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Physical activity in the older adults related to commuting and leisure, Maceió, Brazil

ABSTRACT

OBJECTIVE: To evaluate the level of physical activity of older adults by commuting and leisure time and associated factors.

METHODS: This was a cross-sectional study carried out with a population-based sample of 319 older individuals in Maceió, AL, Northeastern Brazil, in 2009. The level of physical activity in leisure and commuting was measured by applying the International Physical Activity Questionnaire, long version. The variables analyzed were: age, schooling, sex, *per capita* income and perceived health. We used descriptive analysis, Fisher's exact test and multiple regression analysis of prevalence rates.

RESULTS: We classified 87.5% as insufficiently active in commuting, being significantly higher among those individuals with older ages, with more education and who feel dissatisfied with their physical health. The prevalence of older people who are insufficiently active in leisure time activity was 76.2%, being more frequent in women, in men with advanced age; older adults with lower *per capita* income, and dissatisfaction with comparative physical health and self-perceived mental health.

CONCLUSIONS: The prevalence of insufficiently active was high in commuting and leisure time activities. Factors such as age, gender and income should be considered, especially with regards leisure, in order to ensure fairness in the development of policies to promote health and physical activity in this population.

DESCRIPTORS: Aged. Motor Activity. Leisure Activities. Sedentary Lifestyle. Cross-Sectional Studies.

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INTRODUCTION

Changes in the structure of the age pyramid all over the world have highlighted ageing and old age, giving rise to actions by social and governmental agents as well as health care professionals.[4]

An unprecedented change has taken place in living standards over the last few decades. Mechanization, technological advances, computerization and the constantly increasing mechanisms to avoid physical effort, such as escalators, elevators and remote controls have led to the progressive decrease in physical activities at work, within the home and in leisure time.[12] Such reduced levels of physical activity may increase some harmful effects of the ageing process, such as loss of muscular force.[6]

Physical activity or exercise is a great victory for public health as it provides many benefits to the organism; when done regularly, it has a positive influence on physiological, functional, psychological and social variables.[17]

Measuring physical activity in older adults is essential in creating interventions to minimize and control problems related with inactivity and functional decline.[18]

The state of Alagoas, in the Northeast of Brazil, has some of the worst social indicators in the country and high social inequality.[a] Moreover, the older population has low levels of schooling and a poor socioeconomic level.[b] Considering the vast extent of the territory in Brazil and the peculiarities of each region, there is a lack of surveys in the Northeast identifying which aspects (sociodemographic and health indicators) may affect physical activity in the older population.

The aim of this study was to analyze the level of physical activity in older adults in the areas of commuting and leisure and associated factors.

METHODS

This was a cross-sectional population survey with a probabilistic sample of individuals aged ≥ 60 residing in the urban area of Maceió, AL, Northeastern Brazil, in 2009. Of the 320 individuals eligible for the study, one was considered as a loss due to an error in completing the questionnaire, leaving a total sample of 319 individuals.

In 2009, the municipality of Maceió, state capital, had a population of 896,965 inhabitants, of which 60,908 were aged ≥ 60. The city is composed of seven health districts, covering 50 neighborhoods and 875 census tracts, two of these census tracts are rural.[a]

In order to calculate the sample size, a sampling error of 6.0%, 50.0% prevalence of physical inactivity and 95% confidence interval were considered. The size of the sample was 266 individuals, with 20.0% added to cover losses and refusals; the minimum needed was 320 older individuals.

A self-weighted cluster sampling model was produced in the following stages:

1) The seven health districts were classified into "better", "intermediate" and "worse" socioeconomic level, as the heterogeneity of the city's different socioeconomic strata was considered. They were finally order according to random selection of the districts, identifying the order in which the districts would be surveyed.

2) Each neighborhood was ordered alphabetically and numerically to be selected according to the number of older individuals in each. Neighborhoods with more older individuals had a higher chance of being selected for the sample. Seven (one per district) were selected.

3) After identifying the residential census tracts (excluding commercial tracts), the tracts of each neighborhood were selected proportionally according to the number of older individuals in each, considering the sample calculation and size of 0.5% plus 20.0% (for losses). The sample was calculated according to the estimated population size for 2009.[a]

4) All of the blocks and their respective sides (streets, avenues and villas) in each tract were numbered. The households were randomly selected following a clockwise selection. After visiting a specific number of residences (defined according to the total number of residences in the tract), older individuals were systematically interviewed by the researcher.

