

SEDENTARY BEHAVIOR AND SUBJECTIVE AND PSYCHOLOGICAL WELL-BEING OF OLDER ADULTS BEFORE AND DURING THE COVID-19 PANDEMIC


COMPORTAMENTO SEDENTÁRIO E BEM-ESTAR SUBJETIVO E PSICOLÓGICO DE IDOSOS ANTES E DURANTE A PANDEMIA DE COVID-19

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Abstract: This study aimed to compare the sedentary behavior, satisfaction and purpose in life of Brazilian older adults before and during the period of social isolation due to the COVID-19 pandemic, depending on sociodemographic variables. This is a cross-sectional study carried out with 108 older adults. The Life Satisfaction Scale, the Purpose in life Scale and the International Physical Activity Questionnaire were used. Data were analyzed using the Kolmogorov-Smirnov test, independent student's t test and Pearson's coefficient ($p < 0.05$). Women were less satisfied with life during the period of social isolation ($p < 0.01$). Older people showed a reduction in the perception of satisfaction and purpose in life ($p < 0.001$) and an increase in sedentary behavior ($p < 0.001$) during the period of social isolation. There was a reduction in the satisfaction and purpose in life among older adults and an increase in sedentary behavior after the beginning of the isolation period.

Keywords: Aging; Sedentary lifestyle; Corona virus infections; Health promotion.

Resumo: Este estudo teve como objetivo comparar o comportamento sedentário, a satisfação e o propósito de vida de idosos brasileiros antes e durante o período de isolamento social devido à pandemia de COVID-19, em função de variáveis sociodemográficas. Trata-se de um estudo transversal realizado com 108 idosos. Foram utilizadas a Escala de Satisfação com a Vida, a Escala de Propósito de Vida e o Questionário Internacional de Atividade Física. Os dados foram analisados por meio do teste de Kolmogorov-Smirnov, teste t de Student independente e coeficiente de Pearson ($p < 0,05$). As mulheres ficaram menos satisfeitas com a vida durante o período de isolamento social ($p < 0,01$). Os idosos apresentaram redução na percepção de satisfação e propósito de vida ($p < 0,001$) e aumento do comportamento sedentário ($p < 0,001$) durante o período de isolamento social. Houve

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redução da satisfação e do propósito de vida entre os idosos e aumento do comportamento sedentário após o início do período de isolamento.

Palavras-chave: Envelhecimento; Estilo de vida sedentário; Infecção por corona vírus; Promoção da saúde.

INTRODUCTION

The increase in longevity among Brazilian older people poses challenges to aging individuals and society since, in advanced old age, there is a potential increase in the loss of physical and cognitive abilities. This experience of adversities may negatively impair the personal and family background of aging but foster gerontological research to develop innovation and knowledge on physical and mental health that can contribute to healthy longevity (RIBEIRO; YASSUDA; NERI, 2020; SPOSITO *et al.*, 2013).

Satisfaction with life is considered a significant physical and mental health marker, with potential use as an indicator for older adult health policies (GEORGE; CRYSTAL, 2016). Keeping the feeling that life is meaningful can help control moments of suffering and improve people's quality of life and physical health (PARK *et al.*, 2019).

High levels of satisfaction and purpose in life in adults and the older people are related to better coping with aging, greater self-care and greater social engagement. In addition, people with higher levels of purpose in life tend to be more resilient, more optimistic and to adopt good preventive behaviors, such as healthy eating and regular physical activity (RIBEIRO; YASSUDA; NERI, 2020).

As purpose in life appears to promote healthier behaviors and protect against disease, some researchers (KIM *et al.*, 2017; HOOKER; MASTERS, 2016) speculate that it contributes to people's ability to maintain independent physical function. In middle age (over 50 years old) in the United States who had adequate levels of physical function at baseline, a higher purpose in life in early life was associated with a decreased risk of developing slow walking speed after years of follow-up, and it was also observed that small increases in walking speed occurred among people who had a high purpose in life. Thus, the authors concluded that purpose in life may be a promising, and new, factor that serves as a goal to improve not only mental health, but also physical function in older adults and older people (KIM *et al.*, 2017). Regarding the aspect physical activity, it is suggested that purpose in life is a reliable correlate of physical activity, since it was associated with moderate to vigorous physical activity (measured by accelerometers) and also with self-reported physical activity (HOOKER; MASTERS, 2016).

