in the elderly. **Methodology:** This is a descriptive study with a qualitative approach, carried out through the Integrative Literature Review (RIL), where the following 6 steps were adopted: 1-Identification of the research question; 2-Establishment of criteria for inclusion and exclusion of studies; 3-Definition of the information to be extracted from the studies, data evaluation; 4-Analysis of the studies included in the review; 5- Interpretation of results; 6-Presentation of the review and synthesis of knowledge. Data were collected in the databases LILACS, BDNF and SciELO with selected articles in the period 2009 to 2018, where they were analyzed according to Bardin content. The search resulted in 10 articles, emerging 3 thematic categories. **Results:** In the articles found, all the technologies created and implemented emerged from superficialities and limitations in health practices of professionals and caregivers of elderly. **Conclusion:** Most bibliographic productions on educational technologies in the elderly are performed by nurses in order to stimulate the quality of care and provide the expansion of knowledge and care practices to the elderly.

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INTRODUCTION

The increase in the elderly population is a topic of debate among researchers, social and political managers in a globalized way.

The current demographic transition refers to the continuous pursuit of establishing goals and public policies aimed at the aging process with health maintenance, quality of life assurance and lack of disabilities (ARAÚJO et al., 2017). The aging process can bring several implications for the quality of

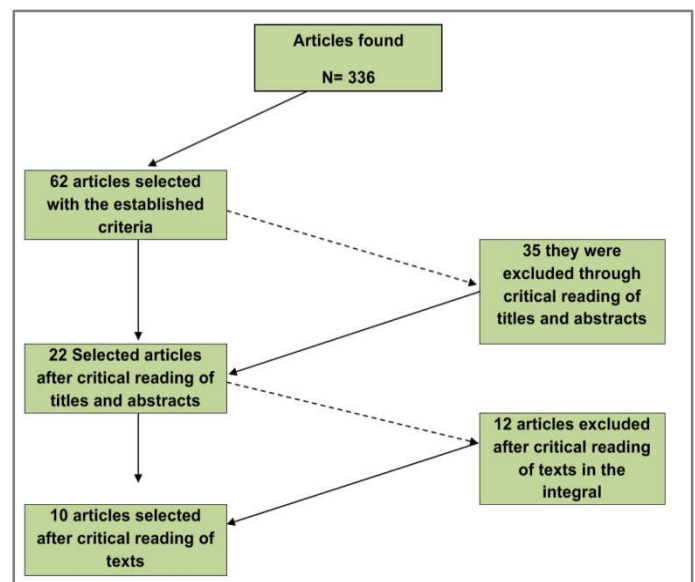
life of the individual, impacting aspects such as autonomy and independence in daily activities. When these practices are impaired, the elderly begin to demand support from the family and the health services system (TEIXEIRA, 2010). In this context, health promotion arises, which can be defined as the set of measures aimed at having good health, promoting quality of life, reducing vulnerabilities and risks related to their determinants and conditioning modes of living, Working conditions, housing, environment, education, leisure, culture, access to essential goods and services (PENHA, *et al.*, 2015). Health promotion aggregates fundamental tools and strategies to model the teaching-learning process, making the theory and process of care more understandable and accessible in view of the adversities of the elderly, especially one of the tools that come Gaining notoriety are the educational technologies (PISSAIA, *et al.*, 2017). Technology is understood as a set of knowledge and practices related to products and materials that define therapeutics and work processes and constitute instruments to perform actions in the production of health. Technologies can be classified into educational technologies (devices for mediation of teaching and learning processes), assistive technologies (devices for mediation of care processes) and managerial technologies (devices for Mediation of management processes in the various health systems) (FONSECA, *et al.*, 2011).

