

Research Article

A Descriptive and Analytical Observation of the Influence of Physical Activity on the Depression of the Elderly for Healthy Aging

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Abstract

Background: The aging population justifies looking at active aging with an expectation of healthy physical and emotional vitality. Healthy aging is defined as the process of developing and maintaining functional skills in aging. Depression has an impact on the individual functional ability. The practice of physical activity, even if it mild, contributes to the physical and mental health of the older people.

Objective: To verify the influence of physical activity on older people depression for healthy aging.

Methodology: The sample consisted of 690 older people non-selected Brazilian volunteers from both genders present in a street race in Rio de Janeiro from October 30, 2019 to March 12, 2020, who answered the questionnaire composed of socio-demographic questions and extracted from the BDI-II (Beck Depression Inventory-II) and the Baecke-Old.

Results: The average age was in the range 65-69 years old, 75.4% of the sample with a university degree; 84% actives, 16% seden-

tary, 80.6% without depression. The hypothesis test, Pearson's chi-square presented that the differences found between the active and sedentary groups are significant, with 94.4% of certainty.

Conclusion: The hypothesis test, Pearson's chi-square presented that the differences found between the active and sedentary groups are significant, with 94.4% of certainty. A sample with a university degree (75.4%), practicing physical activity (84%) without depression (80.6%) underlines the certainty that the educational level and physical activity directly influence the depression of the older people.

Keywords: Baecke-Old; BDI-II; Depression; Elderly; Healthy aging; Physical activity; Older people

Introduction

By 2050 every fifth inhabitant of the Earth will have 60 years or more [1]. The aging of the population due to the increase in life expectancy [2] justifies looking at health maintenance with the expectation of healthy aging with family members and participating in the community with independence and autonomy [3], in a multidimensional approach [4]. Healthy aging with physical activity is the solution to the main challenges that population aging poses for the health system, and implies satisfaction with life and health, emotional and physical independence and vitality, significant factors for an independent life [5]. Aiming to increase active aging worldwide, the World Health Organization started in 2020 the decade of healthy aging [6]. Healthy aging is defined as the process of developing and maintaining functional skills in aging and it is fundamental as demographic aging and its challenges can only be achieved with the support of society as a whole [1], and of each individual de per se.

Expectations, concerns and fears can generate depression, which affects the individual's ability to function [7], with a high impact on the life of the subject and his family and commitment to social aspects [8]. Aaron Beck developed an inventory of depression, in a cross-cultural perspective, BDI-II Beck Depression Inventory - II, classifying depression into levels [9].

Depression in the older people is strongly associated with physical inactivity [10]. The practice of Physical Activity (PA) benefits the health of the older people [6]. PA, even with light exercises, is an important contribution to both physical and mental health, demonstrating benefits even in more severe mental disorders [11]. The BAECKE-Old inventory was designed to measure the PA of the older people, in a broad approach [12].

Objective

To verify the influence of physical activity on older people depression for healthy aging.

Methodology

The sample consisted of 690 older people non-selected Brazilian volunteers from both genders present in a street race in Rio de Janeiro from October 30, 2019 to March 12, 2020, who answered the questionnaire composed of socio-demographic questions and

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extracted from the BDI-II (Beck Depression Inventory-II) and the Baecke-Old. The exclusion criterion was cognitive difficulty that reduced the clarity of ideas to answer the questionnaire. The research is an ex-post-facto observational analytical survey in accordance with the Helsinki statement [13] and approved by the UNIRIO Research Ethics Council under # 3,670,727.

The instrument composed for this research begins with six socio-demographic questions adopted by the Brazilian national census [14], followed by five questions from the BDI-II. As only five of the original 21 questions were used, we adopted a classification adjusted for the levels of depression proposed by Beck: 0. 0-3 = no depression; 1. 4-5 = mild depression; 2. 6-7 = moderate depression; 3. 8-15 = severe depression. The scientific standard [15] includes in the PA of the older people, recreation, occupational, leisure, transportation, home care, attending a minimum of 150 minutes of weekly aerobic exercises, and the Baecke-Old questionnaire contemplates this approach of PA.

Results

Sociodemographic profile

The sociodemographic profile of the older people is shown in table 1. The average age was in the range 65-69 years old.

Questions	Answers	Percent	Absolute
Gender	Feminine	73.6	509
	Masculine	26.2	181
	Other	0.1	1,0
Age-Bracket	60-64	39.4	273
	65-69	32.9	228
	70-74	18.3	127
	75-79	6.1	43
	80-84	2.0	14
	85-80	0.7	5
	90-	0.6	4
Living Status	Family	68.5	474
	Alone	24.7	171
	Friends	0.7	5
	Others	6.1	42
Marital Status	Single	10.6	73
	Married/ Stable Union	54.4	376
	Separated/ Divorced	22.8	158
	Widow	12	83
Schooling	Illiterate	0	0
	E.S. Incomplete	2.6	18
	E.S. Complete	1.4	10
	H.S. Incomplete	1.9	13
	H.S. Complete	9.2	64
	U.E. Incomplete	9.2	64
	U.E. Complete	38.4	266
	Pos-Graduation	37	257

Table 1: Sociodemographic Profile.

