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The use of hyperprotein and creatine supplementation in palliative elderly patients on cognition, functionality and sarcopenia

El uso de suplementos de hiperproteína y creatina em pacientes ancianos paliativos em cognición, funcionalidad y sarcopenia
O uso da suplementação hiperproteica e creatina em pacientes idosos paliativos na cognição, funcionalidade e sarcopenia

ABSTRACT

Aging is a natural process, often affected by palliative diseases, the use of oral supplements can improve factors such as sarcopenia, cognition and functionality. Objective: To analyze the use of hyperprotein supplements and creatine in elderly patient-swuth palliative diseases in relation to the improvement of cognitive function, functionality and sarcopenia. Methodo: This is an integrative literature review article in the PubMed, SciELO, Google Scholar, LILACS databases, in the period 2016-2020, using the DeCS descriptors, aging, "palliative care,"nutritional supplements", Elderly frail", "cognitive dysfunction", "sarcopenia and creatine, in Portuguese and English. Result: 200420 articles were found, after a careful Reading, only 62 articles were selected, being divided into three sections showing the effects of hyperprotein and creatine supplementation in palliative elderly. Conclusion: But studies are needed to prove the use of supplements in palliative elderly patients to improve sarcopenia, functionality and cognitive impairment.

DESCRIPTORS: Palliative Care; Creatine; Sarcopenia.

RESUMEN

El envejecimiento es un proceso natural, muchas veces afectado por enfermedades por enfermedades paliativas, el uso de suplementos orales puede mejorar factores como la sarcopenia, la cognición y la funcionalidad. Objetivo: Analizar el uso de suplementos de hiperproteínas y creatina en pacientes ancianos con enfermedades paliativas en relación con la mejora de la función cognitiva, la funcionalidad y la sarcopenia. Metodo: Se trata de un artículo de revisión integradora de la literatura em las bases de datos PubMed, SciELO, Google Scholar, LILACS, en el período 2016-2020, utilizando los descriptores DeCS, envejecimiento,"cuidados paliativos", suplementos nutricionales", ancianos frágiles', disfunción cognitiva", sarcopenia y creatina, en portugués e inglés. Resultado: 200420 artículos se encontraron, luego de una lectura atenta, solo se seleccionaron 62 artículos, divididos em tres apartados que muestran los efectos de la suplementacion con hiperproteina y creatina em ancianos paliativos. Conclusión; Pero se necesitan estudios para probar el uso de suplementos em pacientes ancianos paliativos para mejorar la sarcopenia, la funcionalidad y el deterioro cognitivo.

DESCRIPTORES: Cuidados paliativos; Creatina; Sarcopenia.

RESUMO

O envelhecimento é um processo natural, muitas vezes acometidos por doenças paliativas, o uso de suplementos orais pode melhorar fatores como sarcopenia, cognição e funcionalidade. Objetivo: Analisar o uso de suplementos hiperproteicos e creatina em pacientes idosos com doenças paliativas em relação a melhora da função cognitiva, funcionalidade e sarcopenia. Método: Trata-se de um artigo de revisão integrativo de literatura nas bases de dados PubMed, SciELO, Google Scholar, LILACS, no período de 2016-2020, utilizando os descritores do DeCS, envelhecimento, "cuidados paliativos", "suplementos nutricionais", "Idoso fragilizado", "disfunção cognitiva", sarcopenia e creatina, em idiomas português e inglês. Resultado: Foram encontrados 200420 artigos, após uma leitura criteriosa, apenas 62 artigos foram selecionados, sendo dividido em três seções mostrando os efeitos da suplementação hiperproteica e de creatina em idosos em paliativos. Conclusão: Mas estudos são necessários para comprovar o uso de suplementos em pacientes idosos paliativos na melhora da sarcopenia, funcionalidade e déficit cognitivo.

DESCRIPTORES: Cuidados Paliativos; Creatina; Sarcopenia.

