Physical inactivity and associated factors in adults, São Paulo, Brazil

Inatividade física e fatores associados em adultos, São Paulo, Brasil

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Abstract

Objective: To analyze the prevalence of overall and leisure time physical inactivity and associated factors and types of exercises or sports modalities according to schooling in 2,050 adults from 18 to 59 years of age - state of São Paulo, Brazil. **Methods:** Population-based cross-sectional study with a stratified sample of clusters performed in multiple stages. Physical inactivity was determined using the short version of the International Physical Activity Questionnaire – IPAQ and by a question on the regular practice of leisure time physical activity. Data analysis took the sample design into account. **Results:** Prevalence of physical inactivity during leisure was higher among women. Poisson multiple regression model in man indicated that overall sedentarism was lower among single and separated men, students and without car in the household. Leisure physical inactivity was greater among men over forty years, among those with less schooling and full-time students. Overall physical inactivity was more prevalent among woman with more schooling, with less qualified occupations and widows. Leisure physical inactivity decreased with age and schooling. Among modalities practiced for leisure, walking was more prevalent among women and football was more prevalent among men. Most modalities were directly associated with schooling; approximately 25% of the individuals with more than 12 years of schooling practiced walking. **Conclusions:** These results suggest that interventions and public policies to promote physical activity should consider differences in gender and socioeconomic status as well as the preferences for different modalities and the context in which the physical activity is practiced.

Keywords: Physical activity. Leisure Activities. Exercise. Risk Factors. Health Surveys. Brazil.

Resumo

Objetivo: Analisar prevalências de inatividade física e fatores associados, e exercícios e esportes praticados segundo escolaridade em 2.050 adultos de 18 a 59 anos de idade - Estado de São Paulo, Brasil. **Métodos:** Estudo transversal de base populacional com amostra estratificada e em múltiplos estágios. A inatividade física global foi aferida pelo International Physical Activity questionary – IPAQ short version, e por questão sobre prática regular de atividade física no lazer. A análise dos dados levou em conta o desenho amostral. **Resultados:** A prevalência de inatividade física no lazer foi maior entre as mulheres. Já a inatividade física pelo IPAQ foi maior entre os homens. Modelos de regressão múltipla de Poisson indicaram, nos homens, menor inatividade física pelo IPAQ nos solteiros e separados, estudantes e aqueles que não possuíam carro. A inatividade física no lazer foi maior nos homens acima de 40 anos e com menor escolaridade ou apenas estudantes. A inatividade física pelo IPAQ, nas mulheres, foi mais prevalente entre as com maior escolaridade, ocupações menos qualificadas e viúvas; a inatividade física no lazer diminuiu com o aumento da idade e da escolaridade. Entre as modalidades praticadas no lazer, a caminhada foi a mais prevalente nas mulheres e o futebol nos homens. A maioria das modalidades foi diretamente associada à escolaridade; aproximadamente 25% dos indivíduos com mais de 12 anos de estudo praticava caminhada. **Conclusões:** Estes resultados sugerem que intervenções e políticas públicas de promoção da atividade física devem considerar diferenças socioeconômicas, de gênero, bem como as modalidades e o contexto em que a atividade física é praticada.

Palavras-chave: Atividade Física. Lazer. Exercícios. Fatores de Risco. Levantamentos Epidemiológicos. Brasil.

Introduction

The twentieth century was marked by the progressive growth of physical inactivity which has reached extremely high prevalence today in both developed and developing countries[1]. Consistent scientific evidences has been produced on different benefits to health through physical activity[1-3]. People who engage in regular physical activities have lower risk of developing cardiovascular diseases, diabetes, some cancers, obesity, depression and anxiety symptoms among other morbidities[1,3-5]. Also, active people have lower rates of cardiovascular and overall mortality[6]. These findings led physical inactivity to be considered one of the most current relevant health problem for the role it plays in the incidence and prevalence of chronic diseases[1,7]. Consequently, the practice of physical activity has become an important resource to be used in order to prevent and control chronic diseases and has been gaining importance in public policy proposals to health promotion[6,7]. It is considered that the decrease in physical inactivity could have great impact on the costs of health services and on the improvement of the population health[5].