Although the benefits of regular physical activity are already well established in the literature, studies have shown that, with aging, daily physical activity becomes less frequent, less intense and more fragmented, and conversely, longer sessions are observed of sedentary behavior or rest throughout day (OLIVEIRA *et al.*, 2018; OLIVEIRA *et al.*, 2019). The COVID-19 pandemic seems to have increased physical inactivity in several regions of the world, such as Belgium (CONSTANDT *et al.*, 2020) and Poland (GÓRNICKA *et al.*, 2020) for example, and studies have shown a prevalence of between 43% and 50% reduction in physical activity (GÓRNICKA *et al.*, 2020; CANCELLO *et al.*, 2020) in addition to a 49% increase in screen time 10, even with recommendations advising on the importance of continuing to practice physical activity and reducing sedentary behavior during the pandemic (PITANGA; BECK; PITANGA, 2020).

Knowing about variables that affect the aging process is the first stage so that future plans and interventions can be guided in order to improve the physical, subjective and psychological well-being of older adults. Studies that assess, the sedentary behavior, life satisfaction and purpose in life of the older people before and during the COVID-19 pandemic were also not found in the literature, thus demonstrating a gap in the production of knowledge and a clear reason for carrying out this study.

Thus, the objective of the present study was to compare the sedentary behavior, satisfaction, and purpose in life of older adults before e during the period of social isolation due to the COVID-19 pandemic, depending on sociodemographic variables.

METHODS

This is a analytical study with a cross-sectional design and methodological investigation. A total of 108 older people (60 years and over), of both sexes, recruited in a non-probabilistic way, in different regions of Brazil, participated in the research. Older people with internet access, with the ability to handle technological equipment (smartphone or computer) and with the ability to understand the questions on the form were included. Those who did not know how to handle the equipment to answer the form relied on the help of others.

For the sociodemographic profile of the sample, a questionnaire was prepared with objective questions related to: age, age group (60 to 70 years; 70 years or older), sex (male; female), income in the year 2020 minimum wage (1 to 2; 2.1 to 3; 3.1 to 4; 4.1 to 5; more than

5), retirement (yes; no); and self-perception of health (good; fair; poor). The researchers asked whether the participants were (or were not) in total or partial social isolation.

The purpose in life of older adults was assessed using an instrument with 10 questions, according to the version adapted by the group of researchers at Rush University Medical Center, in Chicago. The purpose in life instrument is a self-report measure, which contains 10 questions, with answers indicated on a 5-point Likert scale, according to the level of agreement (strongly agree, agree, partially agree, partially disagree, disagree, and totally disagree). The final scores can vary from 10 to 50 points, the higher, the more purpose in life the older person has (RIBEIRO; NERI; YASSUDA, 2018).

To research satisfaction with life, the “Life Satisfaction Scale”^{14,15} was used. This is composed of five items, the answers being graded according to a Likert-type scale, ranging from 1 = totally disagree to 7 = totally agree. This scale has the purpose of evaluating the judgment that people make about their own satisfaction with life, being themselves to choose, according to their values and interests, the aspects to be considered to express such satisfaction. From a possible total score of 35 points, the closer to it, the better the satisfaction of older adults with life (DIENER *et al.*, 1985).

Sedentary behavior was evaluated by the last two questions of the International Physical Activity Questionnaire (IPAQ), in the short version. This variable is evaluated by the amount of time the older person sits on a weekday and weekend.¹⁶ The IPAQ is an instrument that assesses the level of physical activity. However, as our aim was to assess only sedentary behavior¹⁶, and not the level of physical activity, only the last two questions were used, which are precisely the ones that assess this variable (MATSUDO *et al.*, 2001).

The research is an integral part of the institutional project approved in the Opinion (3,967,673) of the Research Ethics Committee, following the human research standards of resolution 466/12 of the National Health Council.

Quantitative data collection took place through an online form provided by Survey Monkey. The subjects who were interested in participating in the research accepted the informed consent form in the online form, indicating “I agree”.

The link was created to host the electronic questionnaire developed for the study and circulated through social media (Facebook, Instagram, and WhatsApp). The platform for filling in the questionnaires was available to receive the answers from the subjects for 30 days. Before completion, participants received a brief instruction containing information about the purpose

of the survey, the target audience and the estimated time to complete the questionnaire (approximately 15 minutes). Data were collected from April 20 to May 20, 2020.

The instruments were applied in a single moment, however, they were duplicated, the first referring to the participant's self-assessment before social isolation, and the second referring to during social isolation.

