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INTEGRATIVE REVIEW ARTICLE

FACTORS ASSOCIATED WITH COGNITIVE IMPAIRMENT IN INSTITUTIONALIZED ELDERLY INDIVIDUALS: INTEGRATIVE REVIEW

FATORES ASSOCIADOS AO COMPROMETIMENTO COGNITIVO EM IDOSOS INSTITUCIONALIZADOS: REVISÃO INTEGRATIVA

FACTORES ASOCIADOS CON EL DETERIORO COGNITIVO EN ANCIANOS INSTITUCIONALIZADOS: REVISIÓN INTEGRADORA

Ivoneide Maria de Melo Zimmermann[1], Márcia Carréra Campos Leal[2], Rogério Dubosselard Zimmermann[3], Ana Paula de Oliveira Marques[4], Érika Carla Cavalcanti Gomes[5]

ABSTRACT

***Objective*:** contribute to increase knowledge about the factors associated with cognitive impairment in institutionalized elderly individuals. ***Method*:** integrative review of articles published between 2009 and 2014, in Portuguese, English, and Spanish, with this guiding question: "Which are the factors associated with cognitive impairment in institutionalized elderly individuals?" Articles were evaluated through the Critical Appraisal Skills Program and the Agency for Healthcare and Research and Quality. ***Results*:** nine articles that met the inclusion criteria were analyzed. The instrument most frequently used to evaluate cognitive functioning (seven articles) was the Mini-Mental State Examination (MMSE) and most studies have been conducted in Brazil (6). ***Conclusion*:** physical activities and cognitive stimulation are needed to promote the institutionalized elderly individual's health. These studies are key for grasping the evolution of the aging process and knowing the possible changes that institutionalization can trigger. ***Descriptors*:** Elderly; Cognition; Homes for the Aged.

RESUMO

***Objetivo*:** contribuir para ampliar os conhecimentos acerca dos fatores associados ao comprometimento cognitivo em idosos institucionalizados. ***Método*:** revisão integrativa de artigos publicados entre 2009 e 2014, em português, inglês e espanhol, com a seguinte questão norteadora: "Quais são os fatores associados ao comprometimento cognitivo em idosos institucionalizados?". Os artigos foram avaliados com o Critical Appraisal Skills Program e a Agency for Healthcare and Research and Quality. ***Resultados*:** foram analisados 9 artigos que atenderam aos critérios de inclusão estabelecidos. O instrumento mais utilizado para avaliar a função cognitiva (7 artigos) foi o Miniexame do Estado Mental (MEEM) e a maioria dos estudos foram realizados no Brasil (6). ***Conclusão*:** atividades físicas e de estimulação cognitiva são necessárias para promover a saúde do idoso institucionalizado. Estes estudos são essenciais para o entendimento da evolução do processo de envelhecimento e o conhecimento das possíveis alterações que a institucionalização pode desencadear. ***Descritores*:** Idoso; Cognição; Instituição de Longa Permanência para Idosos.

RESUMEN

***Objetivo*:** contribuir a aumentar el conocimiento sobre los factores asociados con el deterioro cognitivo en ancianos institucionalizados. ***Método*:** revisión integradora de artículos publicados entre 2009 y 2014, en portugués, inglés y español, con esta pregunta guía: "¿Cuáles son los factores asociados con el deterioro cognitivo en ancianos institucionalizados?". Los artículos fueron evaluados con el Critical Appraisal Skills Program y la Agency for Healthcare and Research and Quality. ***Resultados*:** se analizaron 9 artículos que cumplieron con los criterios de inclusión establecidos. El instrumento más utilizado para evaluar la función cognitiva (7 artículos) fue el Mini Examen del Estado Mental (MEEM) y la mayoría de los estudios se han realizado en Brasil (6). ***Conclusión*:** se necesitan actividades físicas y de estimulación cognitiva para promover la salud del anciano institucionalizado. Estos estudios son esenciales para la comprensión de la evolución del proceso de envejecimiento y el conocimiento de los posibles cambios que la institucionalización puede desencadenar. ***Descriptores*:** Ancianos; Cognición; Hogares para Ancianos.

