



Development of cognitive and motor stimulation activities: perspective of institutionalized elderly

Desenvolvimento de atividades de estímulo cognitivo e motor: perspectiva de idosos institucionalizados

Desarrollo de actividades de estímulo cognitivo y motor: perspectiva de las personas mayores institucionalizadas

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ABSTRACT

Objective: To analyze the development of cognitive and motor stimulation activities from the perspective of institutionalized elderly. **Method:** Qualitative research with 13 institutionalized elderly people from a municipality of Paraná, Brazil. Activities of cognitive and motor stimulation were carried out and, afterwards, semi-structured interviews. The data were submitted to Similitude Analysis using IraMuTeQ® software. **Results:** The graphic representation formed by the central zone "activity"; linked to the peripheral areas "head", "good", "difficult" and "easy", evidenced the perception of the elderly on the benefits of the activities. They considered that the activities, especially those of motor stimulation, generate health benefits, because they promote body exercise. The cognitive stimulus was related to the improvement of the performance of skills, such as memory, reasoning, concentration and attention. It was identified that in the category of motor stimulus, there are different degrees of difficulty among the elderly, related to the functional decline that they present. The activities provided leisure moments for the elderly. **Final considerations and implications for practice:** The institutionalized elderly experience a generalized routine limited to biological needs to the detriment of the stimulation of cognitive and motor functions. This stimulation is necessary in order to achieve comprehensive care for the elderly.

Keywords: Health of Institutionalized Elderly; Cognition; Mobility Limitation.

RESUMO

Objetivo: Analisar o desenvolvimento de atividades de estímulo cognitivo e motor na perspectiva de idosos institucionalizados. **Método:** Pesquisa qualitativa com 13 idosos institucionalizados de um município do Paraná, Brasil. Realizaram-se atividades de estímulo cognitivo e motor e, posteriormente, entrevistas semiestruturadas. Os dados foram submetidos à Análise de Similitude por meio do software IraMuTeQ®. **Resultados:** A representação gráfica formada pela zona central "atividade" ligada às zonas periféricas "cabeça", "bom", "difícil" e "fácil", evidenciou a percepção dos idosos sobre os benefícios das atividades. Os idosos consideraram que as atividades, especialmente as de estimulação motora, geram benefícios para a saúde, pois promovem o exercício corporal. O estímulo cognitivo foi relacionado à melhoria do desempenho de habilidades como memória, raciocínio, concentração e atenção. Identificou-se que na categoria de estímulo motor, existem diferentes graus de dificuldade entre os idosos, relacionado ao declínio funcional que estes apresentam. Ainda, as atividades proporcionaram momentos de lazer para os idosos. **Considerações finais e implicações para a prática:** O idoso institucionalizado vivencia uma rotina generalizada limitada às necessidades biológicas em detrimento do estímulo das funções cognitiva e motora. Essa estimulação é necessária, a fim de alcançar a integralidade da assistência à pessoa idosa.

Palavras-chave: Saúde do Idoso Institucionalizado; Cognição; Limitação da Mobilidade.

RESUMEN

Objetivo: Analizar el desarrollo de las actividades de estímulo cognitivo y motor desde la perspectiva institucionalizada de las personas mayores. **Método:** Investigación cualitativa con 13 ancianos institucionalizados de un municipio de Paraná, Brasil. Se realizaron actividades de estimulación cognitiva y motora y, posteriormente, entrevistas semiestruturadas. Los datos se enviaron a Similitude Analysis, utilizando el software IraMuTeQ®. **Resultados:** La representación gráfica formada por la zona central "actividad" ligada a las zonas periféricas "cabeza", "bueno", "difícil" y "fácil", evidenció la percepción del grupo sobre los beneficios de las actividades. Consideraron que las actividades, especialmente las de estimulación motora, generan beneficios para la salud, pues promueven el ejercicio corporal. El estímulo cognitivo se ha relacionado con la mejora del rendimiento de habilidades como memoria, razonamiento, concentración y atención. En la categoría de estímulo motor existen diferentes grados de dificultad entre las personas mayores, relacionado con la decadencia funcional que éstos presentan. Las actividades proporcionaron momentos de ocio para ellos. **Consideraciones finales e implicaciones para la práctica:** El anciano institucionalizado experimenta una rutina generalizada limitada a las necesidades biológicas en detrimento del estímulo de las funciones cognitiva y motora, esta fundamental para promover la integralidad de la asistencia a la persona mayor.