If there was no resident aged over 60 in the household, the researcher went to the next until an older individual was identified, then re·start'ing the systematic search. If there was an older resident in the household absent at the time visited, a new visit was arranged on up to two occasions, being then considered a loss if no contact was eventually possible. If there was more than one older individual in the household, it was randomly decided which one to interview. If the number of

interviewees in a particular district was not attained, the researcher moved on to the next selected census tract.

The long form International Physical Activity Questionnaire (IPAQ), adapted for the older in Brazil,[3] was used to assess the level of physical activity related to commuting and leisure time (dependent variable).

Levels of physical activity were analyzed according to the recommendation of 150 minutes per week;[c] weekly physical activity was obtained by adding the minutes spent walking, as well as in other moderate and vigorous activities, multiplying these minutes by two.[11] The older individuals were classified into two different levels of physical activity, according to the total of minutes (0 to 149: insufficiently active; 150 or over: active).[c]

The independent variable were: a) socioeconomic data: *per capita* income. (ratio between total income and number of household members); schooling (length of time at school or level of education); b) demographic data: sex, age, marital status, family composition, reported morbidities and perceived health[d] (current health and physical capacity compared with that of five years ago; health and physical capacity compared to that of an individual of the same age; current mental capacity compared with that of five years ago; mental capacity compared to that of an individual of the same age).

Excel® 2003 (Windows®) was used to produce a database. The data were transferred to the Statistics Package Social Science – SPSS® package version 15.0, to analyze the data.

The data were self-weighted; the analyses were then carried out based on the models. Analyses of the prevalence ratios of the insufficiently active older individuals in the areas of commuting and leisure were carried out using generalized linear models, with Poisson distribution with log link function and robust variance used to approximate the binomial.[2] Unadjusted analysis (separately for each characteristic) was carried out in each domain. Multiple regression analyses of the prevalence ratios for the factors in question was performed. The variables for the modelling were selected using backward elimination and grouping the most proximal factors, in the case of zeroes (or 100.0%) in the intersections between the explanatory variable and the outcome.

Two final models were evaluated for each domain. The first, containing sociodemographic explanatory variables: gender, age group, interaction between gender and age group, schooling, income, marital status, family composition; the second: number of diseases

and perceived health, as well as the variables from the first model.

The study was approved by the Research Ethics Committee of the *Universidade Federal de São Paulo* (Process no. 0479/09, 08/05/2009). All participants were informed pf the aims of the study and signed consent forms.

RESULTS

The majority of the population studied were female (69.6%), with an average age of 69.2 (standard deviation 7.1 years), minimum 60 and maximum 90 years old (Table 1).

Most of the older individuals had between one and three years of schooling (46.4%) and an income of between one and three minimum wages (41.7%) (Table 1).

In the commuting domain, the prevalence of being insufficiently active was 87.5%, being greater among those aged 70 and over (97.9%). The majority had four or more years of studies (97.2%); among those with higher *per capita* income (five or more minimum wages) it was 96.9% (Table 2).

The prevalence of insufficiently active individuals in the leisure domain was 76.2%. There was a higher proportion among women (80.6%) than men (66.0%) in the unadjusted model. The prevalence of insufficient physical activity in leisure time increased in those aged 80 and over (92.1%). The highest prevalence of inactivity was observed in those on less than one minimum wage (87.6%) and those with between four and seven years of studies (82.1%).

The sociodemographic variables age, schooling and perceived physical health compared with other individuals of the same age were associated with insufficient physical activity in commuting in both adjusted final models. For those aged 70 and over, there was a 1.22 times higher chance (PR = 1.22; 95%CI 1.13;1.32) of being insufficiently active in this domain, in the final adjusted demographic model. Those older individuals with higher levels of schooling (four or more years of studies) had a higher chance of not being sufficiently active in commuting (1.13; PR = 1.13; 95%CI 1.06;1.21; and 1.14; PR = 1.14; 95%CI 1.07;1.22, respectively, in the sociodemographic/sociodemographic and perceived health models) (Table 3).