[1]Dental surgeon. MS student in Gerontology at the Federal University of Pernambuco (UFPE). Recife (PE), Brazil. Email: neidemz@hotmail.com; [2]Dental surgeon. Ph.D. in Dentistry. Professor at the Department of Social Medicine of UFPE. Coordinator of the Elderly Care Center (NAI). Recife (PE), Brazil. Email: marciacarrera@hotmail.com; [3]Dental surgeon. Ph.D. in Legal Dentistry and Deontology. Professor at the Department of Social Medicine of UFPE. Recife (PE), Brazil. Email: rdzlegal@uol.com.br; [4]Nutritionist. Ph.D. in Nutrition. Professor at the Department of Social Medicine of UFPE. Coordinator of the Elderly Program (PROIDOSO). Recife (PE), Brazil. Email: marquesap@hotmail.com; [5]Occupational therapist. Ph.D. student in Neuropsychiatry at UFPE. Recife (PE), Brazil. Email: erikacarlagomes@yahoo.com.br

INTRODUCTION

Aging is a phenomenon that occurs both in developed countries and developing countries. According to the World Health Organization (WHO), in 2050 the number of people over 60 years of age will be around 3 times larger than the current one. The elderly will account for about 1/5 of the world population, i.e. 1.9 billion individuals out of a total of 9 billion, a fact that makes studies helping to improve health promotion and maintenance and elderly quality of life very important.[1] This change in population profile may be explained by falling birth rates and the significantly increased life expectancy due to scientific advances and changes taking place in the economy. Governments, national and international organizations and society itself have debated this issue exhaustively, in order to gather forces and face this reality.

Aging may become painful for many elderly individuals. Lack of social support, difficulty in dealing with aging itself, partner's death, financial difficulties, lack of family members or family abandonment, in short, situations that can trigger physical and mental illnesses, turn the elderly individual into a dependent human being in need of specialized care. In this context, homes for the aged (HA) become a viable and often unavoidable option for many individuals. These institutions are not just a shelter, but another stage of their lives, which will provide aging with dignity and quality of life.

Based on the classic concept proposed by Vieira[2], cognition is a term used to describe cognitive abilities or mental functioning that implies the ability to feel, think, perceive, remember, think, form complex thought structures, and the ability to produce responses to requests and external stimuli.

In natural aging, there is a progressive decline in these functions. Memory losses, especially difficulties to remember names, numbers, and objects placed somewhere are the most frequent ones.

Cognitive impairment (CI) in the elderly refers to individuals who have some degree of cognitive loss when compared to individuals at the same age group, but it does not substantially interfere with the ability to fulfill instrumental activities of daily living (IADLs)[3]; they are able to keep autonomy and independence in their lives. CI does not go so far as meeting the criteria for the diagnosis of dementia.

Some studies have suggested that CI may represent a risk factor for Alzheimer's disease, considering the conversion rate for this condition is around 10 to 15% per year, in contrast to that of normal individuals, where it ranges from 1 to 2% per year.[4]

Cognitive and functional diagnosis can contribute to planning actions that favor health promotion and maintenance of functional capacity in the elderly, improving their quality of life, reducing the risk of accidents, prolonging their autonomy.[5]

For these reasons, it is extremely important to investigate CI in institutionalized elderly individuals and potential associated factors, with a view to help developing public health policies and practices that minimize the occurrence of this disease.

METHOD

This study is an integrative review, with these steps: theme definition and formulation of a guiding question, definition of inclusion and exclusion criteria, definition of descriptors, pre-selection of articles, evaluation of articles to be included in the review, interpretation of results, and preparation of the review.