Palabras clave: Salud del Anciano Institucionalizado; Cognición; Limitación de la Movilidad.

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INTRODUCTION

Brazil, according to demographic data, is experiencing an accentuated transition in its age structure, in which the elderly are the population group that presents a marked growth throughout the country.^{1,2} Aging is characterized by morphological, functional, biochemical and psychological changes, comprising a complex and progressive process, usually identified when the individual already has some degree of impairment of their functional and cognitive capacity.³ Still, a significant portion of the elderly develop chronic diseases throughout their lives that can aggravate functional limitations, leading them to dependence on others and/or specific equipment for carrying out daily tasks and their own care.⁴

In view of this reality, it is observed a growth of this public in institutions that offer continuous care, known as Long Term Care Institutions for the Elderly (LTIE), which are committed to meeting the basic needs of the elderly, providing them with a better quality of life.^{3,4}

Functional capacity, especially the motor dimension, is one of the important markers of quality of life for the elderly and its compromising promotes limitation of mobility, which in turn leads to frailty, high risk of falls, dependence, institutionalization and death, generating long-term care and high cost for health services.^{4,5}

Cognitive deficit is directly associated with limited mobility, as brain diseases produce important motor changes in the individual. The decrease in the time of action and reaction, the loss of nervous tissue and the reduction of the production of neurotransmitters and of auditory, vestibular and visual acuity substantially influence the reduction of the motor stimulus.^{4,5} Cognition is understood as all aspects that involve mental functioning, such as: skills to express feelings, thoughts, perceptions, memories and reasoning, in addition to the complex structures that involve the ability to produce and provide responses to external stimuli.³

With institutionalization, the elderly can experience helplessness, demotivation, anguish and depression, as well as the progression of physical and cognitive limitations, especially in the face of a generalized daily routine, in which basic care is performed by third parties regardless of the elderly's own ability to perform it.^{4,6} This situation can be aggravated by the lack of cognitive and motor stimulation, due to the lack of specialized labor, deficit of human resources or the restriction of the institution's physical space.⁷

It is understood that the maintenance of the cognitive and motor capacity of the elderly person deserves attention, especially in the context of the LTIE, since the institutionalized elderly person is more vulnerable to the progression of cognitive and motor declining. It is necessary to develop interventions by health professionals, with a focus on the quality of life and on active and healthy aging, which enable the preservation of these aspects in the elderly population. In this sense, the aim of this study is to analyze the development of cognitive and motor stimulation activities from the perspective of institutionalized elderly.

METHOD

This is a descriptive study with a qualitative approach developed in a philanthropic LTIE in the northwest of the state of Paraná, Brazil. The institution under study is the field of action of an extension project carried out by the Nursing course at the Universidade Estadual de Maringá (UEM). The project counts on the participation of undergraduate, master's and doctoral students who weekly carry out activities with the elderly.

During 2017, among the project's activities, nursing consultations were held that addressed socioeconomic, psychological, family aspects and data related to the health of the elderly, in order to identify their characteristics and needs. From this, the motor and cognitive deficit was identified as one of the main nursing diagnoses of this population, being the focus of the project's activities in 2018.

Based on research on cognitive and motor stimulation, the project group carried out activities adapted for the elderly, which addressed various actions such as: board games (dominoes, cards, checkers, chess, puzzle games); sensorial games (stimulation of touch, smell, hearing and vision); manual activities (modeling art, painting and drawing with crayons, gouache paint and colored pencils, paper folding and origami); reasoning activities (crossword puzzles, word hunt, spot the difference game, game of linking pictures/words, memory game, among others); figure bingo; bowling; ring toss game; agility and balance activity with bladders and balls; stretching and physical exercise with different materials such as balls, hula hoops, among others.

