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Prevalence of commuting physical activity and associated factors in long-lived older adults

Prevalência de atividade física de deslocamento e fatores associados em idosos longevos

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Abstract – The aim of this study was to estimate the prevalence of commuting physical activity and associate sociodemographic, behavioral and health characteristics in long-lived older adults of Florianópolis/SC. This cross-sectional epidemiologic study included 343 individuals aged 80 and older; these individuals are members of community groups registered in the municipality of Florianópolis/SC. Sociodemographic information and health and behavior data were collected. To assess physical activity, the "commuting" domain of the International Physical Activity Questionnaire (IPAQ) was used, adapted for older adults. Data were analyzed using Stata 11.0 with Logistic regression expressed in odds ratios and 95% confidence interval. The prevalence of commuting physical activity was 19.5%. The oldest members of the group (p= 0.011; OR= 0.90; 95%CI= 0.83/0.98), with worse health perception (p< 0.001; OR= 0.33, 95%CI= 0.18/0.60) and with hypertension diagnosis (p= 0.009; OR=0.47; 95%CI= 0.27/0.83) had lower odds ratio of commuting physical activity. Knowledge about sociodemographic, behavioral and health characteristics associated with commuting physical activity can serve as a basis for the development of programs and actions to encourage commuting physical activity among long-lived older adults.

Key words: Health conditions; Health status; Individuals aged 80 years and over; Motor activity; Population characteristics.

Resumo – *O objetivo deste estudo foi estimar a prevalência da realização de atividades físicas de deslocamento e associar as características sociodemográficas, comportamentais e de saúde de idosos longevos de Florianópolis/SC. Trata-se de um estudo epidemiológico transversal, com 343 idosos, com 80 anos ou mais de idade, participantes dos grupos de convivência, cadastrados na Prefeitura Municipal de Florianópolis/SC. Foram obtidas informações sociodemográficas, de saúde e comportamentais. Para avaliar a realização de atividade física, utilizou-se o domínio "deslocamento" do Questionário Internacional de Atividade Física (IPAQ), adaptado para idosos. Os dados foram analisados no programa estatístico Stata 11.0, por meio de regressão logística expresso em Odds Ratio e intervalo de confiança de 95%. A prevalência da realização de atividade física no deslocamento foi de 19,5%. Os longevos com maior idade (p= 0,011; OR= 0,90; IC95%= 0,83/0,98), pior percepção de saúde (p< 0,001; OR= 0,33; IC95%= 0,18/0,60) e com diagnóstico de hipertensão arterial sistêmica (p= 0,009; OR= 0,47; IC95%= 0,27/0,83) apresentaram menores chances de realização de atividades físicas de deslocamento. O conhecimento sobre as características sociodemográficas, comportamentais e de saúde, associadas à realização de atividade física de deslocamento de idosos longevos, pode servir de base para a elaboração de ações que promovam a atividade física de deslocamento em idosos longevos.*

Palavras-chave: *Atividade motora; Características da população; Condições de saúde; Idosos de 80 anos ou mais; Nível de saúde.*

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INTRODUCTION

The prevalence of physical activities is low worldwide, although in the elderly, it can reach values up to 47%[1]. The absence or reduction in levels of physical activity generates negative impact, similar to smoking[2,3], being considered a major public health problems of modern society[4]. Furthermore, low levels of physical activity increase the number of chronic diseases and disabilities, reduce life expectancy[3] and are responsible for over three million deaths per year[5].

The prevalence of physical activity and associated factors in the elderly have been investigated in other studies, either in the domains of commuting, leisure, work, or in the domain of daily activities[6,7]. However, information is still contradictory and vary widely due to the methodology used, and few studies have investigated long-lived individuals, those aged over 80 years[8].

Long-lived older adults have health characteristics very distinct from younger age groups, because, with advancing age, there is decline of physical[9], cognitive and social capacities[10,11], and reduction in the levels of physical activity[12]. Considering that recently, researchers have focused their efforts on the health-related aspects in long-lived older adults [4], highlighting physical activity[8,13,14], there is still little information on the prevalence and factors associated with commuting physical activity in this age group.

Commuting physical activities are strongly encouraged worldwide because, in addition to reducing the use of cars, traffic and air pollution and noise[15], it can contribute to health through the prevention and treatment of cardiovascular diseases, cancer, reducing the risk of type 2 diabetes, stroke, obesity and reducing the risk of mortality due to all causes[16]. However, the performance of commuting physical activity has been considered as a strategy for increasing the levels of physical activity of elderly people, helping individuals to reach recommendations for health promotion[17].