The selection of articles took place in November 2014, guided by this question: "Which are the factors associated with cognitive impairment in institutionalized elderly individuals?" These Brazilian Health Sciences Descriptors (DeCS) were used: elderly, cognition, and homes for the aged. The inclusion criteria used were: being an article; publication date between January 2009 and January 2014 in the databases Latin American and Caribbean Literature on Health Sciences (LILACS), Medical Literature Analysis and Retrieval System Online (MedLine), and Brazilian Nursing Database (BDEnf); published in Portuguese, English, or Spanish; full text available; research with institutionalized elderly individuals aged 60 years or over.

The exclusion criteria were: publications related to theses, dissertations, congress abstracts, proceedings, editorials, comments and opinions, review and intervention articles, and studies including in their sample people aged below 60 years.

The search strategy combined 2 or 3 descriptors through the connector "and" and "or" in the subject descriptor field.

The pre-selected articles were fully read and those selected were evaluated through two instruments. The first, adapted from the Critical Appraisal Skills Programme (CASP), provided by the Public Health Resource Unit (PHRU), prepared by the University of Oxford, in 1993.[6] The instrument was chosen due to its

proposal of objective, systematic, and user-friendly analysis. It consists of 10 items (maximum of 10 points), including: objective, methodological adequacy, presentation of theoretical and methodological procedures, sample selection, data collection procedure, relationship between researcher and participants, evaluation of ethical aspects, data analysis procedure, presentation of results, and research significance. The articles were classified according to these scores: 6-10 points - good methodological quality and low bias and a 5-point minimum - satisfactory methodological quality, but with increased risk of bias. In this paper, we chose to use only the articles classified from 6 to 10 points. The second instrument used was provided by the Agency for Healthcare and Research and Quality (AHRQ). Still Well[7] classifies papers according to the evidence level: Level I - systematic review or meta-analysis; Level II - evidence derived from at least one well-defined controlled randomized clinical trial; Level III - Evidence obtained from well-defined trials without randomization; Level IV - evidence from cohort and well-defined case-control studies; Level V - evidence from systematic review of descriptive and qualitative studies; Level VI - evidence from authorities' opinion and/or specialized committee reports.

The analysis of articles was descriptive, according to the data collection instrument, making it possible to evaluate these characteristics of each research: authorship, journal, language, study design, year of publication, instrument used, and factors associated with cognition.

RESULTS AND DISCUSSION

Nine articles were analyzed, which met the established inclusion criteria. Figure 1 shows the search results related to descriptors, according to the databases.

Database	Found	Pre-selected articles	Excluded	Analyzed
BDEnf	18	_	_	_
LILACS	323	15	9	6
MedLine	14,463	21	18	3
Total	14,804	36	26	9

Figure 1. Descriptors according to the databases.

As for the journals where the articles were published: 1 in psychology, 1 in psychogeriatrics, 1 in psychiatry, 1 in nutrition, 1 in social sciences and medicine, 1 in physical therapy, 2 in speech therapy, and 2 in nursing. Concerning the country where the research was conducted: 2 in European countries (Spain and the UK), 1 in an African country (Egypt), and 6 in South America (Brazil). Regarding the publication language: 3 in English and 6 in Portuguese. As for the institutions where the research was conducted, the 9 articles were affiliated with universities and/or hospitals. Concerning the research design: 2 had evidence level IV (cohort and case-control) and 7 had evidence level V (descriptive cross-sectional). Within the chronological interval considered in the review, only the year 2011 did not have studies consistent with the inclusion criteria.

Figure 2 displays a synthesis of the characterization of articles.

