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Associated factors with physical activity and social activity in a sample of Brazilian older adults: data from the FIBRA Study

Fatores associados às atividades física e social em amostra de idosos brasileiros: dados do Estudo FIBRA

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ABSTRACT: *Objective*: This study investigates associated factors to participation in four domains of physical activity and social activities among 2344 community-dwelling older adults (72.3 ± 5.5 years; 65.6% female) without cognitive impairment, residents in six Brazilian cities. *Method*: An adapted version of Minnesota Leisure Time Activity Questionnaire was used to measure physical activity in four different domains. An inventory of social activities was developed for research. Age, gender and family income were assessed by self-report. Comparisons of frequencies and logistic regression analyzes were performed. *Results*: All sociodemographic variables were affecting the activity engagement profile of the sample. Have higher family income showed association with high level of leisure time, occupational and transportation physical activity, result supported by the literature. The gender associated with high level of activity varied according to the specific domain of the analyzed activity indicator. Have less age proved to be associated with higher level of activity in all indicators associated with age, highlighting the increasing age as the major barrier to performance physical and social activities in old age. *Conclusions*: Allow the active involvement of older people is the great challenge of public policies that promote active aging.

Keywords: Motor activity. Social participation. Activities of daily living. Aging.

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RESUMO: *Objetivo:* Este trabalho investigou os fatores associados à atividade física em quatro diferentes domínios e o desempenho de atividades sociais em 2.344 idosos (72,3 ± 5,5 anos; 65,6% mulheres) sem déficit cognitivo, residentes na comunidade de seis localidades brasileiras. *Método:* Uma versão adaptada do *Minnesota Leisure Time Activity Questionnaire* foi utilizada para avaliar a atividade física em quatro diferentes domínios. Um inventário de atividade social foi desenvolvido para a pesquisa. Idade, gênero e renda familiar foram avaliados por autorrelato. Foram realizadas comparações de frequências e análises de regressão logística. *Resultados:* Todas as variáveis sociodemográficas demonstraram afetar o perfil de engajamento em atividade da amostra. Ter maior renda familiar comprovou associação a nível elevado de atividade física no lazer, no trabalho e no deslocamento, resultado apoiado pela literatura. O gênero associado a alto nível de atividade variou de acordo com o domínio específico do indicador de atividade analisado. Ter menos idade confirmou ser associado a nível mais elevado de atividade em todos os indicadores integrados à idade, evidenciando o avanço na idade como a grande barreira ao desempenho de atividades físicas e sociais na velhice. *Conclusão*: Possibilitar o engajamento dos idosos com mais idade é o grande desafio de políticas públicas de fomento ao envelhecimento ativo.

Palavras-chave: Atividade motora. Participação social. Atividades cotidianas. Envelhecimento.

INTRODUCTION

Although there is no widely accepted concept for the term activity, it has a strong presence in research and clinical intervention in gerontology[1-3]. It refers to the whole set of actions that a person performs throughout the day, ranging from the simplest activities, arising from the physiological needs, to the more complex, which involve functionality in the physical and social environment, productivity, pleasure in relation to life and personal relationships[4]. Effort from different fields of research on this theme has resulted in different models, concepts and measures. The term advanced activities of daily living (AADL) encompasses a profile of activities characterized by the requirement of the highest level of functionality, since, in order to achieve them, preserved physical, cognitive and psychological abilities are necessary. Competent performance in these activities is a strong indicator of greater functional capacity and better physical and mental health,[5,6] while public policies which promote healthy aging[7,8] emphasize participation, understood as the involvement in activities that characterize the engagement that the individual has in their social setting,[9] and physical activity (PA), understood as any voluntary activity, produced by the skeletal muscles that results in caloric expenditure above the resting level[10], which can be performed in different domains, such as work activities, domestic tasks, commuting and recreation[11]. Both social and physical activity profiles require high functioning performance levels and have a well-known association with health and quality of life in old age. Engagement in social activities (SA) is considered a protective element in relation to disability[5]. The literature also associates this indicator with better physical health and longer life expectancy[9]. PA is highlighted as a protective element of disability[12] and is highlighted as one of the most

important behavioural variables for maintaining health and quality of life in old age[7,13]. Knowing the variables that affect the profile of PA engagement in different domains and in activities of a social nature in elderly residents in the community is of great relevance to gerontology research.