It is noteworthy that long-lived older adults are at the limit of their functional capacities, with more diseases and hence poorer health. This reinforces the importance of commuting physical activity in the reduction in functional disability, regarded as one of the factors that most affect older adults, causing numerous damages to their quality of life[18].

In this sense, the prevalence and factors associated with commuting physical activities in long-lived older adults can assist in the planning of public policies[17], providing information consistent with the needs of this population[9]. The aim of this study was to estimate the prevalence of commuting physical activities and associated sociodemographic, behavioral and health characteristics of long-lived older adults in Florianópolis / SC.

METHODOLOGICAL PROCEDURES

Population and sample

The sample of this cross-sectional epidemiological study was composed of individuals aged 80 years or more of both sexes, participants of the 102

community groups registered in the City of Florianópolis / SC in the years 2010 and 2011.

The sample was intentionally selected through records of long-lived older adults in at least one of the social groups and be present on the day of data collection. Of the 497 registered subjects, 139 who were not present on the days of data collection, seven who refused to participate and eight who had incomplete data were excluded from the study. Thus, the sample consisted of 343 long-lived older adults.

Variables analyzed

Variables were analyzed through questionnaire containing the following information: 1) socio-demographic aspects - age (years), sex (female, male), marital status (married, single, separated, widowed), education (illiterate, incomplete elementary school, complete elementary school, complete high school, higher education), skin color (white, other), occupation (not work, work), family income (<1 minimum wage, 1-3 minimum wages, 3-6 minimum wages, > 6 minimum wages); 2) health conditions - self-perceived health (excellent or good, regular / poor or very poor) and disease self-report (absence, presence); 3) Behavioral - Tobacco use (absence, presence), alcohol use (absence, presence) and falls in the last year (absence, presence).

Commuting physical activity was evaluated by the block II International Physical Activity Questionnaire (IPAQ), long version and normal week, adapted for older adults[19]. This variable was dichotomized into physically inactive (elderly people who performed less than 150 minutes of commuting physical activity per week) and physically active (elderly people who practiced 150 minutes or more).

Prior to data collection, interviewers were trained to standardize the application of instruments. First, the City Hall of Florianópolis, SC was contacted to access the address of the community groups of registered elderly and the contact of the group coordinators. The Elderly Management of the City Hall of Florianópolis-SC provided the database with the identification of the place of operation and contact telephone numbers of the coordinators of the 102 Community Groups of the municipality. Later, there was contact with the coordinators to request consent for the research. The next step was to identify how many long-lived older adults were registered these community groups so that they could be contacted. Long-lived older adults were invited in the community group they attended, where the date and time of the interview were scheduled. By agreeing to voluntarily participate in the research, questionnaire of sociodemographic data, health and behavioral conditions, in addition to the block II IPAQ were applied in the form of interview. Collection took place in the social groups surveyed, in a reserved place.

Data treatment

To estimate the prevalence of commuting physical activity and associated sociodemographic, behavioral and health characteristics of long-lived older

adults in Florianópolis / SC, the modeling process by logistic regression analysis was adopted. The magnitude of the association between factors and physical activity was expressed as Odds Ratio (OR) and respective 95% confidence intervals. The variables included in the adjusted analysis were those that showed statistical significance of p≤0.20 in the unadjusted analyses. Variables with p = 0.05 remained in the final adjusted model. Analyses were performed using Stata software (Stata Corporation, College Station, USA) version 11.0.

Ethical aspects

For this survey, all ethical principles in accordance with Resolution 466/2012 of the National Health Council were fulfilled, and the study was approved by the Ethics Committee on Human Research of the University of the State of Santa Catarina (protocol 149/2010). All participants who agreed to voluntarily participate in the study signed the informed consent form.

RESULTS

Of the 497 long-lived older adults registered in community groups of Florianópolis / SC, 343 participated in this study (69% response rate), with mean age of 84.09 ± 3.89 years. Most were women, widows, who lived with a partner, with incomplete elementary school, white, who did not work and he received up to three minimum wages. As for the health characteristics, most subjects perceived their health as excellent or good, had at least one disease diagnosed by a physician (hypertension was the most prevalent), and used one or more drugs every day. With regard to behavioral aspects, most respondents have never smoked, did not show moderate or high alcohol use and had no falls in the last year. The prevalence of commuting physical activity was 19.5% (95% CI: 15.3; 23.7), as Table 1.

Table 1. Prevalence of commuting physical activity and sociodemographic, behavioral and health characteristics of long-lived older adults. Florianópolis / SC, Brazil 2011 (n = 343).