N	Title	Authors	Journal	Country	Study design	Year
1	Rastreamento cognitivo de idosos institucionalizados no Município de Jequié-BA	Reis LA, Torres GV, Araújo CC, Reis LA, Novaes LKN.	Psicol Estud	Brazil	Descriptive cross-sectional study	2009
2	Perfil das habilidades cognitivas no envelhecimento normal	Souza VL, Borges MF, Vitória CMS, Chiapetta ALML.	Revista Cefac	Brazil	Prospective cross-sectional study	2010
3	Association between food and nutrient intakes and cognitive capacity in a group of institutionalized elderly people	Vizuete AA, Robles F, Rodriguez-Rodriguez F, López-Sobraler AML, Ortega RM.	Eur J Nutr	Spain	Descriptive cross-sectional study	2010
4	Uso de medicamentos por idosos de instituições de longa permanência, Brasília-DF, Brasil	Oliveira MPF, Novaes MRCG.	Rev Bras Enferm	Brazil	Exploratory descriptive cross-sectional study	2012
5	The characteristics of residents in extra care housing and care homes in England	Barton R, Baumker T, Callaghan L, Holder J, Netten A, Towers AH.	Heal Soc Care Community	United Kingdom	Exploratory cross-sectional study	2012
6	Repercussão do declínio cognitivo na capacidade funcional em idosos institucionalizados e não institucionalizados	Trindade APNT, Barboza MA, Oliveira FB, Borges APL.	Fisioter Mov	Brazil	Observational cross-sectional study	2013
7	Comparação do equilíbrio, depressão e cognição entre idosas institucionalizadas e não institucionalizadas	Borges MOS, Rocha LR, Couto EAB, Mancini PC.	Revista Cefac	Brazil	Cohort and case control cross-sectional study	2013
8	Does self-reported sleep quality predict poor cognitive performance among elderly homes?	Amer MS, Hanza SA, El Akkad RM, Adbel Galeel YL.	Aging Ment Health	Egypt	Case study and control group	2013
9	Perfil cognitivo de idosos residentes em instituições de longa permanência de Brasília-DF	Ferreira LS, Pinho MSP, Pereira MWM, Ferreira AP.	Rev Bras Enferm	Brazil	Descriptive cross-sectional study	2014

Figure 2. Synthesis of the characterization of articles.

Figure 3 shows the instruments used to collect data and the results of factors associated with cognitive impairment in institutionalized elderly individuals for each review article.

N	Instrument	Results
1	MMSE	Institutionalized elderly individuals have higher cognitive changes. Institutionalized elderly individuals with low educational level have higher cognitive changes.
2	MMSE	Elderly people with high educational level (8-15 years) performed better in cognitive language assessments. Young elderly individuals performed better in the memory assessment related to evocation. Elderly women had better cognitive performance than elderly men in assessments involving memory skills.
3	MMSE	A diet rich in cereals, eggs, vegetables, and fish provide nutrients for proper brain function and, as a consequence, promote the maintenance of cognitive ability. A higher intake of saturated fatty acids increases cognitive decline.
4	_	Elderly individuals with cognitive impairment have a lower consumption of a classes of medicines; this condition affects the appropriate use of medicines. Institutionalized elderly individuals show increased adherence to drug thera because its administration is under the supervision of caregivers working at institutions instead of being up to themselves.
5	MDS CPS	Elderly individuals living in private accommodations who have some level of physical independence, over time, tend to have minor problems of cognitive impairment. Institutionalized elderly individuals who interact with elderly people showin multiple levels of dependence may have positive (feel supported) or negativ reactions (feel isolated, excluded from society), such feelings directly interfere with cognition.
6	MMSE	The cognitive state influences on depression and the functional activities of living. Institutionalized elderly individuals have worse cognitive performance, lowe functional activity, and higher depression state than non-institutionalized el individuals.
7	MMSE	The institutionalization of elderly women lead to changes in their lifestyle, personal projects. These changes, along with the feeling of abandonment, c decline in cognitive functions. Elderly women living in HA have an increased sedentary lifestyle, lose much autonomy, and these factors associated with aging accentuate the cognitive decline.
8	MMSE	Sleep quality in institutionalized elderly individuals is associated with cognitive dysfunction; the worse this quality, the higher the use of hypnotic when compared to non-institutionalized elderly individuals.
9	MMSE	Cognitive loss is more frequent among women than men. The lower the educational level, the higher cognitive loss. No relationship was found between age and cognitive loss.

Figure 3. Distribution of articles included in the integrative review, according to instrument used to collect data and results of factors associated with cognitive behavior in institutionalized elderly individuals.