Therefore, health technology is an important tool focused on the various conditionality's and demands inherent to the aging process, which can provide improvement in the health condition and self-esteem of the elderly, safety in the environment Household, subsidy of techniques to care in medical-hospital environments, ease in mobility, communication and greater opportunity at work and leisure, besides offering the elderly person new opportunities and challenges, superior to previous generations (ARAÚJO, *et al.*, 2017). The process of evaluation and incorporation of health technologies in Brazil has evolved considerably in recent years. The incorporation of technologies in health systems should be constantly analyzed and improved so that their adoption occurs in a sustainable, transparent way and that favors their consolidation in the Unified Health System (SUS) (LIMA; BRITO; ANDRADE, 2019). The health technologies that nurses implement during the development of health education actions should be compromised with the social transformation of the person involved in the educational process, consistently, continuously and sensitively to the Social and political development of the collective. Therefore, the formulation of technologies should integrate the doing, thinking and being, mobilizing actions of human care (PISSAIA, *et al.*, 2017). Therefore, it is necessary to reflect on the knowledge necessary to provide care to the elderly and how this knowledge is transmitted. From this perspective, an integrative literature review was developed with the objective of analyzing the national literature on the production of health technologies and its applicability to nursing practice in the elderly.

METHODOLOGY

This is a descriptive study with a qualitative approach, developed by the integrative literature review method. This type of study makes it possible to perform the search, critical evaluation and synthesis of research results on a subject investigated, contributing to the advancement of knowledge and the implementation of effective interventions in health

care (FONSECA, *et al.*, 2011). For the elaboration of the integrative Review, the following 6 steps were adopted: 1- Identification of the research question (by means of the research question); 2-Establishment of criteria for inclusion and exclusion of studies; 3-Definition of the information to be extracted from the studies, data evaluation; 4-Analysis of the studies included in the review; 5-Interpretation of results; 6-Presentation of the review and synthesis of knowledge. It was used as a research question: "What is the applicability of health technologies for nursing practice in the elderly?" The search for selection of articles occurred through online access in the following databases and databases: LILACS (Latin American Literature on Health Sciences), BDNF (databases in nursing) and SciELO (Scientific Electronic Library Online). Data collection occurred between the months of April to July 2019, using the controlled descriptors "technologies" and "elderly", "Nursing education", "Nurse" mediated by the Boolean operator "AND", aiming to broaden the quantitative studies, the Descriptors were extracted from DECS (health sciences descriptors). The non-controlled descriptors "light technologies" "light-hard Technologies", "Health Technologies" and "nursing" were also used. The inclusion criteria established for the review were: research articles published in the period 2009 to 2018 in Portuguese, available electronically in full and addressing the use of educational technologies aimed at health education with Elderly. We excluded studies of the type: editorials, letters to the editor, reflexive studies and studies that did not address relevant themes to the objective of the study. At the end of the data collection were found a total of 336 articles in the three bases and database mentioned. However, the final sampling consisted of 10 publications, which met the criteria established as shown in Figure 1 below:



Source: Research authors. 2019.

Figure 1. Flowchart of the articles found and selected

For the analysis and synthesis of the selected articles, the URSI form adapted to the study was used, which was completed for each article of the final sampling, contemplating the following information: article identification (article title, authors, Periodical, country and year and type of publication), type of study, objective and methodological characteristics of the study (study design, technology used/developed) and synthesis of results. Data analysis occurred through exploratory, selective, analytical and interpretative reading of

Table 1. Identification of the articles

N°	Article Title	Authors/Year	Database and Periodic	Country and level of evidence	Publication Type
1	Assistive technology and active ageing according to professionals working in coexistence groups.	LEITE, E.S et al. 2018.	SciELO, Rev EscEnferm USP.	Brazil. Nível 3	Original article.
2	Educational Technology: A dynamic instrument for caring for the elderly.	CARDOSO, R.S.S et al. 2018.	SciELO, Rev BrasEnferm.	Brazil. Nível 3.	Research article.
3	(Geronto) Caring-Educational technology in Alzheimer's disease and support for the elderly/family: perspective of professors and students.	ILHA, S. et al. 2017.	BDENF, Esc Anna Nery.	Brasil. Nível 3	Research article.
4	Caring technology for group Mutual help for people with Parkinson's and their families.	SENA, E.L.S et al 2010.	SciELO, Texto Contexto Enferm.	Brazil. Nível 3	Original article.
5	Challenges and Care technologies developed by caregivers of patients with Alzheimer's disease.	SCHMIDT, M.S et al. 2018.	SciELO, Rev. Bras. Geriatr. Gerontol.	Brazil. Nível 3.	Original article.
6	Educative Gerontotechnology focused on the elderly stomized in light of complexity.	BARROS, E.J.L et al. 2012	LILACS, Rev Gaúcha Enferm.	Brazil. Nível 3.	Original article.
7	The production of care for users with arterial hypertension and health technologies	SANTOS, F.P.A et al. 2013.	SciELO, Rev EscEnferm USP	Brazil. Nível 3.	Original article.
8	Assistive technologies for elderly with dementia: a systematic review	MAIA, J.C et al. 2017.	SciELO, Acta Paul Enferm.	Brazil. Nível 1.	Review article.
9	Elderly and technologies: a bibliographic research.	COSTA, E.O. BIFANO, A.C.S.2017.	BDENF Estud. interdiscipl. Envelhec.	Brazil. Nível 5.	Review article.
10	Educational Technologies in nursing care in Health education: integrative Review	SILVA, D.M.L.CARNEIRO, F.A. MELLO, R. 2017.	BDENF. Rev enferm UFPE on lin.	Brazil. Nível 3,	Review article.