Variables	n (%)
Level of commuting PA	
Inactive (less than 150 minutes / week)	276 (80.5)
Active (150 or more minutes / week)	67 (19.5)
Sex	
Female	315 (91.8)
Male	28 (8.2)
Marital status	
Married	47 (13.7)
Not married	19 (5.5)
Separate	11 (3.2)
Widower	266 (77.6)
Education	
Illiterate	44 (12.8)
Incomplete elementary school	191 (55.7)
Complete elementary school	52 (15.2)
Complete high school	42 (12.2)
Higher education	14 (4.1)

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Variables	n (%)
Skin color	
White	323 (94.2)
Others	20 (5.8)
Occupation	
Not work	335 (97.7)
Work	8 (2.3)
Income	
< 1 minimum wage	40 (11.7)
1-3 minimum wage	167 (48.7)
3-6 minimum wage	73 (21.2)
> 6 minimum wage	63 (18.4)
Self-perceived health	
Regular / Poor or Very Poor	175 (51.0)
Excellent or good	168 (49.0)
Column disease	
Absence	332 (96.8)
Presence	11 (3.2)
Arthritis	
Absence	240 (70.0)
Presence	103 (30.0)
Fibromyalgia	
Absence	343 (100.0)
Presence	0 (0.0)
Cancer	
Absence	341 (99.4)
Presence	2 (0.6)
Diabetes	
Absence	332 (96.8)
Presence	11 (3.2)
Bronchitis / Asthma	
Absence	329 (95.9)
Presence	14 (4.1)
Hypertension	
Absence	138 (40.2)
Presence	205 (59.8)
Depression	
Absence	332 (96.8)
Presence	11 (3.2)
Stroke	
Absence	339 (98.4)
Presence	4 (1.6)
Stomach ulcer	
Absence	337 (98.2)
Presence	6 (1.8)
Urinary incontinence	
Absence	333 (97.1)
Presence	10 (2.9)
Drug use	
Absence	38 (11.1)
Presence	305 (88.9)
Tobacco use	
Absence	308 (89.8)
Presence	35 (10.2)
Alcohol use	
Absence	343 (100.0)
Presence	0 (0.0)
Falls in last year	
Absence	234 (68.2)
Presence	109 (31.8)

n = frequency; % = Percentage; PA = physical activity.

Table 2 presents the results of unadjusted and adjusted analysis for commuting physical activities in relation to sociodemographic, behavioral and health characteristics. The factors significantly associated with the outcome in the unadjusted model, variables arthritis / rheumatism and income, did not remain associated in the final model after adjustments.

The performance of commuting physical activity was inversely associated in the adjusted analysis to age (p = 0.011; OR = 0.90; 95% CI = 0.83 / 0.98), to self-perceived health (p <0.001; OR = 0.33; 95% CI = 0.18 / 0.60) and hypertension diagnosis (p = 0.009; OR = 0.47; 95% CI = 0.27 / 0.83). That is, individuals with older age, poorer health perception and hypertension diagnosis were less likely of achieving commuting physical activity when compared to individuals with better perceived health and without hypertension diagnosis, respectively.

Table 2. Unadjusted and adjusted analysis of factors associated to the performance of commuting physical activities of long-lived older adults participants in community groups of Florianópolis / SC, Brazil 2011 (n = 343).

Variable	Unadjusted analysis		Adjusted analysis	
	OR (CI95%)	p-value	OR (IC95%)	p-value
Age	0.92 (0.85/0.99)	0.028*	0.90 (0.83/0.98)	0.011*
Sex		0.085	--	--
Female	1			
Male	2.10 (0.90/4.88)			
Marital status		0.595	--	--
Married	1			
Not married	0.78 (0.22/2.80)			
Separate	0.29 (0.03/2.52)			
Widower	0.68 (0.33/1.39)			
Education		0.910	--	--
Illiterate	1			
Incomplete elementary school	1.78 (0.71/4.51)			
Complete elementary school	1.15 (0.37/3.62)			
Complete high school	1.49 (0.47/4.73)			
Higher education	1.73 (0.37/8.06)			
Skin color		0.230	--	--
White	1			
Others	1.84 (0.68/4.98)			
Occupation		0.694	--	--
Not work	1			
Work	1.38 (0.27/7.02)			
Income		0.023*		0.065
< 1 minimum wage	1			
1-3 minimum wage	2.70 (0.78/9.34)		2.38 (0.67/8.50)	
3-6 minimum wage	4.48 (1.07/18.70)		3.71 (0.84/16.32)	
> 6 minimum wage	4.01 (1.14/14.09)		3.34 (0.92/12.13)	
Self-perceived health		<0.001*		<0.001*
Regular / Poor or Very Poor	1		1	
Excellent or good	0.33 (0.19/0.59)		0.33 (0.18/0.60)	