In epidemiological studies, physical activity has been focused in two contexts: physical activity during leisure time - which includes games, sports, hiking and exercises undertaken during leisure time; and overall physical activity - which includes, in addition to leisure activities, those performed as a means of locomotion, at work and household[1,8]. Most epidemiological studies analyze physical activity in general in the context of leisure, and evidences of associations between health and overall physical activity are scarce and controversial[9]. There are few articles which analyze both physical activity in the overall context and in leisure time [10].

Population-based studies have used different tools and criteria to measure physical inactivity and the level of physical activity which hinders the comparability of the results[9,11]. For population-based surveys it is essential to use a valid instrument, of easy application, low cost, allowing the comparison among

surveys conducted in different localities. The instrument that has been most frequently used in epidemiological studies in Brazil is the *International Physical Activity Questionnaire (IPAQ)*. This questionnaire was proposed by the World Health Organization, with the objective of making available a tool for measuring physical activity level, which could be applied in different regions and cultures. The questionnaire was tested in several countries, including Brazil [12].

The importance of physical activity for public health makes it necessary to increase the knowledge of the epidemiological pattern of this practice and to monitor population subgroups prevalences.

Given these findings, this study aimed to analyze the prevalence of overall physical inactivity and inactivity during leisure time and the association of these indicators with demographic and socioeconomic factors in adults between 18-59 years old living in areas of the state of Sao Paulo, as well as to evaluate differentials in the ways of physical exercise and sports played according to schooling.

Material and methods

This cross-section study used data from population-based health surveys conducted in the period of 2001 to 2002, in non-institutionalized urban residential populations in four areas in the state of São Paulo - Brazil:

- City of Campinas
- City of Botucatu
- District of Butantã, in the city of São Paulo
- An area encompassing the cities of Itapecerica da Serra, Embu and Taboão da Serra.

A two-stage probabilistic sample was obtained. In each area of research, the *census* urban tracts were grouped into three strata according to the percentage of heads of household with college-level education less than 5%, 5% to 25% and over 25%. In each one of the areas 10 census tracts were selected from each strata with proportional probability in according to the size of the census tracts expressed by the number of households on that. In the second stage, a systematic sample of households was drawn in each selected census tracts.

The minimum size set for the sample took into account the possibility to estimate a prevalence of 0.5, with a sample error of 0.10, considering a 95% confidence in the determination of confidence intervals, and a design effect estimated in 2. Considering possible losses the minimum sample size was high at 20%. Further details of the methodology can be found at Alves et al[13].

For this study data from subjects aged from 18 to 59 years was analyzed.

The survey questionnaire included questions about socioeconomic conditions, morbidity during the past 15 days, chronic diseases *check list*, use of health services and health-related behaviors, among other topics. The questionnaire was applied directly to the person selected.

The variables included in this study were:

Physical activity evaluated by International Physical Activity Questionnaire

(QIAF – IPAQ), short version, which verifies the weekly frequency, duration and intensity of physical activity performed in the following contexts: work, transportation, household and leisure time activities. The subjects were categorized into:

- *Sedentary:* no physical activity for at least 10 continuous minutes in any weekday.
- *Insufficiently active:* physical activity for at least 10 continuous minutes in some weekday without meeting the criteria to be classified as active.

- *Active:*

- Vigorous activities at least 3 days a week and at least 20 minutes in each session

- Moderate activity or walking at least 5 days a week and at least 30 minutes or

- Any activity at least 5 days a week for 150 minutes or more.

- *Very active:*

- Vigorous activities at least 5 days a week for at least 30 minutes

- Vigorous activities at least 3 days a week, with 20 or more minutes per session, plus moderate activity or walking at least 5 days per week and with at least 30 minutes per session.

In this study these categories were group in this manner "sedentary + insufficiently active" and used the term "insufficiently active" to designate this category.

Leisure time physical activity: was set to insufficiently active on leisure time, the individual that answered negatively to the question: "Do you regularly practice, at least once a week, any sport or exercise?"