In the leisure domain, 76.2% of the older individuals were insufficiently active. There was a higher proportion of women (80.6%) than men (66.0%) in the

[c] United States Department of Health and Human Services (US). 2008 Physical activity guidelines for Americans. Be active, healthy and happy. Washington (DC); 2008 [cited 2008 Oct 16]. Available from: http://www.health.gov/paguidelines/guidelines/default.aspx
[d] De Vitta A. Bem-estar físico e saúde percebida: um estudo comparativo entre homens e mulheres adultos, sedentários e ativos [tese de doutorado]. Campinas: Universidade Estadual de Campinas; 2001.

Table 1. Sample description (n = 319) according to demographic and socioeconomic aspects and physical activity in older adults by sex. Maceió, AL, Northeastern Brazil, 2009.

| Variable | Sex | | | | | | p |
| | Male | | Female | | Total | | |
	n	%	n	%	N	%	
Total	97	30.4	222	69.5	319	100.0	
Age (years)							0.3834
60 |- 70	54	55.7	125	56.3	179	56.1	
70 |- 80	28	28.9	74	33.3	102	32.0	
80 |- 90	15	15.5	23	10.4	38	11.9	
Schooling (years)							0.0239
< 1	28	28.9	71	32.0	99	31.0	
1 to 3	56	57.7	92	41.4	148	46.4	
4 to 7	8	8.2	31	14.0	39	12.2	
8 and over	5	5.2	28	12.6	33	10.3	
Family composition							0,.2178
Living alone	6	6.2	24	10.8	30	9.4	
Not living alone	91	93.8	198	89.2	289	90.6	
Marital status							< 0.0001
Single	7	7.2	19	8.6	26	8.2	
Married/Civil partnership	73	75.3	73	32.9	146	45.8	
Divorced/Separated	3	3.1	13	5.9	16	5.0	
Widowed	14	14.4	117	52.7	131	41.1	
Monthly *per capita* income (minimum wages)							0.0595
< 1	27	27.8	78	35.1	105	32.9	
1 to 3	51	52.6	82	36.9	133	41.7	
3 to 4	5	5.2	11	5.0	16	5.0	
5 and over	14	14.4	51	23.0	65	20.4	

unadjusted model. The prevalence of being insufficiently active in leisure time increased in those aged 80 and over (92.1%). A higher prevalence of inactivity was observed in those on less than one minimum wage (87.6%) and those with between four and seven years of studies (82.1%).

The prevalence of physical inactivity was higher among those with three or more diseases (93.5%), although there was no statistical significance.

Those who reported being dissatisfied with their physical health (90.2%) had a higher prevalence of inactivity (Table 4).

In the two final adjusted models, differences were found regarding sex, age group, income, perceived physical compared with mental health. The profile of inactivity according to age differed between sexes. In the final demographic model, women aged between 60 and 79 years had a 1.37 times higher chance (PR = 1.37; 95%CI 1.16; 1.63) of being inactive than men, but there was no statistically significant difference between men

and women in the more advanced age group of 80 to 90 years (p = 0.51). Older individuals on incomes of five or fewer minimum wages had a greater chance of being insufficiently active in leisure time (PR = 1.94; 95%CI 1.52;2.48 and PR = 1.94; 95%CI 1.53;2.48, in the respective models).

Those who evaluated their physical health as dissatisfactory compared with their mental health (PR = 1.19; 95%CI 1.07;1.32 and PR = 1.15; 95%CI 1.00;1.32, respectively) were associated with physical inactivity in leisure time, compared with those who evaluated it as satisfactory or regular (Table 5).

Walking was the most commonly reported leisure time physical activity in the general sample.

DISCUSSION

In the domains of physical activity in commuting and leisure, there was a high prevalence of physical inactivity in the older population. These domains were evaluated separately, as, when dealing with this

Table 2. Prevalence of older individuals insufficiently active in commuting, unadjusted prevalence ratios and respective 95% confidence intervals. Maceió, AL, Northeastern Brazil, 2009.