Few national studies have investigated the physical activity level (PAL) in the elderly in four different domains[14] and, to the best of our knowledge, there are no studies in which these indicators were analysed together with social engagement indicators. Gender, income and age influence development over the course of life because they determine different possibilities of access to resources and social opportunities, such as health, education and work resources, which affect the activity levels of the elderly in different ways.

In general, the literature shows that men tend to engage in activities outside their residence[15], however, it is women who report greater social involvement[16,17]. Being a woman is associated with overall physical inactivity, however they are the ones who report higher PAL in the domestic activities domain[18-20] On the other hand, men are more active in the areas of leisure time, work and commuting[18-20].

Socioeconomic status tends to be an aggravating factor for physical inactivity[21], especially in leisure time[18,22,23,] but it is still not clear how this variable is associated with social engagement[16,24]. The functional limitations due to ageing cause this variable to negatively influence the level of commitment to PA in all domains[19-21,25] as well as SA engagement[15-17].

This study aimed to investigate associations between the levels of PA in four different domains, the SA level and the independent variables of gender, family income and age.

METHOD

This study was approved by the Research Ethics Committee of the *Universidade Estadual de Campinas* (Unicamp).All participants signed the Informed Consent Form, in a format approved by this committee. The research was performed based on the data contained in the electronic bank of the FIBRA Study. This is a multicentric study developed by partner universities led by Unicamp, the Universidade de São Paulo (USP), the Ribeirão Preto campus, the *Universidade do Estado do Rio de Janeiro* (UERJ) and the *Universidade Federal de Minas Gerais* (UFMG)[26].

SAMPLING AND PARTICIPANTS

A total of 2,344 elderly individuals with no cognitive impairment suggestive of dementia were selected from a sample of 3,075 elderly people obtained from six Brazilian cities. Cluster sampling was used.

In the first stage, census sectors from the urban area of the participating municipalities were drawn at random. The minimum number to compose the sample of cities with more

than one million inhabitants, such as Campinas and Belém, was 601 elderly, considering a sample error of 4%. For other cities with less than one million inhabitants, the number of 384 elderly participants was estimated, with a sampling error of 5%. In each selected area, quotas of men and women of 65-69, 70-74, 75-79 and 80 years and over were estimated, based on the distribution of these segments[26].

In the second stage, the elderly were recruited from their homes by trained personnel with the objective of identifying the elderly and selecting them according to the research criteria. The following exclusion criteria were used according to Ferrucci et al: presence of deficits regarding memory, attention, spatial or temporal orientations or communication suggestive of cognitive deficit; permanent or temporary walking incapacity, except with the use of a walking aid; localized loss of strength and aphasia due to CVA; severe motor speech or affectivity impairment associated with advanced Parkinson's disease; severe auditory or visual deficit; and be in a terminal stage[27]. It is possible to visualize the characteristics of the sample in Table 1.

Table 1. Distribution of absolute and relative frequencies of sample characteristics (n = 2344). FIBRA study, *Universidade Estadual de Campinas*.

Variables	Category	Frequency	Percentage
Locality	Ermelino Matarazzo (SP)	302	12.9
	Campinas (SP)	689	29.4
	Poços de Caldas (MG)	318	13.6
	Ivoti (RS)	160	6.8
	Parnaíba (PI)	299	12.7
	Belém (PA)	576	24.6
Gender	Male	806	34.4
	Female	1.538	65.6
Family income (minimum salary)	0.0–1.0	199	9.9
	1.1–3.0	959	47.9
	3.1–5.0	448	22.4
	5.1–10.0	266	13.3
	> 10.0	131	6.5
Age	65–69	889	37.9
	70–74	730	31.1
	75–79	452	19.3
	80 ou >	273	11.7

A single data collection session was held in easily accessible public places[26]. The collection began with the Mini-Mental State Examination (MMSE) which includes identification questionnaires and sociodemographic data.

The cut-off points were: 17 for the illiterate; 22 for the elderly with 1 – 4 years of schooling; 24 for those with 5-8 years of schooling and 26 for those with 9 or more years of schooling. These cutoff points were based on the Brucki et al.[28] criteria, bar one standard deviation. For this reason, 23.8% of the elderly were excluded from the initial sample.

This manuscript is an integral part of the doctoral thesis of one of the authors, Taiguara Bertelli Costa, entitled *Physical Activity, Social Activity and Satisfaction with Life: crucial relationships in successful old age*, under the guidance of the co-author, Prof. Dr.Anita Liberalesso Neri.