Socioeconomic and demographic variables: gender (female and male), age (18 - 29, 30-39, 40-49 and 50 to 59 years), race/ethnicity (white, black/brown and others), marital status (married, stable union without marry, singles, widows and divorced), religion (Evangelical and other), schooling (0-7, 8 to 11 and 12 or more years of study), per capita household income (less than or equal to 2 minimum Brazilian salaries and more than 2), automobile ownership by the family (yes or no), type of dwelling at the time of the interview, grouped into: "household activities" (domestic occupation in own house), unemployed, students, higher qualification occupations (including directors, top-level professionals and professionals at the technical level), and lowest qualifying occupations (including workers without direction, technical or top-level jobs, with activities in commerce, administration, provision of services, industry or agriculture).

The data was enter in Epi Info database. Analyses were made with STATA program using *svy* commands (for complex samples analysis).

The prevalence of overall physical inactivity (IPAQ) and at leisure time for each sex was estimated in according to the set of socioeconomic and demographic variables. To test these associations, the chi-squared test was used with a significance level of 5%. The prevalences and prevalence ratios were calculated with 95% confidence intervals using Poisson. A Poisson multiple regression model was developed, in which variables with $p<0.20$ were included in simple analysis adopting the *backward* procedure were variables with $p<0.05$ remained in the model.

This study was approved by the Ethics Committee of The State University of Campinas (process nº. 369/2000).

Results

Data from 2050 adults (1028 women and 1022 men) was analyzed. Between individuals sampled, 7.6% of losses occurred due to refusals and individuals not being reached after more than three visits.

It was found that among men and women respectively, the prevalence of sedentary by IPAQ was 6.8% and 4.4%, insufficiently active 16.6% and 7.3%, active 48.2% and 67.0%, and very active 28.4% and 21.2%. Physical inactivity in leisure time had prevalence of 65.4% (data not shown in table).

Table 1 shows that there were significantly more inactive men in leisure time with 30 years of age or more, with black/brown color (on the threshold statistical significance), married in relation to single, those with lower schooling, those without car in the household and among those with a lower qualification occupation. According to IPAQ, there were more inactive men of white race, with 12 or more years of schooling in relation to those with less than 7 years (on the threshold statistical significance), with occupations of higher qualification and whose family owned a car. Single and separated men were shown to have been significantly more active than those married.

Table 2 shows that women with the highest prevalence of physical inactivity during leisure time were under 29 years old compared with those with more than 50 years, those with race black/brown, and

Table 1 – Prevalence (%) for overall sedentarism and sedentary during leisure, according to demographic and socioeconomic factors in men in areas of the state of São Paulo, Brazil.

		MEN			
		Leisure inactivity		IPAQ inactivity	
	N	Prevalence (%)	Prevalence ratio (IC 95%)	Prevalence (%)	Prevalence ratio (IC 95%)
Age (years)					
18 a 29	474	44,7	1	19,8	1
30 a 39	204	59,0	**1,10 (1,03-1,17)**	19,4	1,00 (0,92-1,08)
40 a 49	198	64,9	**1,14 (1,07-1,21)**	29,0	1,08 (0,98-1,19)
50 a 59	144	65,2	**1,14 (1,06-1,23)**	28,5	1,07 (0,99-1,16)
Total	1020	56,2		23,4	
		p=0,000		p=0,150	
Race/ethnicity *					
write	716	54,1	1	26,4	1
black/mixed	281	61,8	**1,05 (1,00-1,10)**	16,7	**0,92 (0,87-0,98)**
		p=0,050		p=0,016	
Marital status					
Married	500	58,5	1	28,1	1
Together but not married	177	62,5	1,03 (0,95-1,10)	21,6	0,95 (0,89-1,01)
Single	267	36,0	**0,86 (0,79-0,93)**	14,2	**0,89 (0,83-0,95)**
Separated	44	58,2	1,00 (0,88-1,14)	7,0	**0,83 (0,75-0,93)**
widowed	19	65,4	1,04 (0,88-1,23)	46,6	1,14 (0,91-1,44)
		p=0,002		p=0,005	
Religion					
Evangelical	150	59,1	1	18,3	1
Other	869	55,6	0,98 (0,90-1,06)	24,1	1,05 (0,96-1,14)
		p=0,602		p=0,291	
Schooling (years)					
0 a 7	375	70,0	1	20,0	1
8 a 11	478	46,6	**0,86 (0,81-0,91)**	24,1	1,03 (0,97-1,10)
12 or more	167	46,1	**0,86 (0,79-0,93)**	29,9	**1,08 (1,00-1,17)**
		p=0,000		p=0,128	
Per capita household income - minimum salaries					
<=2	533	59,3	1	20,2	1
> 2	488	52,8	0,96 (0,90-1,02)	26,5	1,05 (0,98-1,13)
		p=0,205		p=0,165	
Occupation**					
Higher qualifying occupations	214	47,5	1	33,2	1
Lower qualifying occupations	647	62,5	**1,10 (1,02-1,19)**	21,1	**0,91 (0,84-0,98)**
Unemployed	59	37,6	0,93 (0,81-1,08)	18,0	**0,89 (0,79-1,00)**
Students	80	19,3	**0,81 (0,73-0,89)**	11,9	**0,84 (0,75-0,94)**
		p=0,000		p=0,007	
Car ownership					
No	384	61,2	1	15,5	1
Yes	635	52,8	**0,95 (0,91-0,99)**	28,3	**1,11 (1,05-1,18)**
		p=0,020		p=0,001	