Source: Research authors, 2019.

Table 2. Methodological characteristics of the included studies

N°	Methodological design	Objective	Technology used/developed	Results synthesis
1	Cohort study	Identify the knowledge of professionals about assistive technology and its importance in the life of the elderly	Assistive technology.	It was identified that the lack of knowledge about this technology by the elderly person is related to low schooling, visual problems and the shame of using such an instrument.
2	Cohort study	To develop educational technology with caregivers of elderly people based on the needs, difficulties and interests manifested by these individuals in relation to caring for the elderly.	Educational technology.	The development, together with caregivers, of educational technologies, printed and digital material, contributed to guidance and information about the care of the elderly and to the decision-making of the caregiver.
3	Cohort study	To know the understanding of the professors and students of the courses of health/humanities about AMICA as a (geronto) care-educational technology in the context of the DA and support for the elderly/family	Caring technology-educational.	The care in the perspective of technology leads to the reflection of the inherent ability of the human being to seek innovations capable of transforming their daily life, aiming at a better quality of living and personal satisfaction. AMICA is characterized as a complex (Geronto) care-educational technology, generating new gerontotechnologies of care for the elderly/family with DA
4	Convergent care	Adapt, test and evaluate the assistive technology of mutual help group for patients with Parkinson's disease and their families, in the contexts of Jequié-BA and Florianópolis-SC, focusing on social inclusion and network formation of relationships	Caring Technology	The care technology, the GAM for DP patients and their relatives, would stimulate the formation or expansion of the social support network of the Parkinsonians. Throughout the implementation of the GAM, it was observed that the maintenance or increase of the network of relationships can be attributed to the interest and involvement of people around the patient, due to the opportunity to acquire knowledge about the disease and modalities Therapeutic.
5	Cohort study.	Know the challenges and care technologies developed by caregivers of patients with Alzheimer's disease	Caring technology.	The main care technologies found in this study were adaptations of the home environment aimed at the physical safety of the elderly with Alzheimer's disease, the technology is associated with the way people live, and may be present in the places of Work, in residences and in relationships, constituted by human skills to construct and use instruments from an emerging need.
6	Cohort study.	Present the educational booklet as a gerontotechnological product useful for the care of the elderly stomized in the light of complexity.	Educational technology.	The educational booklet presents itself as a gerontotechnological product useful for the care of the stomized elderly. It emerges as a pedagogical resource capable of enabling dialogical integration between nurse-elderly stomized and family enabling the construction of an easily available and low-cost multidimensional knowledge.
7	Cohort study.	Characterize the technological profile of nurses from three Portuguese hospital centers	Educational technology.	The predominance of light technologies in the command of the work process, such as welcoming, sensitive listening, among others, potentializes the bond between professionals and users, enabling openness to creative production of care in which they consider themselves The subjectivities present, overcoming the distation often occasioned by the massive presence of hard and light-hard technologies.
8	Systematic review.	To analyze studies of interventions with assistive technologies, employed in the assistance of elderly with dementia, in the execution of ABVD and AIVD.	Assistive technology.	The TA have promising potential for the care of elderly people with dementia, enabling advances in the way of caring and reducing caregiver burden. Assistive technologies can be applied to improve the quality of life of elderly patients with dementia. The application of this technological apparatus provides positive results, in support to the elderly and their caregivers, in the execution of the ABVD and AIVD.
9	Bibliographic review	Mapping the academic production related to the use of technologies in everyday life by the elderly	All sorts.	The studies about the technologies related to the health care of the elderly addressed the impact of the use of hearing aids and Repertoires used in the decision to use it; of care relationships in health services and the issue of empowerment as an educational technology for self-care. Among the technologies most used by the elderly, those belonging to the group of Information and Communication technologies (ICTS) were highlighted, more specifically the use of computers.
10	Integrative Review.	Identify, in academic publications, the models of educational technologies (TE) used in nursing care in health education and analyze the models of educational technologies regarding type, scope, practicality, challenges and validation.		The importance of the knowledge of the target audience to which it intends to reach, regardless of what type of TE is intended to be addressed. The language addressed in the technologies should make it easy to understand the lay population, making TE truly effective.