Variable	N	n	%	Unadjusted PR	95%CI	χ^2_w	p
Total	319	279	87.5				
Sex							
Male	97	84	86.6	1			
Female	222	195	87.8	1.01	0.92;1.11	0.09	0.7628
Age (years)							
60|- 70	179	142	79.3	1			
70|- 90s	140	137	97.9	1.23	1.14;1.33	27.33	< 0.0001
70|- 80	102	99	97.1				
80|- 90	38	38	100.0				
Schooling (years)						17.04	0.0002
< 1	99	83	83.8	1			
1 to 3	148	126	85.1	1.02	0.91;1.13	0.08	0.7837
4 and over	72	70	97.2	1.16	1.05;1.28	9.36	0.0022
4 to 7	39	39	100.0				
8 and over	33	31	93.9				
Monthly *per capita* income (minimum wages)						14.67	0.0021
< 1	105	87	82.9	1			
1|- 3	133	115	86.5	1.04	0.93;1.16	0.58	0.4473
3|- 5	16	14	87.5	1.06	0.86;1.30	0.27	0.6015
≥ 5	65	63	96.9	1.17	1.06;1.29	10.00	0.0016
Marital status						3.06	0.3818
Single	26	22	84.6	1.13	0.81;1.56	0.52	0.4696
Married/Civil partnership	146	126	86.3	1.15	0.86;1.54	0.90	0.3431
Divorced/Separated	16	12	75.0	1			
Widowed	131	119	90.8	1.21	0.91;1.62	1.70	0.1924
Family composition							
Living alone	30	26	86.7	1			
Not living alone	289	253	87.5	1.01	0.87;1.17	0.02	0.8932
Number of diseases						9.86	0.0072
None	12	10	83.3	1			
1	114	90	78.9	0.95	0.72;1.24	0.15	0.6949
2 or more	193	179	92.7	1.11	0.86;1.44	0.67	0.4128
2	162	148	91.4				
3 or more	31	31	100.0				
Physical health						6.18	0.0454
Satisfactory	186	159	85.5	1			
Regular	82	77	93.9	1.10	1.01;1.19	5.17	0.0229
Unsatisfactory	51	43	84.3	0.99	0.86;1.13	0.04	0.8383
Comparable physical health						14.52	0.0007
Satisfactory	225	192	85.3	1			
Regular	65	63	96.9	1.14	1.06;1.22	12.95	0.0003
Unsatisfactory	29	24	82.8	0.97	0.81;1.15	0.12	0.7311
Mental health						6.04	0.0488
Satisfactory	177	149	84.2	1			
Regular	103	93	90.3	1.07	0.98;1.17	2.33	0.1267
Unsatisfactory	39	37	94.9	1.13	1.02;1.24	5.84	0.0157
Comparable mental health						3.77	0.1515
Satisfactory	207	176	85.0	1			
Regular	87	80	92.0	1.08	0.99;1.18	3.31	0.0690
Unsatisfactory	25	23	92.0	1.08	0.95;1.23	1.44	0.2307

χ^2_w: Wald Chi-square test

Table 3. Adjusted prevalence ratios of older individuals insufficiently active in commuting in two models and respective 95% confidence intervals. Maceió, AL, Northeastern Brazil, 2009.

Variable	Final Model 1 (demographic)				Model 2 (demographic, perceived health)			
	PR adjusted	95%CI	χ^2_w	p	PR adjusted	95%CI	χ^2_w	p
Age (years)								
60 |- 70	1				1			
70 |- 90	1.22	1.13;1.32	26.87	< 0.0001	1.22	1.13;1.31	26.40	< 0.0001
Schooling (years)								
Illiterate or 1 to 3	1				1			
4 or more	1.13	1.06;1.21	14.26	0.0002	1.14	1.07;1.22	15.52	0.0001
Comparable physical health								
Satisfactory/Unsatisfactory	–				1			
Regular	–				1.14	1.06;1.22	13.55	0.0002
Reference %	77.3	71.3;83.9			75.3	68.9; 82.2		
Fit of model			5.11[a]	0.8838			13.81[b]	0.7947

[a] 10 Degrees of freedom
[b] 19 Degrees of freedom

population, it was necessary to consider their peculiarities (part of this population suffer from chronic, degenerative diseases and are retired). Moreover, these domains are relevant in categorizing physical activity at a population level.[8]

The proportion of insufficiently active older individuals in commuting was high (87.5%). A similar result was found in an international survey, which indicated that 80.0% of the older population in the USA are inactive in commuting.[11] The high prevalence in this study is possibly the result of biological factors, added to environmental factors, such as most older individuals being retired and having no need to travel to work.