During 2018, 15 elderly people participated in the activities, with their frequency recorded weekly. This research approached these elderly people according to the following inclusion criteria: having participated in the activities in the last three months of the year 2018 and being able to answer the study questions, after obtaining the minimum score of the assessment cognitive test of Mini-Mental State Examination (MMSE). The MMSE is organized into two sections that measure cognitive functions. The first contains items that assess orientation, memory and attention, totaling 21 points; the second measures the ability to nominate, obey a verbal command and a written one, free writing a sentence and copying a complex drawing (polygons), comprising nine points. The total score is 30 points⁸.

The minimum score to be considered varies according to the education of the individual assessed. Therefore, for the application of this test in the participants of the present study, the following cutoff points were considered: score below 20 points for illiterate elderly people; 25 points for elderly people with one to four years of study; 26.5 for elderly people with five to eight years of study; 28 points for the elderly with 9 to 11 years of study; and 29 points for elderly people with more than 11 years of study.⁸ Thus, among the 15 elderly people evaluated by the test, 13 obtained the minimum score. One presented communicative incapacity for the application of the MMSE, as well as for the interview on the activities of cognitive and motor stimulation, and another refused to participate in the research.

An individual interview was carried out with each elderly person, in June 2019, through a semi-structured script with the following guiding questions: How do you evaluate the activities developed in the stimulation workshops?; What activity(ies) did you most enjoy participating in? Comment on the reasons; What did you feel when carrying out the activities?; Did you have any difficulties while carrying out the activities? If so, what difficulty(ies)?; Which activity(ies) did you find easier? Comment on the reasons.

The interviews were recorded and transcribed in full and, subsequently, grouped, thus configuring the *corpus* that was submitted to lexicographic analysis using the software Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires – IraMuTeQ®, developed by Pierre Ratinaud, which aims to discover the essential information contained in a text, through statistical text analysis. Although we talk about quantitative analysis of textual data, it does not fail to consider the quality of the studied phenomenon and, still, it provides criteria from the material itself to consider it as an indicator of a phenomenon of scientific interest.⁹

This software enables various types of textual data analysis, such as similitude analysis, used in this research, which is based on graph theory and makes it possible to identify the co-occurrences between words, indicating the frequency and the connection between them, helping to identify the structure of representation.⁹ The graphic structure generated from this analysis showed a central zone linked to four peripheral zones. Then was carried out the interpretative analysis of the words within each zone and its relation with the others.

The research was performed after authorization from those responsible for the LTIE and approval of the research project by the Research Ethics Committee Involving Human Beings at the Universidade Estadual de Maringá (COPEP/UEM), according to Resolution No. 466/2012¹⁰ and No. 510/2016¹¹, under opinion no.3.358.062/2019. To guarantee the anonymity of the research participants, the speeches were identified by the letter “E”, followed by the Arabic number, according to the order in which the interviews were conducted.

RESULTS

Among the elderly people, the prevalence of the male sex and the variation in age between 63 and 90 years stands out. As for education, 11 attended only elementary school, one was illiterate and one elderly woman completed higher education. Regarding the presence of diseases or limitations, mobility difficulties and the use of walking aids such as a cane, a walker and a wheelchair were identified in five elderly people. Of these, two had impaired manual dexterity to perform simple movements such as grabbing objects. The occurrence of depression in two elderly people stands out, one of whom still had the diagnosis of Alzheimer’s in the first stage, with symptoms such as recent memory loss and disorientation regarding time and space.

Figure 1 shows the graphic representation formed by the central activity zone (n=88) that is connected to the peripheral areas head (n=56; “*cabeça*”), difficult (n=50; “*difícil*”), good (n=42; “*bom*”) and easy (n=36; “*fácil*”) each linked with the words that have connection.

In relation to the central activity zone, its connection is identified with several words. Five most frequent stand out: taste, body, health, important and intelligence. From the analysis of this zone, are noted that liking the activities was fundamental for the adherence of the elderly and the fact that liking and participating are related to the benefits of these activities for the body and, consequently, for their health. This connection found in the activity zone is demonstrated by the speeches below.