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INTRODUCTION

The Elderly Statute considers elderly people to be 60 years of age or older.¹ When compared to other countries such as China, India, the United States and Indonesia, it is suggested that in 2050, it will be the fifth largest aging population in the world, with the need for this aging to occur actively.² Senescence is a natural process that results in decreased functional capacity and attenuation of organic defense mechanisms, when the functional reserve of the elderly is insufficient, this process can culminate in the emergence of senility demanding Palliative Care (PC's).³

According to the PC's manual - National Academy of Palliative Care. PC'S are approaches that aim to promote quality of life for patients and family members who face progressive and life-threatening diseases.⁴ In the literature, it is possible to observe that the majority of palliative patients have sarcopenia.⁵

Sarcopenia in the Elderly is considered a muscular disease, resulting in an increased risk of falls and fractures which results in losses in activities of daily life (ADLs) and Instrumental activities of daily living (IADL). With loss of strength as a central component associated with decreased muscle mass.⁶ Some oral supplements can be beneficial for improving sarcopenia.⁷ In sarcopenic elderly it is necessary to guarantee a greater supply of proteins (PTN's) that can attenuate this anabolic resistance, which can be 1,2-1,5 g/kg/day of PTN's.⁸ Many elderly people do not reach the necessary number of PTN's.

Hyperproteic supplements may decrease the effects of sarcopenia in the elderly⁹ being an alternative to guarantee the minimum daily quantity of PTN's in most cases.¹⁰ According to BRASPEN's guideline on nutritional therapy in aging, it is essential to use oral supplements in patients where nutritional needs are greater than energy expenditure.¹¹

Creatine is another supplement used - a compound of the amino acids arginine, glycine and methionine, as a good alternative in elderly patients with sarcopenia, improving the rate of protein metabolism.¹² It can be used to improve patients who have suffered trauma to the Central Nervous System or who have neurodegenerative diseases improving cognition.¹³

The aim of this study is to analyze in the scientific literature, the use of hyperprotein and creatine supplement in elderly patients with palliative diseases and in palliative care to improve cognitive function, functionality and sarcopenia.

METHODS

This article consists of an integrative literature review on the topic, of articles published mainly in indexed journals, in the databases. Via Medline database (PubMed), Scientific Electronic Library Online (SciELO), Google Scholar, Latin American and Caribbean Health Sciences (LILACS), from 2016 to 2020, in Portuguese, English and Spanish, using the descriptors registered in DeCS: Envelhecimento; Cuidados paliativos, Suplementos nutricionais, funcional como Idoso fragilizado, cognitivo como disfunção cogniti-

va, sarcopenia, creatina. Applying the and and or connectors and the following health descriptors in the sections.

The inclusion criteria of the articles were based on those that met the proposed idea of the theme, covering the elderly population, the time chosen for analysis in the last five years, with the use of hyperprotein and creatine supplementation to improve sarcopenia, functionality and cognition in the elderly with illnesses and palliative care, as well as articles that aimed at the importance of care in this vulnerable group, improving the quality of life and decreasing the costs of the Unified Health System (SUS). Priority was given to articles that had no conflicts of interest.

Articles that did not fit the year were excluded, in the proposed descriptors as well as the themes that were not carried out or that were not elderly, in the supplement sections, those that did not mention hyperprotein or creatine supplements were excluded. For the purpose of this study, patients in (PC's) with an emphasis on oncology from discovery to treatment and the various health impacts were considered, decreasing functionality and generating other disorders such as sarcopenia that directly influences nutritional status and treatment success¹⁴, also implying the assistance impact on SUS. According to a study by the oncology observatory, using data from the Ministry of Health, Brazilian Institute of Geography and Statistics⁵, the 2016 annual cost for cancer patients by SUS reached approximately R\$ 4 million, most of which in clinical and surgical procedures.

The complete reading resulted in 63

articles, being these 30 articles from Google Scholar, 20 articles from PubMed, 9 articles from SciELO and 3 articles from LILACS. A total of 200353 articles were excluded that did not meet the required characteristics.