National studies show different results. Research described by Florindo et al[6] (2009) showed a higher prevalence of the older adults inactive in commuting (93.7%) in the city of Sao Paulo, SP, Southeastern Brazil, probably explained by the availability of free public transport, such as the bus and metro. A recent population based study, with a sample of 6,624 older individuals in 100 municipalities in 23 states in Brazil, showed a lower prevalence of insufficiently active older individuals in commuting (73.9%).[13]

Lower *per capita* income was associated with a lower prevalence of older individuals insufficiently active in commuting (82.9%). A similar result was found in a study by Salvador et al[20] (2009) with 385 older individuals in the municipality of Ermelino Matarazzo, SP. This region is characterized by low to mid socioeconomic levels and the prevalence of older individuals who did not do more than 150 min/week of walking as commuting was 65.2%. Those with poorer

socioeconomic conditions probably did not use individual means of transport (car) to get around.[20]

Age was positively associated with inactivity in commuting. A similar result was found by Madeira et al[13] (2013) in an older population, among whom a trend was observed of insufficient levels of movement with increased age. Morbidities limited getting around in this age group.

The adjusted models showed a positive association between being insufficiently active in commuting and higher levels of education. On the other hand, a nationwide study of the older people[13] showed that, the higher the level of schooling, the greater the activity in getting around. One explanation is the fact that the sample analyzed different populations in several cities (n = 100) of different sizes.

The older people were shown to get around less, which could be associated with factors such as health and social conditions as, in the municipality of Maceió, these indicators are precarious.

There was a high prevalence, 76.2%, of being insufficiently active in leisure time, which is in agreement with other Brazilian studies.[6,7,25] A population survey of the older population in the United States (n = 5,589), showed a proportion of 73.1% inactive.[10] This domain received greater attention from researchers as it deals with activities carried out in free time, which can be affected by campaigns promoting health and by public policies.

There is growing interest in assessing the Brazilian population's levels of physical activity. The study "*Vigilância de Fatores de Risco e Proteção para Doenças Crônicas por Inquérito Telefônico* – Telephone Survey Monitoring

Table 4. Prevalence of older individuals insufficiently active in leisure time, unadjusted prevalence ratios and respective 95% confidence intervals. Maceió, AL, Northeastern Brazil, 2009.

Variable	N	n	%	Unadjusted PR	95%CI	χ^2_w	p
Total	319	243	76.2				
Male	97	64	66.0	1			
Female	222	179	80.6	1.22	1.04;1.43	6.29	0.0122
Age (years)						19.50	0.0001
60|- 70	179	122	68.2	1			
70|- 80	102	86	84.3	1.24	1.09;1.41	10.21	0.0014
80|- 90	38	35	92.1	1.35	1.18;1.55	18.64	< 0.0001
Schooling (years)						7.73	0.0520
Illiterate	99	77	77.8	1.60	1.11;2.32	6.37	0.0116
1 to 3	148	118	79.7	1.64	1.15;2.36	7.29	0.0069
4 to 7	39	32	82.1	1.69	1.16;2.48	7.32	0.0068
8 or more	33	16	48.5	1			
Monthly *per capita* income (minimum wages)						21.69	0.0001
< 1	105	92	87.6	1.84	1.41;2.39	20.31	< 0.0001
1|- 3	133	109	82.0	1.72	1.32;2.24	15.82	0.0001
3|- 5	16	11	68.8	1.44	0.95;2.19	2.95	0.0857
≥ 5	65	31	47.7	1			
Marital status						3.98	0.2633
Single	26	19	73.1	1.30	0.80;2.12	1.09	0.2963
Married/Civil partnership	146	109	74.7	1.33	0.85;2.07	1.57	0.2097
Divorced/Separated	16	9	56.3	1			
Widowed	131	106	80.9	1.44	0.93;2.23	2.62	0.1054
Family composition							
Living alone	30	17	56.7	1			
Not living alone	289	226	78.2	1.38	1.00;1.90	3.92	0.0477
Number of diseases						18.34	0.0004
None	12	9	75.0	1			
1	114	76	66.7	0.89	0.63;1.26	0.43	0.5113
2	162	129	79.6	1.06	0.76;1.49	0.12	0.7266
3 or more	31	29	93.5	1.25	0.89;1.25	1.63	0.2020
Physical health						12.12	0.0023
Satisfactory	186	138	74.2	1			
Regular	82	59	72.0	0.97	0.83;1.14	0.14	0.7061
Unsatisfactory	51	46	90.2	1.22	1.07;1.38	9.53	0.0020
Comparable physical health						29.22	< 0.0001
Satisfactory	225	163	72.4	1			
Regular	65	52	80.0	1.10	0.95;1.28	1.78	0.1824
Unsatisfactory	29	28	96.6	1.30	1.20;1.48	28.24	< 0.0001
Mental health						5.32	0.0698
Satisfactory	177	135	76.3	1			
Regular	103	74	71.8	0.94	0.81;1.09	0.64	0.4228
Unsatisfactory	39	34	87.2	1.14	0.99;1.32	3.23	0.0722
Comparable mental health						3.79	0.1503
Satisfactory	207	156	75.4	1			
Regular	87	65	74.7	0.99	0.86;1.15	0.01	0.9068
Unsatisfactory	25	22	88.0	1.17	0.99;1.38	3.42	0.0645