I like activity, I like everything that moves the body, we need to be careful not to dismay. I'm an old lady and I think I'm fine for my age. I like these activities, I like to exercise, we feel fine, I stay more agile, smarter, and slenderer. Look at the body! (stands and shows the body). (E9)

These activities help the body, help the body's spring, the joints. We are still moving it all, we are moving the body, we make several movements. So it helps health. (E12)

The activities developed were considered important by the elderly due to the learning opportunity that they provided, because when performing them there was an expansion of their skills, which had been limited throughout life due to educational factors or lack of opportunity.

I've been here for 12 years, it's the time of a study, for people to do a master's, doctorate, so it's important to do activities here that improve the head, that trains the head. (E4)

[...] doing these activities is very important, because we talk, we learn more, you teach many things that we don't know. I didn't know how to paint, I learned it here. (E5)

These activities are very important, because there are people here who don't even know how to write their name, so these activities help in learning. (E6)

When carrying out these activities, the elderly had the possibility to develop reasoning, stimulate memory, concentration and attention, aspects directly linked to mental function, as shown in the head peripheral zone, linked to the words: help, improvement, memory, fundamental and stopped. The elderly perceive these activities, especially the word hunt and crosswords, as an opportunity to continue developing their skills, so that they do not lose them, which for them would be configured as being stopped.

When doing the activities I felt superior. I think my intelligence is still good. The activity does this with us, I feel good, useful. (E4)