RESULTS

A total of 63 articles were used to analyze aspects of aging, palliative diseases and the relationship between oral supplementation of hyperprotein and creatine in improving sarcopenia, functionality and cognition and the impacts on SUS. Public policies were also researched to understand the current context and how nutrition can be crucial to increase its effectiveness in palliative elderly.

It was divided into three sections, the first section relating to aging and public policies, the second section subdivided into two more sections on diseases and PCs, which affect the elderly and their quality of life, pathological factors that influence sar-

copenia, cognition and functionality and hypoprotein and creatine supplementation to improve these conditions. And the third section subdivided into two more sections on the nutritional status in palliative elderly and the relationship between oral supplementation of concentrated hyperprotein and creatine in sarcopenia, cognition and functionality. For data analysis, the Prisma method was used.

DISCUSSION

The impact of aging and public policies to mitigate causalities

The elderly population is growing abruptly and as a cofactor this aging is combined with Noncommunicable Chronic Diseases (NCDs). Regarding Brazil, the estimate is that the elderly population will reach 35% in 2070.¹⁶

Aging can generate changes in both the social, physiological and biological context.¹⁷ It is important to maintain and improve activities of daily life (ADLs) and

instrumental activities of daily life (AVIs). Along with aging, some markers are altered, such as a greater concentration of abdominal adipose tissues and a reduction in muscle mass (MM).¹⁸ It is necessary to make active aging, improving the quality of functional life.¹⁹

The various changes caused by aging require the search for active aging, a term created by the WHO, to ensure health, quality of life, rights, primacy and functionality of the elderly.²⁰ Several policies have been created to ensure this support.²¹ Active aging should have a general well-being, ensuring that these elderly people are able to perform ADLs that are related to self-care and IADLs that require a better awareness of the interaction with the environment in which they live.²²

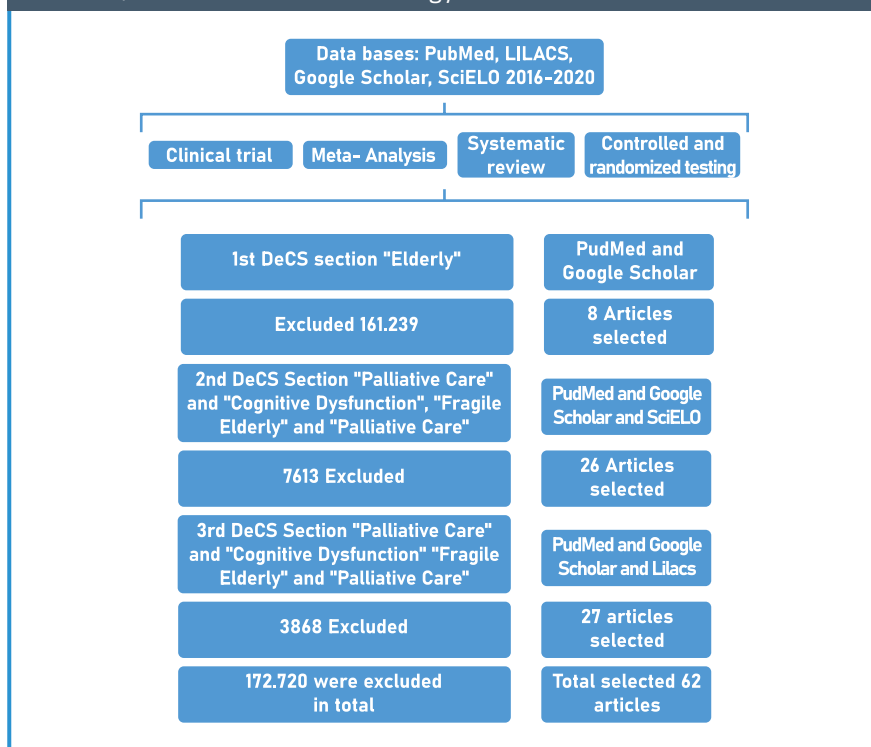
Although there are several programs in order to improve the quality of life of the elderly, there are still difficulties in the care context. The National Health Policy for the Elderly with the main aim of recovering, maintaining and promoting the health of this public reinforces the importance and the need to monitor the scientific way necessary to improve aging and reduce NCDs.²³ With all these issues, outline strategies that help in the health of the elderly, decreasing the expenses of the SUS, which increase with advancing age, which can be returned in better support in public health.²⁴