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Variable	Unadjusted analysis		Adjusted analysis	
	OR (CI95%)	p-value	OR (IC95%)	p-value
Arthritis / Rheumatism		0.037*		0.097
Absence	1		1	
Presence	0.50 (0.26/0.96)		0.55 (0.27/1.11)	
Hypertension		0.013*		0.009*
Absence	1		1	
Presence	0.50 (0.29/0.87)		0.47 (0.27/0.83)	
Drug use		0.266	--	--
Absence	1			
Presence	0.64 (0.30/1.40)			
Tobacco use		0.159	--	--
Absence	1			
Presence	1.76 (0.80/3.87)			
Falls in last year		0.068	--	--
Absence	1			
Presence	0.56 (0.30/1.04)			

Legend: PR = prevalence ratio; 95% CI = 95% confidence interval; * = significance level of less than 5%.

DISCUSSION

Participants in this study achieved low prevalence of commuting physical activities, similar to data presented in survey of Brazilian adults[17]. One explanation for this result may be related to the occupation of long-lived older adults, which, mostly, were retired and therefore did not need to commute to work[17].

Another factor that may have supported this finding refers to the advanced age, which was inversely associated with commuting physical activity. It was observed that, with advancing age, there was a decrease in the time of performance of commuting physical activities, according to the results of other studies[7,17]. This decrease in levels of commuting physical activity occurs from the age of 55 years, being more pronounced in people over 80 years[7]. Increasing age leads to decreased commuting physical activity due to the natural process of human aging. This process involves functional losses, particularly progressive reduction in the functional abilities of the body and decreased physical capacities such as aerobic capacity, muscular strength, flexibility, balance, reaction time, movement, agility, coordination, and increased number of diseases[12]. Thus, in general, as the chronological age increases, people become less physically active[20].

The health condition seems to play an important role in the performance of commuting physical activities, according to the data of this study. Elderly people who perceive their health as regular, poor or very poor were less likely to perform commuting physical activity when compared to those who perceive their health as good or very good, in agreement with other studies[20,21,22]. Health perception influences the performance of physical activity in all domains, because people who reported poor health

performed lower levels of physical activities compared with those who reported better health[20,23]. Poor health perception may limit the forms of commuting among elderly individuals, as well as the presence of diseases[17].

In this investigation, hypertension was also associated with commuting physical activities, and people diagnosed with the disease are less likely to perform commuting physical activities in relation to older people without the diagnosis. This can be explained, since hypertension, disease of highest prevalence in the elderly[24], and in long-lived older adults[25,26], has as its major risk factors physical inactivity. When checking the level of physical activity of 310 hypertensive people followed in the Outpatient Center (18-69 years of age), a study[27] showed that the majority of these hypertensive patients are physically inactive, especially hypertensive patients with advanced age.

Thus, our results are extremely useful for the creation of health promotion activities close to the homes of long-lived older adults and with the offer of various activities that meet the male public interest, as in most community groups, gymnastics is the only type of exercise offered[21]. it should be noted that such measures may encourage walking as a way to commute whether for shopping, use health services, visit relatives and neighbors, or to move to the community group.

This hypothesis is supported, since walking is considered a low-cost physical activity, easy to perform and can be incorporated into the daily lives of older adults for being more accessible and allowing the participation of more people, being an indication for health promotion programs[28], especially in long-lived older adults. Thus, the increase in the performance of commuting physical activities is essential to bring about health benefits, increase the functional capacity, social contacts, brain function, psychological well-being and reduce stress and depression[28].

Some limitations of this study can be highlighted, such as the low proportion of men in the sample, the lack of survey of individual physical information (gait speed, muscle strength etc.) and the geographic location of the home of participants, which may have influenced the commuting physical activity of respondents. In contrast, the cross-sectional study conducted with elderly people aged 80 and older and attending community centers are positive points. These features allow a specific diagnosis of factors associated with the displacement of this age group so that precise actions can be directed. In addition, studies that investigated levels of physical activity are difficult to compare, especially due to the lack of standardization regarding the methodological aspects related to the instruments used, the physical activity terminologies, the cutoffs [1] and the age amplitude of the sample.

CONCLUSION

It was found that long-lived older adults, participants of community groups in Florianópolis / SC, showed low prevalence of commuting physical activities and that this behavior was inversely associated with increasing age, to

regular, poor or very poor self-perceived health and hypertension diagnosis.

Thus, the results of this study have shown that knowledge about factors associated with commuting physical activity among long-lived older adults can serve as a basis for the preparation of new proposals to encourage physical activity, especially through walk. In addition, it may assist in urban planning, traffic safety and commuting modes, increasing levels of physical activity and hence contributing to the health of this population group.

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