This work was not submitted to any other journal and was not presented at a scientific meeting. Both, Taiguara Bertelli Costa and Anita Liberalesso Neri, collaborated in the conception of the article; in the analysis and interpretation of the data; in the writing of the article and relevant critical revision of the intellectual content; and final approval of the version to be published.

The Research Ethics Committee of the *Universidade Estadual de Campinas* (Unicamp) approved this study with the Certificate of Presentation for Ethical Assessment (CAAE) number 47962815.1.0000.5404. All participants signed the Informed Consent Term (ICF), in a format approved by the Research Ethics Committee of the Faculty of Medical Sciences (FCM) of Unicamp, under opinion 208/2007.

VARIABLES

Physical activity

Physical activity was evaluated taking into account the domains: physical exercises and active sports; domestic activities; work activities in commuting to work and during work breaks. The instrument was composed of items taken from the Brazilian version of the Minnesota Leisure Time Activity Questionnaire (MLTAQ)[29]. Sixteen items were used to evaluate the practice of regular physical exercises and sports in an active leisure situations and 11 investigated the performance of varied domestic activities[18,22]. Four items concerned the practice of paid or voluntary work and the way this work was performed (sitting or standing, light or heavy, carrying weights greater than 13 kg), and walking when commuting to work or during work breaks.

They were all yes or no, and they were all questioned about the continuity of activities over the previous two weeks, weekly frequency, and daily duration in minutes. Subsequently, the correspondences of the activities with their metabolic equivalents (MET) were investigated, which allowed them to be classified as mild, moderate or vigorous intensity level[11,30].

Social activities

Social activities were evaluated through a 13-item inventory (AAVD) based on the model by Baltes et al.[31] regarding behavioural competences in old age, and a model based on Reuben et al.[32], who constructed a taxonomy of complex activities that require autonomy and functional independence and which are performed in complex environments. Some of them involve performance related to social roles. The instrument included alternative responses based on Souza et al.[33] in the cross-cultural validation that made up the Human Activity Profile (PAH), which consists in asking if the respondent never did, still does or did not do each activity. This measure is important to avoid data contamination resulting from economic conditions and gender roles. The survey included several activities of a social nature, such as paid or voluntary activities; associative activities, such as participating in boards and councils and taking part in groups of elderly cohabitation; educational activities, such as attending universities of the Third Age; SA, such as visiting friends, attending social gatherings and cultural events and going to church; leisure activities such as traveling out of town or in the country; and complex psychomotor activities such as driving a car.

Age, gender and family income

The information was obtained through self-reports regarding date of birth, gender and family income in gross values.

DATA ANALYSIS

Physical activity

For the classification of the elderly regarding PAL, the weekly time spent on moderate intensity PA[11] plus the weekly time spent on vigorous PA[11] multiplied by two[21], was considered with reference to the current recommendations of weekly volume, in minutes, for moderate intensity activities (150 minutes) and vigorous (75 minutes) of the World Health Organization (WHO)[13,34]. Three categories were developed: inactive, those who did not report practicing any PA; insufficiently active, those who did not reach 150 minutes per week; and active, those who spent 150 minutes or more[21].

Social activity index

In order to analyze the performance of SA, a social activity index (SAI) was developed. The frequencies of the "never", "I don´t do anymore" and "I still do" answers were counted for each of the items. The activities that the elderly had never performed were not included

in the calculation of the percentage of SA performed. The SAI corresponded to the sum of the activities that each elderly person still did divided by the sum of those that they did not continue and those they still did. The result was a percentage value that indicated the degree of social involvement: <50% = low; 51-80% = moderate and> 80% = high.

Socioeconomic variables

The ages were grouped into four ranges: 65 to 69, 70 to 74, 75 to 79, and 80 years or older. Monthly family income values were also collected in monthly minimum salary units (MS): <1; 1.1 to 3.0; 3.1 to 5.0; 5.1 to 10.0; and > 10.0.

RESULTS

The sample consisted of 2,344 elderly, with a mean age of 72.3 ($\pm$ 5.5), 65.6% were women. Considering the overall indicator, 64.8% of the elderly reported a high level of PA engagement. On the other hand, 5.8% described that they did not participate in any PA in any of the four contexts. The majority of the elderly (52.6%) reported moderate SAI. Discriminating the context for the practice of PA, leisure activities were highlighted as the domain with the highest active percentages (44.4%), household tasks had the highest percentage related to insufficiently active (51.7%), while the work and commuting contexts were those with the highest levels of physical inactivity (Table 2).

Comparative analyses by gender showed that this variable significantly affected the PAL. Considering the overall indicator, men stood out among those who were inactive and among those with a high level of PA, while women were the majority of those who were insufficiently active.