Despite the various losses and deficits caused naturally by the aging process, this does not mean that it must be affected by several diseases, but the current scenario is that many individuals are going through this process with several deleterious effects, requiring care among them PC's.²⁵

Palliative Diseases and Palliative Care in the Elderly

It is estimated that in 2030 the increase in life expectancy will be associated with an increase in (NCDs) that will result from $\frac{3}{4}$ of all deaths with emphasis, for cancers that will require PCs.²⁶ When the functional reserve of the elderly is insufficient, this process can culminate in the emergence of (senility) that may demand

Figure 1. Represents the organization chart in the prism format of article selection, based on the search strategy described in the methods.



(PC's).²⁷ Aging brings about a change in body composition that can result in malnutrition, with a reduction in muscle mass (MM) and intracellular water and an increase in adipose tissue, generating a progressive increase in weight up to 70 years of age and from then on, the reduction of endocrine-metabolic stimuli, the weight loss process begins.²⁸

According to the WHO, 40 million people need PCs per year and of these, 78% do not have the financial means to carry out the treatment in a particular way. And many policies do not yet include PCs, and applicability at the onset of illnesses is essential.²⁹ The PC's aim to care for the individual, his family environment and his beliefs, with the aim of promoting the improvement of the quality of life.³⁰

In Brazil, most deaths in the elderly are related to (NCDs) and cancers, with greater dependence on (SUS), since hospitalizations are longer than when compared to young individuals, an instrument used in patients with diseases palliative is the Palliative Performance Scale (PPS), after its application it is possible to have a conception about the integrity, comfort, dignity and quality of life of the patient.³¹ The PPS can also be used to indicate the elderly who need PCs and the evolution of the patient's diagnosis.³²

Palliative disease is any chronic disease that has no cure, the most prevalent in the elderly are: oncology, those that generate neurological damage with poor prognosis, Alzheimer's, dementia, Chronic Obstructive Pulmonary Disease (COPD), Parkinson's, brain tumors.³³ Most geriatric patients with palliative diseases have several demands, and it is extremely important that the home team understands the needs of the patients.³⁴ One of the functions that have a great impact on the life of these senile is cognition, causing a drop in quality.³⁵

Cognition in aging associated with palliative diseases

With advancing age, one of the disorders is cognitive decline.³⁶ It is vital that health professionals understand that PCs

should not be limited only to patients at the end of life, some factors in palliative patients such as cognitive ones are often not evaluated, according to a study carried out with 70 patients in one geriatric unit, only 11% were aware of their disease.³⁷

The cognitive factor is affected in palliative patients with malignant neoplasms, with a decline in cognitive domains, which may be related to treatment with an increase in pro-inflammatory cytokines and may be directly related to cognition.³⁸

One of the clinical protocols for the assessment of the elderly in cognitive dysfunction is the Mini Mental State Examination (MMSE), accepted worldwide, being able to assess the degree of dementia, response to treatment suggested in improving cognition, and the level of difficulty for application is low.³⁹ The mild cognitive dysfunctions present in palliative diseases such as cancer at an advanced stage, may be related to treatment, health professionals must remain attentive to all signs.⁴⁰

A study analyzing 87 elderly patients with cancers, using the MMSE, showed that 29% of the patients had cognitive decline, more present in the female gender and that this cognitive return can generate a poor quality of life for these patients who can also present functional decline.⁴¹