The most frequently used instrument for assessing cognitive function (7 articles) was the Mini-Mental State Examination (MMSE), consisting of a test made up of several questions grouped into 7 categories, each of them designed to assess specific cognitive functions: time awareness, immediate memory, attention and calculation, evocation, remembering words, language, and visual ability.[8] An article used the Minimum Data Set Cognitive Performance Scale (MDS CPS), consisting of scores that range from zero (no cognitive impairment) to 6 (severe cognitive impairment). Only one article did not use an instrument to assess cognitive functioning, it chose to use the cognitive assessment by the professional team of institutions that classified the elderly into two groups: those who had discretion and those who did not have discretion.

♦ Age and cognitive impairment

Article 2 related age with CI and article 9 observed no relationship between age and CI. During senescence (healthy aging process) there is preservation of cognitive functions, which may be satisfactory (universal and inexorable physiological changes) or usual (age-related diseases). While in old age damage or injury occur at a higher level, with potential changes in the nervous system, causing cognitive impairment with loss to fulfill IADLs.[9] The age of the elderly does not interfere with cognitive performance, factors such as physical health status, self-care, contact with family members, interaction with friends and the church, and physical activities exert a more marked influence than age itself.[10] Memory does not get older in healthy elderly people, usually what happens is that it becomes less required, and gets worse due to lack of use. In order to be preserved, it must be exercised.[11]

♦ Gender and cognition

Article 2 reports that elderly women have better cognitive performance than men in memory assessments. And article 9 reports that cognitive impairment is more common in women. Old age, as a heterogeneous process, shows up differently for each individual and for the same individual over life. Usually women, throughout their lives, are less exposed to risky situations, either in their personal or professional life, they consume less alcohol and tobacco, they are more attentive to the emergence of symptoms and signs of disease, thus they live longer and consequently tend to age better.[12] CI is higher and more frequent in hypertensive elderly patients. Uncontrolled blood pressure associated with diabetes mellitus, smoking, alcohol, and obesity can further increase CI. Chronic diseases prevention and control can help in maintaining cognition.[3,13,14]

♦ Education and cognition

Articles 1 and 9 report that the lower the educational level of institutionalized elderly individuals, the higher cognitive loss and article 2 reports that institutionalized elderly people with high educational level (8-15 years) obtained better cognitive performance on language assessments. Age and educational level are factors directly related to CI.[15-17] The higher the educational level, the more difficult it will be to develop dementia and individuals with low educational level are more prone to develop dementia.[12,15,17,18]

Low educational level and institutionalization contribute in a decisive way to cognitive deterioration. Institutionalized elderly people are more likely to develop pathologies that cause more significant physical and psychological decay than non-institutionalized elderly individuals. In the elderly living in HA there is worse cognitive performance that leads to impairment of functional abilities and increased depression.[19]

♦ Diet and cognition

Article 3 reported that a diet rich in cereals, eggs, vegetables, and fish provide nutrients for the proper functioning of the brain and, as a consequence, it promotes the maintenance of cognitive ability, while an intake of saturated fatty acids increases cognitive decline. In HA there are many obstacles in order to reach the nutritional goals, such as institutional resources, financial management standards that directly or indirectly increase the risk of malnutrition, which can be influenced by individual conditions and residents' poor health. In institutionalized elderly individuals who need assistance to feed, the possibility of developing malnutrition increases.[9]

There are several factors influencing the choice of food for the elderly, it is needed to take their eating habits that have been built over life into account, which were acquired according to their income, family composition, cultural and religious values. Inadequate food favors malnutrition. A proper diet must take into account an elderly individual's health status, her/his ability to chew, swallow, digest, and absorb food for a better use of all nutrients.