High PAL in leisure, housework and work, as well as low and moderate SAI were more frequent among men. Among women, greater frequencies of physical inactivity were observed in the leisure time and work domains, and insufficiently active levels in household tasks and high SAI (χ^2, p <0.001 in all analyses).

The age variable affected all the activity indicators in the comparative analyses of frequencies. The presence of older participants was more frequent among those less active in global PAL, leisure time, housework, work, SAI (χ^2, p <0.001 in all analyses) and commuting (Fisher's exact, p = 0.008) .

Upon analysing the groups of income categories, the elderly participants with higher income were more active in the global PAL indicators, leisure time, work, SAI (χ^2, p <0.001 in all analyses) and in commuting (Fisher's exact, p = 0.008). The individuals with lower income were less active in the leisure time, work (χ^2, p <0.001 in all analyses) and in the commuting domains. (Fisher's exact, p = 0.008).

Two models of multivariate logistic regression analysis were performed (Table 3). In order to avoid multicollinearity, the overall PAL indicator, derived from the junction of the four domains

of PA, was analysed separately. The independent variables - activity levels - show association with each other. Despite the outcome, in all analyses, at least one PA or SA indicator was found to be significantly associated with the analysed result. Among sociodemographic variables, being younger, being male and having higher family income represented a greater chance for the overall high PAL outcome. Being a man and having a higher income accounted for a better chance of having high PAL in the leisure domain. Being younger and being a woman corresponded to a higher chance of having high PAL in household tasks domain.

Having higher income, being younger and being a man accounted for a higher chance of having high a PAL in the work domain. Being younger and having a higher family income corresponded to a higher chance of having a high PAL in the commuting domain. Finally, being female and being younger represented a higher chance for high SAI, as presented in Table 3.

Table 2. Distribution of absolute and relative frequencies of the overall physical activity level in domains and index of the social activity sample as a whole (n = 2,344). FIBRA study, State University of Campinas.

Variables	Category	Frequency	Percentage
Overall PAL	Inactive	135	5.8
	Insufficiently active	690	29.4
	Active	1.519	64.8
PAL in leisure time	Inactive	925	39,5
	Insufficiently active	377	16,1
	Active	1.042	44,4
PAL in housework	Inactive	353	15,1
	Insuficiently active	1.212	51,7
	Active	779	33,2
PAL in work	Inactive	2.047	87,3
	Insufficiently active	234	10,0
	Active	63	2,3
PAL in commuting	Inactive	2.152	91,8
	Insufficiently active	121	5,2
	Active	71	3,0
Social activity index	Low	563	24,4
	Moderate	1.215	52,6
	High	533	23,0

PAL: physical activity level.

Table 3. Multivariate logistic regression analysis regarding the influence of gender, age and income for high levels of physical activity in four domains and high social activity index. FIBRA study, State University of Campinas.

Variable	Category	Chance ratio	CI95%	p-value
High overall PAL●				
1. Age (years)	≥ 80 (ref.) 75–79 70–74 65–69	1.00 1.64 1.82 2.20	--- 1.18 – 2.29 1.34 – 2.48 1.62 – 2.98	--- 0.003 < 0.001 < 0.001
2. Gender	Female (ref.) Male	1.00 1.66	--- 1.35 – 2.04	--- < 0.001
3. Family income	≤ 1,0 MS (ref.) 1,1–3,0 MS > 3,0 MS	1.00 1.24 1.45	--- 0.91 – 1.70 1.05 – 2.00	--- 0.171 0.023
4. SAI	Low (ref.) Moderate High	1.97 2.221,97 2.22	--- 1.58 – 2.46 1.69 – 2.93	--- < 0.001 < 0.001
High PAL in leisure time				
1. Gender	Female (ref.) Male	1.00 1.81	--- 1.48 – 2.22	--- < 0.001
2. Family income	≤ 1,0 SM (ref.) 1,1–3,0 SM > 3,0 SM	1.00 0.95 1.47	--- 0.71 – 1.27 1.09 – 1.98	--- 0.724 0.012
3. SAI	Low (ref.) Moderate High	1.00 1.68 1.84	--- 1.34 – 2.03 1.42 – 2.38	--- < 0.001 < 0.001
4. PAL in housework	Inactive (ref.) Ins. active Active	1.00 1.51 1.86	--- 1.15 – 1.99 1.41 – 2.45	--- 0.003 < 0.001
5. PAL in commuting	Inactive (ref.) Ins. active Active	1.00 1.97 1.20	--- 1.29 – 3.00 0.72 – 2.00	--- 0.002 0.496
High PAL in housework				
1. Age (years)	≥ 80 (ref.) 75–79 70–74 65–69	1.00 1.46 1.66 2.15	--- 1.06 – 2.01 1.23 – 2.23 1.61 – 2.89	--- 0.022 < 0.001 < 0.001
2. Gender	Male (ref.) Female	1.00 1.46	--- 1.22 – 1.76	--- < 0.001
3. NAF no lazer	Inactive(ref.) Ins. active Active	1.00 1.47 1.52	--- 1.15 – 1.89 1.26 – 1.84	--- 0.003 < 0.001
4. PAL in commuting	Inactive (ref.) Ins. active Active	1.00 1.50 1.00	--- 1.01 – 2.23 0.60 – 1.68	--- 0.049 0.996