χ^2_w: Wald Chi-square test

Table 5. Adjusted prevalence ratios of older individuals insufficiently active in leisure time in two models and respective 95% confidence intervals. Maceió, AL, Northeastern Brazil, 2009.

Variable	Final Model 1 (demographic)				Model 2 (demographic, perceived health)			
	Adjusted PR	95%CI	χ^2_w	p	Adjusted PR	95%CI	χ^2_w	p
Sex in 60|- 70 year old age group								
Male	1				1			
Female	1.37	1.16;1.63	13.03	0.0003	1.37	1.15;1.62	13.17	0.0003
Sex in 70|- 80 year old age group								
Male	1				1			
Female	1.37	1.16;1.63	13.03	0.0003	1.37	1.15;1.62	13.17	0.0003
Sex in 80|- 90 year old age group								
Male	1				1			
Female	0.94	0.78;1.14	0.42	0.5158	0.94	0.77;1.15	0.33	0.5671
Male age (years)								
60|- 70	1				1			
70|- 80	1.33	1.18;1.49	23.13	< 0.0001	1.33	1.18;1.49	23.50	< 0.0001
80|- 90	1.91	1.52;2.41	30.35	< 0.0001	1.93	1.53;2.43	30.45	< 0.0001
Female age								
60|-70 years	1				1			
70|-80 years	1.33	1.18;1.49	23.13	< 0.0001	1.33	1.18;1.49	23.50	< 0.0001
80|- 90 years	1.31	1.13;1.51	13.54	0.0002	1.33	1.14;1.55	13.48	0.0002
Monthly *per capita* income (minimum wage)								
≥ 5.	1				1			
< 5.	1.94	1.52;2.48	28.45	< 0.0001	1.94	1.53;2.48	28.96	< 0.0001
Comparable physical health	–							
Satisfactory/Regular	–				1			
Unsatisfactory	–				1.19	1.07;1.32	10.75	0.0010
Mental health	–							
Satisfactory/Regular	–				1			
Unsatisfactory	–				1.15	1.00;1.32	4.23	0.0397
Reference %	30.0	22.3;40.3			28.9	21.5;38.9		
Fit of model			8.87[a]	0.5448			18.98[b]	0.4578

[a] 10 Degrees of liberty
[b] 19 Degrees of liberty

Risk and Protection Factors for Chronic Disease", Brazil, 2012 (VIGITEL),[15] in the Brazilian state capitals and the Federal District, showed 70.8% of those aged 18 and over in Maceió who did not do the recommended weekly 150 minutes of physical activity.

A study of the areas covered by primary health care units in municipalities in the South and Northeast, including two municipalities in Alagoas, observed a lower prevalence of inactivity in the population that that in this study. The authors of that study[24] investigated the older adults (n = 4,003) in 41 municipalities and presented data that differed by region, with a prevalence of inactivity from 47.3% to 67.5%, respectively, in the South and Northeast. The South having the best socioeconomic indicators in the country may explain

these results. The prevalence in the Northeast was lower than that found in this study, possibly because those older individuals[24] had some type of access to health promotion in the Primary Health Care Units.