♦ Medication and cognition

Article 4 reports that the consumption and use of medicines by the elderly are quite damaged by CI and that institutionalized elderly individuals have an increased adherence to drug therapy, because its administration is under the responsibility of the institution. Underuse of medicines for the elderly with CI is due to their cognitive status and, as a consequence, it is more susceptible to fail to comply with the therapeutic advice. In turn, in HA the administration of medicines is a responsibility of caregivers and, in many situations, there is no concern in advising the elderly with regard to the prescription, therefore, this lack of cognitive stimulation and the dependence elderly people experience in many institutions interfere with the development of cognition.[20]

♦ Institutionalization and cognition

Articles 1 and 5 to 7 reported that institutionalization favors CI either due to the elderly individual's withdrawal from community life or the physical inactivity often imposed by conditions in the HA. A predictor for institutionalization is advanced age, because every decade that goes by doubles the risk of functional disability and there is greater predisposition to chronic diseases. Elderly care is not an easy task, mainly in the Brazilian reality, where socioeconomic difficulties are huge, and the institutionalization becomes the only option.[21]

The better perception of overall quality of life, the better overall cognitive functioning. However, in old age quality of life does not seem to be linked only to the absence of disease and disability, but also to positive resources in the environment and the elderly individual's good psychological status. The negative self-perception concerning health is related to an increased risk of CI and a positive self-perception may be associated with greater severity of cognitive deficits,

something which may reflect a lower critical ability regarding the morbid state.[22]

Population aging and the increased survival of people with reduced physical, cognitive, and mental ability increasingly require that rest homes are not only a part of the social service network and become a part of the health care network, providing something more than a shelter.[23]

HA provide housing, hygiene, food, medical follow-up, but they take the individual away from family life, favoring social isolation and physical and mental inactivity, something which causes major damage to her/his quality of life.[24-26]

♦ Sleep and cognition

Article 8 reports that sleep quality in institutionalized elderly individuals is associated with cognitive dysfunction. The impact of aging causes changes in the sleep quantity and quality, and this affects more than half of the elderly people over 65 years who live in households and 70% of the institutionalized elderly people, with a negative impact on their quality of life. These modifications in sleep and rest change homeostatic balance, with repercussions on psychological functioning, immune system, behavioral response, mood, and ability to adapt. Sleep and rest are restorative functions needed for life preservation and they contribute to cognitive performance in the elderly.[27]

Sleep in old age may be influenced by factors such as: pain or physical discomfort, environmental factors, emotional discomforts, and changes in the sleep pattern (difficulty to sleep, difficulty to resume sleep, awakening in the morning earlier than desired), drowsiness and daytime fatigue, with naps and increased CI. This situation leads the elderly to consume hypnotic drugs, which are not free from side effects or drug interactions, and they are consumed along with other drugs (polypharmacy), prescribed or not, thus interfering with the health-disease process.

Sleep quality may be influenced by sleep conditions, such as: light, noise, temperature, roommate, behavioral or psychosocial changes (bereavement, retirement, reduced physical and social activities, isolation, institutionalization). Many of these situations are difficult to control or prevent in a HA.[9,27,28]

CONCLUSION

We emphasize that physical activities and cognitive stimulation activities are actions that become needed to stimulate an institutionalized elderly individual's health, keeping functioning and cognition, depression might be avoided or controlled, providing this elderly individual with an improved quality of life. The dependence degree often caused to the elderly varies according to the host institution, the HA often take all responsibilities that might be originally in charge of the elderly. Restrictions on physical activities, either concerning leisure or IADLs, contribute to the passivity of residents, making them increasingly dependent and, as a consequence, decreasing their functional and cognitive ability.

With the steady growth of the elderly population and the growing demand for HA, there is a need to raise awareness of the problems affecting this population, however, studies with institutionalized elderly individuals, from the viewpoint of cognition, are scarce in the literature. Such studies are of paramount importance to grasp how the evolution of the aging process takes place among these individuals, by seeking to know their needs and identify the potential changes that institutionalization can trigger.

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Corresponding Address

Ivoneide Maria de Melo Zimmermann
Estrada do Encanamento, 122, Ap. 701
Bairro Parnamirim
CEP 52030-210 – Recife (PE), Brazil