Data analysis was performed using software SPSS 23.0, using a descriptive and inferential statistical approach. Frequency and percentage were used as descriptive measures for categorical variables. For numerical variables, bootstrapping procedures were performed (1000 re-samplings; 95% IC BCa) to obtain greater reliability of the results, to correct deviations from normality and homogeneity of the sample distribution and differences between the sizes of the groups and, also, to present an interval of 95% confidence for differences between means (HAUKOOS; LEWIS, 2005). The independent t test was used to compare sedentary behavior, life satisfaction and purpose in life as a function of sociodemographic variables, and the dependent Student's t test was used to compare the moments. The effect size (d) was calculated using the model proposed by Cohen (1988) for differences between two groups, adopting the following cut-off points: $d=0.20$ represents small effect size, $d=0.50$ medium and $d=0.80$ big. The correlation between age, life satisfaction (before and during social isolation), purpose in life (before and during social isolation) and sedentary behavior (before and during social isolation) of older adults was verified through the Pearson's correlation coefficient, adopting a significance level of $p<0.05$.

RESULTS

A total of 108 older people participated in the study, with a mean age of 66.92 ± 7.87 years. It was observed that the majority of the older were female (67.6%), were between 60 and 70 years old (58.3%), monthly income of more than five minimum wages (38.0%) and was retired (78.7%). It is also noteworthy that the majority of older adults were (during the data collection period) in total isolation because the quarantine (63.9%) and that the perception of health was good pre-social isolation (81.5%).

When comparing sedentary behavior before and during the period of social isolation as a function of demographic variables (Table 1), there was no significant difference in the time spent sitting among older adults as a function of any of the sociodemographic variables ($p>0.05$).

Table 1 - Comparison of the sedentary behavior of older adults during the period of social isolation due to the COVID-19 pandemic according to sociodemographic variables.

GROUPS	Sedentary behavior before		Sedentary behavior during social isolation			
	social isolation	p-value	d	during social isolation	p-value	d
	M (SD)			M (SD)		
Sex						
Men (n=35)	250.28 (189.30)	0.70	0.08	390.28 (222.73)	0.23	0.24
Women (n=73)	235.89 (177.22)			335.61 (227.13)		
Age group						
60 to 70 years (n=63)	232.85 (177.78)	0.60	0.10	344.12 (216.66)	0.61	0.09
Over 70 years (n=45)	251.33 (185.62)			366.22 (240.67)		
Retirement						
Yes (n=85)	234.35 (181.68)	0.49	0.16	343.29 (225.57)	0.37	0.12
No (n=23)	263.47 (177.93)			390.44 (220.37)		
Isolation						
Total (n=69)	227.82 (170.43)	0.33	0.11	351.59 (210.69)	0.91	0.01
Partial (n=39)	263.07 (197.25)			356.41 (254.05)		

*Significant difference - $p < 0.05$. Independent Student's t test.

M: mean; SD: standard deviation.

Source: the authors.

According to the data in Table 2, a significant difference was found in the indicators of satisfaction with life during the isolation period according to sex ($p < 0.01$), indicating that women had a higher score when compared to men. Regarding life satisfaction before social isolation, no significant difference was found ($p > 0.05$) as a function of sociodemographic variables.

Table 2 - Comparison of life satisfaction of older adults during the period of social isolation due to the COVID-19 pandemic, according to sociodemographic variables.

GROUPS	Life satisfaction before isolation		p-value	d	Life satisfaction during isolation	
	M (SD)				M (SD)	
	Sex					
Men (n=35)	26.22 (5.40)	0.86	0.03	17.02 (7.13)		
Women (n=73)	26.01 (6.42)			21.27 (7.96)		
Age Group						
60 to 70 years (n=63)	25.88 (6.78)	0.69	0.07	19.55 (8.45)		
Over 70 years old (n=45)	26.35 (5.02)			20.37 (7.19)		
Retirement						
Yes (n=85)	26.32 (5.96)	0.44	0.18	20.21 (8.00)		

No (23)	25.17 (6.59)			18.73 (7.68)
Isolation				
Total (n=69)	25.88 (6.48)			19.40 (7.73)
Partial (n=39)	26.48 (5.41)	0.60	0.07	20.76 (8.29)

*Significant difference - $p < 0.05$. Independent Student's t test.

M: mean; SD: standard deviation.

Source: the authors.

When comparing the purpose in life of older adults before and during the period of social isolation as a function of demographic variables, no significant difference was observed in purpose in life as a function of any of the sociodemographic variables ($p > 0.05$).