Source: Research authors, 2019.

the articles that comprised the final sampling of the integrative review. The results were presented through tables and discussed in the pertinent literature. Bardin content analysis was used to analyze the data. Thus, after reading the articles, three categories emerged: CATEGORY 1-the role of nursing and health technologies; CATEGORY 2 – Applicability of health technologies with the elderly; CATEGORY 3 – Difficulties encountered by nurses for the use of health technologies.

RESULTS AND DISCUSSION

Identification of the Articles Analysed: Of the selected articles, 06 (five) were identified in the SciELO database, 02 (two) in LILACS and 02 (three) in the BDEF. Of these, 08 (six) were published in nursing journals and 02 (two) in interdisciplinary journals. The predominant language was Portuguese. As for the year of publication, it was predominant the years of 2017 with 04 (four) articles, 2018 with 03 (three) articles, 2013 with 01 (one) article, 2012 with 01 (one) article and 2010 with 01 (one) article. Based on the analysis of the studies, we performed the characterization from the title of articles, authors, year of publication, objective, country and type of publication.

Categories Analysed

Category 1-the role of nursing and educational technologies: A technology can be understood as the result of processes concretized from the daily experience and research, for the development of a set of scientific knowledge for the construction of material products, or not, for the purpose of Interventions on a given practical situation and the whole process should be systematically assessed and monitored (COSTA; BIFANO, 2017). In the articles found, all technologies created and implemented emerged from superficialities and limitations in health practices of professionals and caregivers of elderly. Thus, the implementation of the technologies functioned as subterfuges the health practices, in which allowed the gathering of groups and creation of spaces of interaction and discussion about a conjugate of knowledge and actions indispensable for good practices Health and care for the elderly (LANDEIRO; PERES; MARTINS., 2015). Corroborating this study, Maniva *et al.* (2018), Stresses that the development of an educational technology in health always comes from a need in the service: deficiencies or gaps in knowledge and practices in relation to care, assuming that this set of knowledge and practices is relevant to the Health maintenance and that if neglected by ignorance are impeditive factors for quality of life. It is reiterated that the articles of the present study evidenced the relationship between nurses and health education.

This clue has as theoretical presupposition the conception of nurse as educator, in which inherent in the process of exercising the profession is included health education, as foreseen in the legal regulation, necessary for the change of human behavior in Relation to health, empowerment and development of human capacities (SCHMIDT, *et al.*, 2018). Pissaia *et al.* (2017) also states that educational technologies are indispensable tools for boosting actions and nursing care processes. According to Mendes *et al.* (2018), The aging process generates modifications that are not always favorable to the individual and can sometimes influence the behavior and quality of life. Through these complex and progressive

behavioral changes, it is necessary to aggregate synchronic elements such as negotiation skills, convincing and tools (educational technologies) in caring for the elderly who provide the processing Actions, care and acceptance/improvement of the health condition. Educational technologies in nursing are capable of promoting major changes in individuals, families and communities, such as changes in locus of behavior, incorporation of new health practices with structural contributions such as health promotion, Disease prevention, control of chronic conditions, decreased morbidity and mortality and higher quality of life (MOFFATT, *et al.*, 2018). Educational Technologies reify Health innovations with reorganization of actions that have a greater impact on health. This has been demonstrated in several countries through several researches. For example, in a quasi-experimental study conducted in Portugal showed that the realization of an educational technology for caregivers and relatives of dependent people provided greater capacity and better performance of knowledge and care with the Patient in the intervention group overlapping the control group (LANDEIRO; PERES; MARTINS, 2016). In a study conducted by Oller *et al.* (2018), in São Paulo in an almost experimental research describes the impacts of the link: health education, educational technologies and nursing in the condition of patients with chronic disease, in which educational technologies and health education were fundamental in Weight control and prevention of disease complications compared to patients without interventions.