Functional Decline in Elderly People Affected by Palliative Diseases

Functional decline can occur naturally as a senility process, which is aggravated when associated with palliative diseases.⁴² Functional capacity offers individuals independence, enabling them to perform their daily and instrumental activities. One of the instruments used is the Kartz scale; a study evaluating 150 elderly patients with the majority of male patients seen in the home environment showed that interventional actions to improve functional recovery can improve the quality of life of palliative patients.⁴³ Anabolic resistance is very present in elderly patients, resulting in the degradation of Muscle Mass (MM) and decreased strength.⁴⁴

Another study evaluating 94 individuals, in PCs, approximately 60 years old, in Brazil, with advanced cancer, with the highest prevalence of the female gender, with the most representative cancers among the groups being gastrointestinal, breast and lung, showed that 40% had a functional decline.⁴⁵ In cancer patients in PCs, maintaining functional capacity is essential since its decline can worsen the prognosis.⁴⁶

Another study carried out in primary care in the elderly indicated for palliative care, with a sample of 73 individuals, being the predominant female gender, showed that when comparing two diseases such as cancer and neurological diseases, which showed a greater decrease in functional capacity, however in both groups there was some functional limitation.⁴⁷ The low functionality seen in patients in PCs is related to nutritional factors such as cachexia, worsening the patient's prognosis leading to a decrease in (MM) and also adipose tissue seen in cancer patients.⁴⁸ Another factor that may be associated with decreased functionality and quality of life for cancer patients is sarcopenia, usually caused by the treatment itself.⁴⁹

Nutritional status and sarcopenia in palliative care

The sarcopenia known for the decrease of (MM) and of the strength, frequent in the elderly; it is more pronounced, when associated with a disease, including palliative ones; low intake of PTN's, gastrointestinal disorders, iatrogenesis, anorexia. In addition, we have a longer hospital stay, longer immobilization time (bed restraint or minimal walking), which implies lower quality of life, higher costs for SUS and greater functional disability.⁵⁰ The feeding in PC's must occur in an individualized way.⁵¹ Nutritional assessment should be part of geriatric care, especially when they have comorbidities, and may progress to sarcopenia by increasing mortality rates.⁵² Sarcopenic individuals show a greater decline in MM causing functional damage, especially in the lower limbs.⁵³ Most palliative oncology

patients have dysfunctions in nutritional status, leading in many cases to malnutrition and resulting in decreased MM and strength that can be measured using handgrip strength.⁵⁴

The chemotherapy and radiotherapy treatments have several deleterious effects, leading to fatigue that reduces the quality of life of patients, causing nutritional changes that result in sarcopenia.⁵⁵ In a study evaluating the nutritional status and the weight loss ratio in the six-month period, in an audience with a mean age of 63 years, with 104 individuals, mostly male, in PCs with a predominance of adenocarcinoma concluded that it is a factor that must be taken into account since the last three months.⁵⁶

A survey of 70 patients, most of them male, with more prevalent head and neck tumors, with the prevalent oral food route using supplementation, showed that 87,2% had malnutrition, resulting in a decrease in the patients' physical strength.⁵⁷

The catabolism seen in palliative cancer patients associated with malnutrition, leads to depletion of (MM) and strength deficit, being a nutritional intervention important, the use of supplements can have a beneficial effect in these patients.⁵⁸

Use of oral hyperprotein supplements and in improving sarcopenia, functionality and cognition in palliative care

Among PCs, food should be one of the factors of great relevance during treatment and can alleviate the suffering of the patient, the use of supplements orally is indicated when patients are unable to reach the energy demand⁵⁹, being one of the most accepted conducts in most cases without restrictions, contributing to adequate energy support, improving protein intake mainly in patients undergoing cancer treatment.⁶⁰ According to the consensus of the Guideline of the European Society for Clinical Nutrition and Metabolism (ESPEN) oral supplementation in palliative patients with advanced diseases is one of the best options.⁶¹