Table 3 demonstrates the comparison between perceptions of satisfaction and purpose in life and sedentary behavior before and during the period of social isolation. A significant difference can be observed in the indicators of satisfaction with life ($p < 0.001$), purpose in life ($p < 0.001$) and sedentary behavior ($p < 0.001$), indicating that older adults showed a reduction in the perception of satisfaction and purpose in life and increased sedentary behavior during the period of social isolation.

Table 3 - Comparison between the perception of life satisfaction, purpose in life and sedentary behavior of older adults before and during the period of social isolation due to the COVID-19 pandemic.

Variables	Pre-Isolation	During Isolation	p-value	d
	M (SD)	M (SD)		
Life satisfaction	26.08 (6.09)	19.89 (7.92)	0.001*	0.87
Purpose in life	38.14 (5.10)	36.57 (5.40)	0.001*	0.29
Sedentary behavior	240.55 (180.46)	353.33 (226.14)	0.001*	0.55

*Significant difference - $p < 0.05$. Dependent t test.

M: mean; SD: standard deviation.

Source: the authors.

When analyzing the relationship between age, sedentary behavior, satisfaction and purpose in life (Table 4), the following significant correlations were found ($p < 0.05$): sedentary behavior before isolation was positively correlated with sedentary behavior during isolation ($r = 0.58$) and life satisfaction during isolation ($r = 0.19$); satisfaction with life before isolation was positively associated with satisfaction with life during isolation ($r = 0.44$), purpose in life before isolation ($r = 0.45$) and purpose in life during isolation ($r = 0.34$); life satisfaction during isolation was also positively correlated with purpose in life during isolation ($r = 0.23$); and purpose in life before isolation was positively correlated with purpose in life during isolation ($r = 0.66$).

Table 4 - Correlation between age, sedentary behavior, life satisfaction and purpose in life of older adults before and during the social isolation due to the COVID-19 pandemic.

Variables	1	2	3	4	5	6	7
1. Age	-	-0.01	0.05	-0.01	-0.08	-0.10	-0.12
2. Sedentary behavior before isolation		-	0.58**	-0.09	0.19*	0.01	0.01
3. Sedentary behavior during isolation			-	-0.14	-0.15	-0.01	-0.13
4. Life satisfaction before isolation				-	0.44**	0.45**	0.34**
5. Life satisfaction life during isolation					-	0.12	0.23*
6. Purpose in life before isolation						-	0.66**
7. Purpose in life during isolation							-

Significant correlation - *p < 0.05; **p < 0.001) – Pearson's correlation coefficient.
Source: the authors.

DISCUSSION

The main findings of the study showed that life satisfaction increased in women during isolation, and that, in general, there was a reduction in satisfaction and purpose in life and an increase in sedentary behavior during the period of isolation. The findings of this research contribute to the understanding of how the pandemic, related to COVID-19, can affect the perception and evaluation of individual aspects of the older's own lives.

Due to the lack of vaccines and evidence-based treatments available for COVID-19, public health actions have recommended social distancing in order to try to control the infection (LI; DE CLERCQ, 2020). However, this strategy can trigger an increase in sedentary behavior and an abrupt reduction in physical activity levels in older individuals, who are already more prone to frailty, sarcopenia and chronic diseases (ROSCHEL *et al.*, 2020). Data from wearable devices already provide information to a reduction in daily steps in different regions of the world during the pandemic, with a 15% decline in Brazil (STAFF, 2020).

In addition to the increase in sedentary behavior, which can be defined as the time spent in activities performed in the sitting/reclining position and/or energy expenditure of activities lower than 1.5 METs (BARNES *et al.*, 2012), it was also verified, in the present study, that the higher the sedentary behavior before isolation, greater during. Studies have shown that older people have higher values of sedentary behavior compared to other groups, going from 65% to 80% of the waking time in the sitting position and approximately five hours a day in sedentary behavior (HARVEY; CHASTIN; SKELTON, 2015). A prospective cohort study, which aimed

to examine the association between sedentary behavior and all-cause mortality in 30,239 adults in the United States between 2009 and 2013, identified that participants classified as having high sedentary characteristics (≥ 12.5 h/ day) presented a higher risk of death and that both the total time spent sedentary and its accumulation in prolonged and uninterrupted episodes are associated with all-cause mortality (DIAZ *et al.*, 2017).