E.S.- Elementary School; H.S.-High School; U.E.- University Education

The Brazilian population with a university degree, according to the 2010 census [14], is 11.3% of the total; the older people in this research reported 75.4% of university level and 93.8% of secondary level, thus the educational level of the sample is considered relevant to be discussed.

Physical activity profile

Considering that according to the WHO, the active older people performs a minimum of 150 minutes of physical activity weekly [15],

this sample composed of 690 older people presented 84% active and 16% sedentary, which characterizes the sample as eminently active.

Depression levels

The results of the older people answers to the questions of the Beck Depression Inventory, BDI-II shown in table 2. Present: 59% nothing, and 30% slightly on feel disappointed in oneself; 70% nothing and 21% slightly on feel less capable than the people around; 96% no on any idea of killing oneself; 50% no and 37% slightly on have been feeling sad; 83% no and 12% slightly on feel like a failure.

	Disappointed	Able	Killing yourself	Sad	Failure
Absolutely not	58.4%	69.4%	95.5%	49.7%	82.8%
Slightly	29.8%	20.6%	3.8%	37.1%	11.5%
Moderately	9.9%	8.3%	0.4%	11.6%	4.2%
Gravely	1.9%	1.7%	0.3%	1.6%	1.4%

Table 2: Results of the older people answers to the questions of the Beck Depression Inventory, BDI-II.

Disappointed - do you feel disappointed in yourself?; Able - do you feel less capable than the people around you?; Killing yourself - do you have any idea of killing yourself?; Sad - have you been feeling sad?; Failure - do you feel like a failure?

Table 3 shows the sample's classification by levels of depression.

BDI - II	N older people	% older people
Severe	26	3,8%
Moderate	33	4,8%
Mild	75	10,9%
Without	556	80,6%
Total	690	100,0%

Table 3: Classification of the sample by levels of depression.

The depression levels of the active and sedentary older people, is shown in table 4.

BDI & AF	Without	Mild	Moderate	Severe	Σ
Sedentary	12%	2%	0.4%	0.6%	15.7% (108)
Active	69%	9%	4%	3%	84.3% (582)

Table 4: Comparison of depression levels in active and sedentary older people.

The hypothesis test, Pearson's chi-square = 1.145, p-value of 0.056, critical value for 2 degrees of freedom = 1.18, comparing chi-square with the critical value, $1.145 < 1.18$, it can be seen that the differences between the active and sedentary groups are significant, with 94.4% of certainty.

Discussion

In the Brazilian population, practitioners of physical activity are equivalent to 38% of the population and among the older people 28%, an index that in the southeast region increases to 55.5% [16]. The Brazilian population with a university degree, according to the 2010 census [14], is 11.3% of the total, while the sample of this research reported 75.4%. This way it can be stated this research is above the Brazilian level in terms of PA and academic level. A sample in which the majority has at least a university degree (75.4%), and practices PA (84%). It was observed a positive relationship between the practice of physical activity and the educational level of the sample (75.4% of

university level and 93.8% of secondary level), thus the educational level of the sample is considered relevant to be underlined.

Low educational status is risk factor for depression [17]. A factor associated with intention to seek professional help for depression is the educational level of the older people [18]. A meta-analysis reports that in India, the aggregate prevalence of depression among older people population is 34%, though estimates varied widely throughout the country [19]. Depression is a major risk factor for suicide in older men, with suicide rates increasing with age in this population: a recent study showed that people older than 75 years had the highest annual incidence of suicide [17]. The depression inventory applied to this sample results in 96% nothing about having any idea of killing yourself; 59% nothing and 30% slightly when it comes to feeling disappointed with yourself; 70% nothing and 21% slightly about feeling less capable than other people; 50% is not slightly 37% as to having been feeling sad; 83% is not 12% slightly in relation to feeling a failure. The older people of this research were distributed in the levels of depression in the following way: 80.6% without depression, 10.9% mild depression, 4.8% moderate depression, and 3.8% severe depression. A sample with a university degree (75.4%), practicing physical activity (84%) without depression (80.6%) underlines the certainty that the educational level directly influences the depression and physical activity of the older people.