In a study aiming at the quality of life in women patients in PC's with various cancers, in India with a total of 69 women, with cachexia, when associated with supplementation among them hyperprotein can improve the quality of life of patients as well as help with weight maintenance, the hyperproteins used were the basis of some flours and for every 400g, 50% was PTN.⁶²

The addition of hyperproteic and hypercaloric supplemental formulas has several benefits when added to dietary conducts, according to the guidance of (ESPEN), in outpatients or in situations that require nutritional support, without intolerance intact PTN's can be used in treatment.⁶³

Muscle Strength (MS) and physical function can be benefited by improving the anabolic response when protein supplementation intake is broken down during the breakfast period with 15g and in the postprandial period with 15g improving the anabolic response.⁶⁴

Protein supplements are beneficial in improving the impairments caused by aging itself, including sarcopenia, in geriatrics a greater supply of PTNs is necessary, often not being reached by the elderly, and the use of 1,2 to 1,5g /kg /day is suggested, mainly from the age of 71.⁶⁵

Sarcopenic patients with Chronic Kidney Diseases (CKD), must have a daily limitation of PTNs.⁶⁶ Despite the need for PTN that many elderly people need to improve sarcopenia, careful consumption is necessary in patients with a glomerular rate of less than 30ml/min.⁶⁷

Oral creatine supplementation in sarcopenia, functionality and cognition

Creatine is a compound of the amino acid arginine, glycine and methionine, aging itself reduces the production of creatine, however exogenous creatine supplementation can improve these stocks between four to six weeks, especially when associated with physical activity.⁶⁸ 3 to 5 g daily is recommended for maintaining high levels of creatine.⁶⁹ Creatine is currently one of the most prominent supple-

ments in sarcopenia⁷⁰, being considered as a complete supplement.⁷¹

Sarcopenia is seen in greater prevalence in patients over 60 years, reaching functionality and decreasing quality of life, muscle degradation, resulting from anabolic resistance, the use of oral creatine supplementation can be beneficial in elderly patients in fatigue, in MM, in the performance of (ADLs) and cognition, in sarcopenia it shows improvement in fatigue, being recommended the use of creatine in elderly people with deficit or lack thereof, and should be associated with carbohydrates and not indicated for patients with CKD.⁷²

A double blind study, carried out in the elderly, with different levels of sarcopenia, little active, of the male gender, with 45 men being selected and finishing the study with 32 individuals, in a period of 12 weeks with the use of 3g of creatine as well as of other dietary supplements, with recommendation of low intensity physical activity, improved MM, the performance in physically inactive men.⁷³

Creatine supplementation has been seen as an alternative in improving cognition, acting in a neuroprotective manner, improving brain energy levels, benefiting mainly the elderly public.⁷⁴ Being able to play a role in the depressive condition of patients, a study carried out among individuals aged 19 to 65 years showed that it can collaborate in the cerebral energy improvement, improving the reception of serotonin, for eight weeks, being in the first week of 3g and in the other seven weeks of 5g.⁷⁵

Another study evaluating creatine supplementation and another supplement in 108 hospital patients in Italy, of both genders aged 60 to 85 years, showed that creatine can improve functional capacity in patients with (COPD) who were stable as well as in apnea dysfunction.⁷⁶

Creatine supplementation can increase intramuscular energy stores in patients with prostate cancer where a decrease in (MM) a study of 56 individuals with advanced disease, aged 65 years or less, showed that they may present beneficial

effects, but more studies need to be done to show the real effectiveness of creatine in elderly people with cancer.⁷⁷

CONCLUSION

Aging is part of the natural process of life, with the decline of several functions

generating cell damage, especially when associated with palliative diseases requiring measures to improve factors resulting from these diseases. Hyperproteic and creatine supplementation can be beneficial, mitigating functionality and cognitive sarcopenia. It is essential that health professionals are aware of these factors and

can improve the quality of life of these patients by restoring nutritional status, improving the prognosis and reducing the length of hospital stay. But studies should be done based on oral supplementation of creatine and hyperprotein in improving sarcopenia, functionality and cognition in palliative elderly patients. ■

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