The present study did not find a significant difference in the sitting time of older adults as a function of any of the sociodemographic variables, unlike Leão, Knuth e Meucci (2020) findings, which found that younger older people, with higher education and income, had higher means of sedentary behavior. Despite the different types of measures and aspects investigated in the literature, excessive sedentary behavior is related to increased health risk and it is worth highlighting that the time of sedentary behavior estimated from self-report (used in most studies) is half of that measured objectively. Thus suggesting that using self-report greatly underestimates the real time spent on this behavior (DIAZ *et al.*, 2017). In this sense, and due to the social distancing adopted by several states and municipalities, home exercise programs can be invaluable, constituting a viable strategy for maintaining and/or improving health, muscle functionality and prevention of falls in older adults (GANZ; LATHAM, 2020). The use of guides and leaflets that describe the benefits of reducing sedentary behavior may be another viable strategy for behavior change in the older (OWARI; SUZUKI; MIYATAKE, 2019).

The benefits associated with regular physical activity are already well described in the literature and a study carried out in Brazil with 133 older people found that those who were physically active were more satisfied with life and had more feelings of apprehension about the future in relation to old age than irregularly active older people (OLIVEIRA *et al.*, 2020). The literature also points out that older people who self-assess their physical fitness as very good have higher scores in life satisfaction (ZIELIŃSKA-WIĘCZKOWSKA, 2017). However, in addition to the increase in sedentary behavior, the present study identified a reduction in life satisfaction in the older people, which may be related to the fear of COVID-19, since the fear of the disease has been shown to increase depression, anxiety and stress and decrease satisfaction with life (SATICI *et al.*, 2020).

The study by Zielińska-Więczkowska (2017) conducted with 320 older people, members of the Universities of the Third Age in Poland, identified that only 40% of the older people were optimistic and satisfied with life and that the highest satisfaction scores were observed in men, compared to women, a result that is different from that found in the present

study. Satisfactory financial situation and good self-assessment of health status also have a positive relationship with satisfaction, and older people who indicate low levels of social support are at greater risk of being dissatisfied with their lives and therefore should receive special attention from gerontologists (SATICI *et al.*, 2020). Another study, conducted in Nepal, found that four out of five older people were satisfied with their lives, showing that even in low-developed countries (the 17th poorest country in the world) the perception of life satisfaction can be positive. This same study also identified that life satisfaction was positively associated with being married, having a high monthly family income, being working and having an adequate nutritional status and, on the other hand, having a worse perception of health, a higher depression score and a perception of being ignored/hated due to old age were associated with a lower rate of life satisfaction (GEORGE; CRYSTAL, 2016).

In the present study, no significant difference was observed in purpose in life as a function of sociodemographic variables. The literature points out that, with the exception of age in some investigations, sociodemographic variables are shown to be weak predictors of purpose in life (RIBEIRO; YASSUDA; NERI, 2020). However, a reduction in purpose in life was observed during the period of social isolation in the investigated sample. This fact is worrying since it can affect the day-to-day of older adults, since the literature emphasizes that older people with high levels of purpose in life tend to set life goals, face aging better, are more engaged and socially active. In addition, people with higher levels of purpose in life tend to be more resilient, optimistic, and engage in health-preserving behaviors, such as healthy eating, regular physical activity, and avoidance of risky behaviors, such as smoking and alcoholism (ASHARANI *et al.*, 2022). Thus, understanding and knowing about the purpose in life of older adults can help in planning work aimed at improving the psychological well-being, especially during the pandemic.

Naturally, the present study is subject to some limitations. Due to the cross-sectional nature of our data, no inferences should be made regarding the direction of causality of the results found. The mediating role of the variables used should be investigated in future research and, as the sample is not representative of Brazil, there is no possibility of generalizing the results to the entire Brazilian context. In addition, the existence of selection bias should be considered, as these are online questionnaires and memory bias, especially with regard to the sedentary behavior variable. However, the inclusion and exploration of variables together is

highlighted, as well as the relationship with sociodemographic data, which are often overlooked.

Another limitation refers to the fact that the older adults were recruited through social media and also that the majority were female. Detailed sociodemographic education as relevant in other cited studies (nutritional education, marital status, state) were not collected in this study.

FINAL CONSIDERATIONS

In general, there was a reduction in the satisfaction and purpose in life of older adults and an increase in sedentary behavior after the beginning of the isolation period. Sociodemographic factors, in general, did not interfere with the variables investigated in older adults.

A better understanding of the determinants related to sedentary behavior, satisfaction and purpose in life will allow more holistic methodologies and education guidance programs for a healthy and successful old age to be implemented. The evaluation of variables that are considered significant markers of physical and mental health can guide and direct innovative and quality gerontological interventions, and in this sense, it is recommended that screening tests be promoted in this area.

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