Table 3. Continuation.

Variable	Category	Chance ratio	CI95%	p-value
High PAL in work				
1. Family income	≤ 1.0 MS (ref.)	1.00	---	---
	1.1–3.0 MS	1.44	0.76 – 2.76	0.267
	> 3,0 MS	2.32	1.22 – 4.40	0.010
2. Age (years)	≥ 80 (ref.)	1.00	---	---
	75–79	1.04	0.54 – 1.98	0.917
	70–74	1.13	0.63 – 2.05	0.683
	65–69	1.93	1.10 – 3.40	0.023
3. Gender	Female (ref.)	1.00	---	---
	Male	1.67	1.20 – 2.32	0.003
4. SAI	Low (ref.)	1.00	---	---
	Moderate	2.14	1.35 – 3.40	0.001
	High	3.61	2.20 – 5.93	< 0.001
5. PAL in commuting	Inactive (ref.)	1.00	---	---
	Ins. Active	9.45	6.24 – 14.32	< 0.001
	Active	12.29	7.34 – 20.58	< 0.001
High PAL in commuting				
1. PAL in work	Inactive (ref.)	1.00	---	---
	Ins. active	12.16	8.26 – 17.89	< 0.001
	Active	10.81	5.87 – 19.89	< 0.001
2. SAI	Low(ref.)	1.00	---	---
	Moderate	2.47	1.34 – 4.56	0.004
	High	3.00	1.55 – 5.79	0.001
3. PAL in leisure time	Inactive (ref.)	1.00	---	---
	Ins. active	0.88	0.50 – 1.55	0.647
	Active	1.60	1.08 – 2.37	0.019
High social activity index				
1. Age (years)	≥ 80 (ref.)	1.00	---	---
	75–79	1.31	0.95 – 181	0.101
	70–74	1.60	1.19 – 2.15	0.002
	65–69	1.77	1.32 – 2.38	< 0.001
2. Gender	Male (ref.)	1.00	---	---
	Female	1.79	1.46 – 2.19	< 0.001
3. PAL in leisure	Inactive (ref.)	1.00	---	---
	Ins. active	1.39	1.08 – 1.78	0.011
	Active	1.61	1.33 – 1.95	< 0.001
4. PAL in work	Inactive (ref.)	1.00	---	---
	Ins. active	2.03	1.49 – 2.77	< 0.001
	Active	2.33	1.37 – 3.96	0.002
5. PAL in commuting	Inactive (ref.)	1.00	---	---
	Ins. active	2.05	1.37 – 3.08	< 0.001
	Active	1.20	0.72 – 2.01	0.481

PAL: physical activity level; ref .: reference; MS: minimum salary; SAI: social activity index; ins: insufficiently; CI 95% OR: 95% confidence interval for the odds ratio. Stepwise selection of variables. Proportional odds model; ● Analyzed in a separate model, without inclusion of the other domains of physical activity.

DISCUSSION

Considering the PA indicators, it is possible to affirm that the sample has a high level of activity. Compared with other national studies, the frequency of elderly people who did not reach the recommendations of 150 minutes of weekly PA (slightly more than 35%) was above only that presented by Florindo et al. (31.8%), with a composite sample of elderly individuals aged 60-65 years[19]. In the other national studies that investigated PA in four different domains, the frequency ranged from 40.7 to 76.3%[20,21,25,35].

The PA domain with the highest frequency for active elderly participants was leisure time and household tasks had the lowest frequency for inactive elderly participants, which reinforces the literature that indicates the domain of home maintenance activities as the most suitable for elderly women in relation to physical activity[19,20].