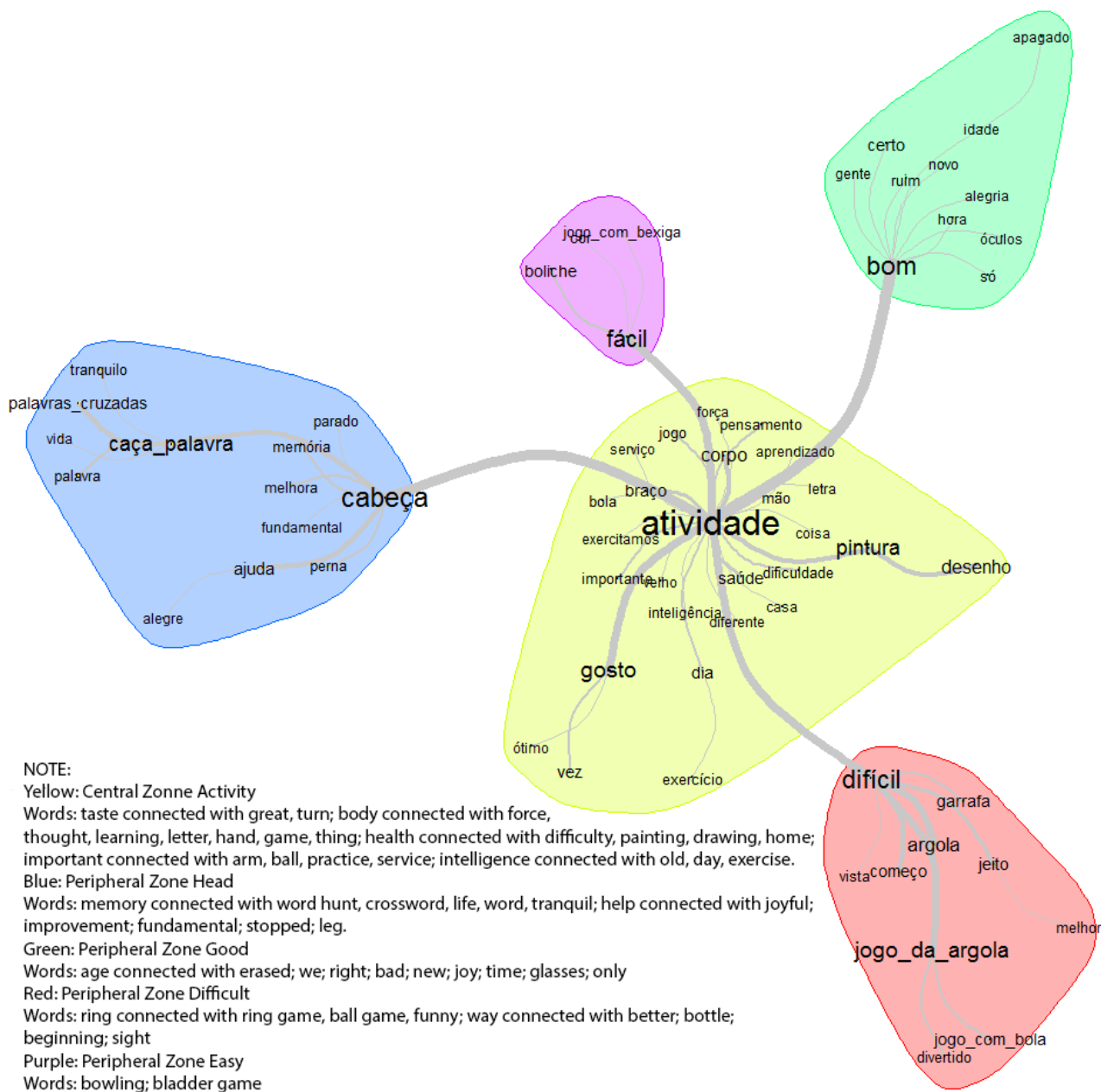


Figure 1. Similitude analysis: perception of the elderly about cognitive and motor stimulation activities
 Source: Developed by the authors using IramuTeQ® software.

Everything that trains the mind I think that favors me, so we don't just stand there making the basics. Stopping is not good. I like everything that helps the head, that improves the brain, I think it is fundamental to not be stuck in time. If I stop, I will rust. This is important in order not to fade, not to disappear. (E7)

When analyzing the speeches, one also perceives an even broader meaning given to these activities, the sense of identity, because when performing them they feel that it is possible

to maintain their cognitive skills, which are synonymous with personality, giving them the sense of being an individual with knowledge and preserved mental capacity.

From the analysis of the good zone, related to the most often words bad, joy, time and age, it is possible to identify that these activities represent a moment of leisure for them, within the routine in which they are inserted in the institution. It is noteworthy the lack of frequent leisure activities in this LTIE, due to the organization of the work of the professionals of this place, with a routine of generalized

care that resembles a hospital sector, in which curative activities stand out.

[...] we spend the day here with bad thoughts and then we do the activity and it seems that the head gets good, it becomes better to think and the bad thought goes away and we spend this hour well, laughing, thoughts get better. Sometimes the person has a bad thought and she has fun there, gets distracted and doesn't think about it anymore. (E8)

I thought the activities were good, fun, it's a joy, it was good. We have fun with the activities and don't even see the time go by. (E11)

Being involved in cognitive and motor stimulation activities takes them out of the institution's daily routine, giving them the opportunity to improve, even if for a short period, the feelings of anguish and suffering. Thus, it is highlighted the possibility of these activities being instruments for the prevention of depressive symptoms or, even, therapeutic to minimizing these problems when already installed.

The elderly themselves identify that experiencing old age can lead them to a state in which they are no longer stimulated and start to be recognized as individuals who do not have cognitive and motor skills, evidenced by the word age, which is directly linked to the term erased. But when doing the activities, they demonstrate that this is not the reality, because being elderly is not synonymous with being stopped, useless or unable to continue developing daily activities.

I feel important, I think: Wow, I'm not erased, there are many of my age who are fading, they don't do anything, and I do. It is very good to do these activities. We must keep moving, it's not because you're an elder that you have to be erased. (E9)

The area difficult connected to the words beginning, sight and way, is associated with the term better, which highlighted the importance of constant cognitive and motor stimulation, so that the frequency provides improvements in the aspects worked on. Initially, the elderly may present some degree of difficulty in understanding and carrying out activities, but with frequent encouragement, it is possible to promote the overcoming of these difficulties, also being a motivation for them to adhere to future activities.

I was getting the hang of it and throwing with more force and so the ball entered the target. I believe that if I do it again, it will be better, I will be more practiced. (E1)

At the beginning it is more difficult, but then we get used to it, we learn the way and it gets better. Now this is not difficult anymore, after we learn it becomes easier. Another

day that has the activity we will already know how to do, because we do not forget anymore. (E13)

In this zone, it is also shown that motor stimulus activities, represented in this zone with the terms ring game and ring, were considered more difficult compared to those that stimulate cognition. This may be linked to the fact that the elderly have a functional decline due to the senility process.