Walking was the preferred leisure activity, other authors have identified the same trend.[10,21,25] This physical activity is better adapted to the older population, as well as being a natural, low impact activity, of low cost.[21]

More older women than older men were insufficiently active in leisure time, as found in other studies.[6,19,22] Women had less free time, which was filled with domestic chores and caring for families, as well as cultural issues that restrict their participation is leisure activities from becoming adults, and which may extend

into old age.[4,22] Men retire, increasing their free time, which encourages their participation in leisure activities.[4]

Cross-sectional and longitudinal studies indicate a reduction in physical activity of between 1.0% and 20.0% per year, with a trend for the proportion of inactive individuals to increase with age.[1] This is mainly due to progressive loss of functional aptitude and physical capacity.[9] According to Vigitel data, physical activity decreases with increased age, reaching 77.8% in those aged 65 and over.[15]

Those in the most advanced age group had a higher prevalence of being insufficiently active. Although women aged between 60 and 79 were less active than men, from the age of 80 onwards, the results are similar. Similar data were verified by Zaitune et al[25] (2007) with older individuals in Campinas, SP, Southeastern Brazil, finding a prevalence of 83.8% of those aged 80 and over being inactive in leisure time.

Many of the older individuals had low purchasing power, and there was an association between being on a lower income and not being sufficiently active in leisure time, which has also been found in other studies.[9,14,24] Socioeconomic activity influences doing regular physical activity: those with higher purchasing power tend to be more physically active than those with lower purchasing power.[9] In Brazil, this can be attributed to cultural issues related to physical activity or the lack of policies promoting health and access. Individuals on higher income have more facility and opportunity to do physical activity, as well as inhabiting a society in which it is recognized by their peers.[16]

Self-perceived health is reflected in the level of physical activity. Those who report their own health as good do more physical activity than those who rate it as poor or regular.[9] There is an association between being insufficiently active in commuting and rating health as regular. Being insufficiently active in the leisure time domain or dissatisfied with physical health was associated with dissatisfaction with mental health. This trend was consistent with the results of other studies.[5,25]

Older individuals with lower levels of schooling, representing the majority of this sample, had a higher prevalence of being insufficiently active in leisure time, although not statistically significant in the unadjusted analysis. A similar result was found in older individuals in Campinas.[25] Those with higher levels of schooling tended to have better health conditions and social support, and better assimilated the benefits of regularly

doing physical activity.[16] The PRs showed no association with inactivity in leisure time in the adjusted models.

Public policies aiming to promote better quality of life should encourage the disadvantaged segments of society. This would prevent social inequalities in morbidity and mortality from growing and guarantee more equality in adopting behavior favorable to health.[25]

Public health care policies should be established to promote and sustain active and health ageing. Recife, PE, Northeastern Brazil, stands out due to its City Gym program – *Programa Academia da Cidade,* which enables better adherence to exercise in public places with equipment for doing physical activity. This program was groundbreaking in that it encouraged women living where the equipment was installed, including older women of lower purchasing power, to have access to physical activities.[23]

The Brazilian Ministry of Health launched a strategic action plan to tackle non-communicable chronic diseases affecting the poorest levels of society and vulnerable groups. Faced with this reality, the Ministry of Health established public policies promoting health, prioritizing various activities, including physical activity. Thus, the Health Gym program – *Programa Academia da Saúde* was created in April 2011. This program aimed to encourage physical activity by constructing healthy spaces, favoring activities aimed at active ageing by implementing comprehensive health care and incentivizing the older individuals in this practice.[15]

In the literature, there are few studies specifically in physical activity in the older adults, especially in a state capital of the Northeast.

There are some limitations to this study. As it is a cross-sectional study, the relationship between cause and effect cannot be evaluated. Information presented herein on factors associated with physical activity in the commuting and leisure time domains may help future studies assess accessibility and obstacles to the older population using walking as a means of transport and in leisure time in Maceió.

The results show a high prevalence of physical inactivity in commuting and leisure time in older adults. Public policies should be drawn up that promote the development of physical activity, especially in the older elderly, females, those on lower income and those reporting poor perceived health.

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