The work and commuting domains were those that presented the lowest frequencies for active elderly participants, which is supported in the literature[19,20,35] and is expected as it includes individuals of retirement age. PA in commuting considered work as a reference, and therefore, suffered direct interference from this domain.

The elderly men were physically more inactive than the elderly women. They are the majority among those who have reported adequate PA. Men stood out among the most active in leisure time, work and in the overall PA indicator, a fact widely supported in the literature[18-20,22], while being a woman was significantly associated with high SAI and PAL in domestic tasks.

These data stimulate the discussion about the criterion of inactivity. Studies that consider not meeting the recommendations of weekly PA volume in minutes as a criterion of inactivity or sedentary lifestyle[20,25,35] tend to relate inactivity to the female gender[20,35].

However, the data presented here contradict this point of view and demonstrate that this statement can be controversial, especially if the specific domain in which the activity was performed is not considered.

Two aspects should be considered in the analysis of the influence of gender on the PA AND SA engagement by the elderly: physical health and the influence of the social roles resulting from this variable. Women experience greater functional incapacity in old age than men[36,37], which results in a greater restriction in the performance of higher intensity PA, such as leisure time physical activities (LTPA).On the other hand, activities which require less functional demands, such as going to church and making visits, are the most prevalent among those that compose the SAI[38]. In general, women are given the role of caring for their families and the home, while men are given the role of provider. Thus, it is correct to think that the elderly women tend to engage in milder intensity activities, of a social nature, that include household maintenance and that are closer to the family-neighbourhood nucleus, while the elderly men, although initially more reluctant to engage, are more likely to commit to higher intensity activities and further away from this nucleus[38,39] because they are more accustomed to being involved in labour and productive activities or having better functionality[36,37].

Family income did not affect the SA indicator, but affected the PA indicator. Those with higher income stood out among the most active in the global indicator, in leisure, work and commuting.

The association between family income and high PAL in work and commuting is presumed, since those who still perform paid activities contribute to the family income, therefore these indicators are directly associated with this variable.

PA indicators in leisure time are directly influenced by socioeconomic conditions[18,22]: elderly people with higher incomes have greater access to services that offer opportunities to practice physical exercises, such as gyms and clubs, or reside near environments conducive to such practices, such as such as squares, parks and gardens[18,22].

The level of income in old age is directly related to that of education: older people with a higher level of education tend to have greater access to information, greater ability to change their lifestyle and to adhere to healthier behaviours, seek more health services and take better care of their physical health[36]. Age was the second variable that most influenced the prevalence of the analysed activities. However, unlike gender, in all associations, ageing meant a decrease in the chance of reaching a high level of engagement in the activity indicators. This is widely reported in the literature, which indicates that the functional declines associated with ageing are important barriers to the adherence to PA and SA[15,17,19,21,22,25,40]. This is reinforced by the fact that at least one activity indicator was selected as a predictor of the outcome in all analyses, i.e., there is a certain collinearity between activity indicators, and it is correct to think that this is due to physical health and functionality. In addition, the environment and people's perception of it is an important factor to be taken into account in this analysis, since it is directly associated with engagement in activities, physical health and functionality[41-44]. In urban areas where older people live, aspects such as public transportation, mobility, architecture, urban structure and safety[45] generally impose physical and social barriers on the elderly's transit, restricting their living space,[46] limiting sociability and, consequently PA and SA[42,45,47].

CONCLUSION

The central variables in the study, PA and SA, were collected using adapted instruments. Although this fact may represent a weak point in the study, it is worth noting that there is no one instrument that is widely accepted for the investigation of PA and SA, whether they are investigated jointly or separately. Other investigations have already used the same inventories for investigations regarding PA[18,22] or AS[17,24] levels. In addition, the territorial scope of the present study, composed of elderly from five Brazilian geographic macro regions, ensures that the sample contains reasonable socioeconomic, geographic and cultural variability and reinforces the importance of the data presented here. Most of the results of this study confirm information from the literature and support the assertion that engagement in activities of different domains is affected by independent variables. Low levels of income were important barriers to physical activity, but gender and age were the independent variables

that most affected the engagement profile of the elderly. The association between gender and activities belonging to specific domains suggests the relevance of considering this variable in the analysis of the profiles of the activities of men and women. Ageing has proven to be the biggest barrier to physical activity in old age. Enabling older people to engage in PA and SA is a complex challenge to public policies that promote active aging, given the greater relative growth of elderly people aged 80 and over.

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