The ring game is more difficult because of the sight, you have to aim, you have to go there and take aim and get the hang of it. (E10)

However, this was not a factor preventing or discouraging participation in activities, which allows the reflection that, regardless of the impairment that the elderly person has, this should not be seen as an obstacle to promote cognitive and motor stimulation.

When interpreting the similitude analysis figure, we identified that contrary to the difficult zone is the easy zone, which also refers to motor stimulus activities. This configuration shows that in the same stimulus category, there are different degrees of difficulty among the elderly. The elderly person may show several signs of functional decline, for example, limited mobility due to the decline in gait, but still maintain hand movement preserved. Thus, developing various activities with different characteristics that focus on the various reflexes and body skills, increase the chance of preserving and rehabilitating these aspects of the elderly.

DISCUSSION

Throughout the year, the elderly began to show more interest and, consequently, greater adherence to activities, evidenced by the frequency record and their permanence throughout the duration of the actions. Initially, few elderly people remained until the end of the activity, but in the last three months of the schedule, all remained participative until the end, especially in view of different activities with different and attractive materials. Due to the institutionalization routine, the elderly have a large availability of free time, leading to idleness. Allied to the small variety of activity to which he/she is exposed to or develops, the institutionalized elderly person is usually motivated by the most diverse forms of action that are offered to him/her and, when there is variety or connection with the playful, he/she is even more motivated.¹²

A study carried out in the capital of Rio Grande do Norte, Brazil, evaluated cognitive aspects in institutionalized elderly people through the application of the Mini-Mental State Examination, identifying a low score among them. After cognitive stimulation for two months, the same elderly people underwent a new exam and they maintained or increased their score, showing that the stimulation had a positive effect on cognition.³

The beneficial impact that cognitive and motor stimulation programs have on physical and mental health in institutionalized

elderly people has been discussed in several studies. It is noteworthy that even in those with functional impairment, this stimulation is necessary to maintain their cognitive and motor functions not yet affected and allow them to compensate for those that already show some decline.^{3,13,14}

Aging is associated with progressive functional loss in multiple systems, including the sensory system, cognitive system related to learning, memory, language, attention, in addition to motor and emotional control. However, it is known that the brain preserves plasticity, making it possible to slow its rate of decline by means of stimulation programs.¹⁵⁻¹⁷ Brain plasticity is the ability of the nervous system to change, adapt at a structural and functional level along neuronal development and, when subject to new ideas, increases the performance of different domains. In this sense, the brain's plasticity in the elderly is the key to permanent learning and maintenance of mental functions.¹³ This possible mechanism predicts that the neural substrate, indispensable to cognitive processes, can be improved, translating into better performances, arising from the insertion of the elderly in environments that increase sensory, motor and cognitive stimulation.¹⁵

The maintenance of cognition in the elderly is essential for the prevention of cognitive impairment and the minimization of the onset of dementia, dependence and disability for self-care, promoting improvement in quality of life and enabling active aging.¹⁵

The cognitive functioning of the elderly person is also related to their psychological well-being, which refers to the individual's ability to have a positive view about themselves, about others and about life. It is about the sense of dominance and autonomy, the cultivation of quality interpersonal relationships, a sense of purpose, of meaning in life and of having a continued development in old age.¹³

Regarding motor stimulation, it is noteworthy that the insufficient practice of physical activity can cause damage to the health and quality of life of individuals, facilitating the appearance of hypokinetic diseases at all ages, accentuating in older age groups. The low level of physical activity in the elderly can accelerate functional decline and impair daily activities, resulting in disability, insecurity and dependence.¹²

Motor stimulation activities provide countless benefits to the individual, such as improving flexibility, aerobic resistance, muscle strength, developing balance and manual dexterity, promoting well-being, in addition to having a positive influence on chronic diseases, minimizing risk factors for occurrence or worsening of these. The possibility of making them with different materials, even simple and hand-made items, stands out¹², as was done in this research, in which physical activities, as well as those of cognitive stimulation, were made possible through objects and simple games that did not demand high financial investment or complexity of materials. In this sense, the performance of motor stimulation activities within the context of the LTIE becomes possible and essential for the maintenance and rehabilitation of the health of the elderly.