The result of this study with a sample with 690 older people, average age 65-69, 54% married, 84% practitioners of PA actives and 75.4% having at least a university degree, 80.6% without depression and 10.9% with mild depression is fully compatible with a study throughout the United States, with 736 older people, average age 68 ± 10 , 83% married, and 58% had at least a college degree mostly without depression and some with mild depression, a study that reported depressive symptoms significantly and consistently increasing with age and that depression is one of the most frequent causes of emotional distress in older adults and is one of the top five concerns faced by the older people today [20]. A study with 5977 older people in Spain 2017 did not reach the levels of PA recommended by the WHO; the low level of PA was associated with depression and greater multimorbidity. The WHO offers recommendations for performing moderate PA for at least 150 min, 75 min of vigorous PA, or a combination of both during the week [21].

The longevity factor, from the 40s to the 21st century, has undergone radical changes, since life expectancy, which was 45 years, in the 21st century became over 80 years, in this interval of just over 100 years, radicalizing the behavior in relation to aging, and this behavior starts to walk together with PA, which has been progressively increasing, reaching levels above 56.7% [16]. The results of this research show a population of 75% of university level, 84% of whom practice physical activity, suggesting an association between the level of physical activity and school level opposing a cross-sectional study in Spain with 13,049 older people, 50% primary schooling, 28% and 6% compliance with PA recommendations, in 2009 and 2017 respectively, did not achieve the physical recommendations in relation to PA levels, presenting higher percentages of multimorbidity or chronic health problems [22].

Aging is a multidimensional phenomenon associated with a process of decline for multiple organic systems that affect the performance of activities of daily living, changes in walking and posture. A lack of physical conditioning can result in a reduction in muscle strength, flexibility, aerobic capacity, and functional autonomy.

A variety of physical exercise programs minimizes the detrimental effects of aging, improving balance and preventing falls, which positively affects the skeletal muscle system, thereby contributing to the functional performance as aging progresses [2]. The physical incapacity as a result of lack of PA influences the daily living activities that can profit from being physically active, even in the short term [23]. The practice of PA, fundamental to the health of the older people, is associated with increased longevity and reduced functional limitations, and it is never too late to start PA as the benefits will be evident even in previously sedentary individuals [6]. In this research the hypothesis test, Pearson's chi-square presented that the difference in depression found between sedentary and active groups are significant, with 94.4% of certainty.

Over the past decades, the United Nation's Sustainable Development Goals have focused on international intervention, research, and evaluation efforts and have produced much positive change in global health towards healthy aging [24]. The lack of physical activity and a sedentary lifestyle results in one of the most significant public health problems of the 21st century; the sedentary lifestyle has a strong effect on the frailty of the older people, reveals Spanish Healthy Aging research [25]. Ageing has profound social and economic consequences in the 21st century with implications for nearly all sectors of society, it is important to understand the indicators of active ageing for developing policies, programs and public services specifically targeted to an ageing society [26]. It is important that people reach old age with an optimal health status in order to reduce age-related disability and morbidity [27]. Denying or hiding the signs that the passage of time imposes affects the older people and reduces their possibilities by the feeling of non-belonging [28], the feeling of being useless and meaningless, which the older people report and which can be reduced with specific interventions [29]. Until he faces old age, face to face, with the decline of his functional capacity, developing intimacy with death, which lurks, the man does not perceive the nullity of some projects, involved in the incessant live wheel [30]. Here there is "just an infinity of singulars": each one is perceived as a unique subject, endowed with an irreducible and unattainable experience, impossible to solve in terms of equation [3]. The principle that all people have the right to grow old in dignity and equality is in the core of the healthy aging concept, relating to older persons: developing and maintaining functional abilities during aging for independence, participation, care, self-fulfillment and dignity. A comprehensive public health policy in response to the problems of demographic aging is necessary, requiring not only a change in what has been done and what is usually done but a change in attitude towards aging; all investments would return in socio-economic terms [1].

Conclusion

The hypothesis test, Pearson's chi-square presented that the differences found between the active and sedentary groups are significant, with 94.4% of certainty. A sample with a university degree (75.4%), practicing physical activity (84%) without depression (80.6%) underlines the certainty that the educational level and physical activity directly influence the depression of the older people.

Strengths & Weakness

The main strength was the study sample size. The main weaknesses are the cross-sectional design not allowing to determine the action of time on the descriptors and that varied aspects of emotional issues have not been addressed.

Difficulties

The Covid-19 pandemic prevented the continuity of data collection, leading the older people in Brazil to isolation at home on March 12, 2020.

Suggestions

The analysis carried out did not make comparisons in the socio-demographic levels of educational and marital status that might be contemplated in future analyzes. A future study can focus on the types of depression feelings that are better covered by PA.

Ethic's Committee

This research complies with the Helsinki Declaration (13), and was submitted to the Research Ethics Committee Involving Human Beings, at the Federal University of Rio de Janeiro, UNIRIO, and received the # 3.670.727.

Conflict's of Interest

There are no financial conflicts of interests to disclose.

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