Category 2 – applicability of educational technologies in the elderly: To Goes, Polaro e Gonçalves (2016) the aging process encompasses countless vulnerabilities, such as the process of ageing that implies restrictions and development of pathologies, annexed the deficiency in solidification of health policies to the elderly public. Through this, health technologies aim to cool these conditions by modifying assumptions in minimizing social injustices and the possibility of improvements and performance in active and healthy ageing. The educational technologies increased in the studies made possible to add to the knowledge about the details of the aging process and its implications, as well as provided a conduit in the training of caregivers, elderly and professionals to perform Specific care actions in the context of the elderly public and directing strategies on the main conditions, diseases and problems of old age (CARDOSO, *et al.*, 2018). Thus, these tools produced the introduction of care and concomitantly favored the introduction of practices which enabled the expansion of knowledge and attitudes. The training of active agents of this transformation led to the aspersion of the benefits to the elderly, such as the development of human capacities, social engagement, reduction of risk of fall, control and prevention of disabilities in the elderly (SCHMIDT, *et al.*, 2018). Resoluteness, integrality and efficiency, therefore, are the words that define the benefits of educational technologies in the elderly public, specifically, these tools are insightful to favor potentializations of their capacities (COSTA; BIFANO., 2017).

Category 3 – difficulties encountered by nurses for the use of health technologies: Despite the users of educational technology to the elderly, the phenomena of counterposition the consolidation of such tools are emphasized. In the ambience of the present study, the main adversities listed were the lack of knowledge of nurses about the applicability and development of technologies, not prioritizing it in care, lack of

incentives from management to stimulate (SANTOS; NERY; MATUMOTO, 2013). To Landeiro, Peres e Martins (2015), Initiate the implementation of any educational technology is necessary to learn about the creation and development of such allied to scientific knowledge based on evidence of the content that will be incorporated into the tool, as well as stipulation of Strategies to establish technology in the service and also the good receptivity of professionals and managers of this service. According to studies, the main obstacles in the implementation of educational technologies are lack of knowledge, tasks and accommodation. This sometimes comes from the academic education itself, responsible for lapsing undergraduates from the clinical-epidemiological profile of the population and absent from the importance of the contributions of technologies to the health of the population and innovation to nursing (SILVA; CARREIRO; MELLO, 2017).

In view of the above, the ferment of technology for some professionals may represent the increase of task, work overload among other justifications that culminate in the insipient production on the theme and discontinuity of use in the care. Corroborating these assertive, other studies clarify that the fragile management in encouraging this operationalization is a prerogative of fragility in the framework of this process (PISSAIA, *et al.*, 2017). Other researches indicate that investments, non-prioritization of research and disintegration of the assistance-research link are counterpoint setbacks in the construction and use of educational technologies (OLLER, *et al.*, 2018). Whatever the deficiency in the implementation of educational technologies, the consequence is unique and convergent: impact on the health-disease process. The absences of health education with educational technologies imply a greater chance of illness in the population due to avoidable causes, a greater number of hospitalizations and concomitant expenditures in the health system, socio-economic disarrangements because of disabilities, organic and functional deaths and losses (LEITE, *et al.*, 2018). It is incompatible for nurses to appear in this process of involvement of educational technology and health education, since this context is the composition of their professional jurisdiction. Absent from this casuistic is a lack of aptitude to deal with the dynamicity of services, health problems of the population and production of innovation, as a social return (MANIVA, *et al.*, 2018).

Conclusion

The majority of bibliographic productions on health technologies in the elderly are performed by nurses in order to streamline the quality of care and provide the expansion of knowledge and care practices to the elderly. Such tools were instrumental in boosting improvements in care actions and potentializing the capacities of the elderly and their social engagement. It is noteworthy that the creation of health technologies is an inherent presupposition of nursing practice and an indispensable context to promote behavioral changes and negotiation of lifestyle and care habits. However, the obstacles to the operationalization of such tools were equated to these benefits, such as: Professional subjectivities, ignorance, operational difficulties of service and management, disability in research investment, among Others which will result in subtraction of the quality of service rendered and a decrease in the quality of life of the elderly and social impacts.

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