The cognitive and motor stimulation activities carried out in the present study were directly linked to leisure, evidencing another fundamental need of these elderly people. In addition to the benefit on physical and mental health, the activities provided the opportunity to experience pleasurable moments that stimulated interpersonal relationships, affection and distraction. Leisure represents one of the basic determinants for the promotion of a healthy life and, when close to the fields of health, it allows different ways of acting in the improvement of mood, anxiety and depression. In this context, leisure provides the opportunity for cognitive, affective and behavioral development, emerging as an emancipatory and empowerment instrument for the elderly, contributing to their biopsychosocial balance.¹⁸

Regarding the institutionalization process, it is emphasized that the lifestyle with less abundance of stimuli and social isolation, contributes to the faster progression of cognitive and motor decline in this group compared to the elderly living in the community. The LTIE have particularities such as the equal and simultaneous treatment for all residents, the noticeable degree of control over the affairs and routine of residents, limiting the degree of autonomy of those who live there. Given this, there is a need to promote activities that can add value in these places, more dynamism, integration and autonomy.^{19,20}

The weakness in cognitive and motor stimulation, as well as in the promotion of leisure in these institutions, may be related to the financial and human resources difficulties that these usually present, especially the philanthropic ones, such as the institution under study. These difficulties lead to an overload of tasks among professionals and prioritization of the biological needs of the elderly, such as body hygiene, food and pharmacological treatment of diseases.^{6,19}

It is essential that the LTIE organize their environment and work process with the view to satisfy the multiple physical, mental and emotional needs that elderly people have, in order to provide them with a satisfactory daily life, both as individuals and as participants in community life. In view of the difficulties that these institutions have, the partnership between them and the external community is essential. In this sense, the role of universities, especially health courses, can provide multi-professional actions in order to cover the diverse needs of the elderly, whether through internships and extension and research projects.⁶

FINAL CONSIDERATIONS AND IMPLICATIONS FOR PRACTICE

Faced with institutionalization, the elderly experience the generalized routine and the limitation of cognitive and motor development, a reality detrimental to their physical and mental health, also influencing their sense of subject, that is, of personality before the community. Thus, the insertion of stimulation programs in the context of the LTIE is necessary and urgent to minimize the functional decline and to achieve comprehensive care for the elderly.

In a same institution, it is possible to find elderly people with different degrees of frailty, with different physical and mental limitations, which initially can be configured as an obstacle to the performance of stimulation activities. However, the performing of these in the present study showed that, regardless of the limitation that the elderly person presents, he/she has an interest and ability to develop them. Therefore, the importance of the continuous practice of stimulation is emphasized, seeking to maintain healthy functions and, even, rehabilitation of those who already show impairment.

Even taking into consideration the importance of cognitive and motor stimulation of institutionalized elderly people, one should regard the limited human resources available to provide assistance to this group, since institutions often have a large number of residents inversely proportional to the number of professionals. Still, nursing is the dominant professional category in this area, being responsible for the great demand for care of the elderly. Therefore, it is necessary to expand the number and specialty of professionals working in this context, with emphasis on those who can contribute to the complementing of care such as a psychologist, occupational therapist, physical educator and physiotherapist. Thus, the need for multi-professional work in assisting the needs of the elderly is highlighted, since as individuals, they have different care needs that go beyond the assistance of biological aspects and activities of daily living.

The present study did not aim to statistically analyze the impact of the activities carried out on the physical and mental health of the elderly, but rather to know the value of this experience for them. It is considered that understanding their perception about cognitive and motor stimulation is fundamental for the planning and execution of these programs.

AUTHOR'S CONTRIBUTIONS

Review study design. Acquisition, data analysis and interpretation of results. Writing and critical review of the manuscript. Approval of the final version of the article. Responsibility for all aspects of the content and the integrity of the published article. Pâmela Patricia Mariano. Data analysis and interpretation of results. Writing and critical review of the manuscript. Approval of the final version of the article. Responsibility for all aspects of the content and the integrity of the published article. Lígia Carreira. Ane Caroline Rodrigues Miranda Lucena. Writing and critical review of the manuscript. Approval of the final version of the article. Responsibility for all aspects of the content and the integrity of the published article. Maria Aparecida Salci

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