* excluded 15 others **2 man declared "household activities" were excluded.

widows woman in relation to married, those with less than eight years of schooling, and those with per capita income equal or less than two Brazilian minimum salary, with occupations of lower qualification, unemployed and house workers (in relation to those with the highest occupations), and those without a car. There was greater physical inactivity according to IPAQ among white women with higher levels of schooling and income, and lower prevalence of inactive women in Evangelical religion, and among those were only students in relation to those in the highest occupations.

In table 3 are presented the prevalence ratios of variables that persisted in the Poisson multiple regression model. Among men, the higher prevalences of inactive at leisure time were found in the categories: 40 years old or more when compared to those who were less than 29 years old, those with less schooling and those with a higher occupation (in relation to that ones that was only students).

Higher prevalence of inactive men according to the IPAQ was observed in married men in relation to those single or separated, those who owned a car, among the ones with highest occupation compared to those that just were students. The final model for women showed higher physical inactivity at leisure time in those with less than 29 years of age in relation to those more than 50, in widowed women in relation to married, among those with less schooling and with lower qualification occupations in relation to that ones with highest occupations. In the IPAQ final regression model, the most inactive women were those with more years of schooling, and in leisure time, those occupying jobs with less qualification in relation to those with occupations with highest qualification.

Regarding physical activities in leisure time (table 4), was found that 16.7% of women practiced walking, 8.8% did gymnastics or bodybuilding, and 2.3% were bicycle users. Among men, 20.8% played soccer, 16.3% walked, 12.7% did gymnastics or bodybuilding, 6.1% were bicycle users, and 2.2% practiced swimming. Except cycling, the prevalence of these practices in both sexes increased significantly with the years of study. Among men, playing soccer was significantly more frequent in those with 8 to 11 years of study.

Discussion

This study detected significant social and gender differences in the prevalence of physical inactivity during leisure time and measured by the IPAQ (taking into account all contexts of daily physical activity), and in modalities of exercise and sports practiced by adults between 18-59 years old, from some areas of the state of São Paulo.

The prevalence of physical inactivity assessed by the IPAQ (sedentary + insufficiently active), was 17.3%, being 11.7% in women and 23.4% in men. Higher values were observed in telephone survey in all Brazilian capitals – VIGITEL, in this study the prevalence of physical inactivity (leisure, transportation, occupational and house work) ranged from 18.7% in Palmas to 32.3% in Natal, with prevalence of 25.6% in São Paulo[14]. Higher prevalences were detected in household surveys conducted in 15 Brazilian state capitals, this study found that physical inactivity estimated by IPAQ, ranged from 28.2% in Belém to 54.5% in João Pessoa, and 35.4% in São Paulo[15]. Other studies conducted in Brazil[5,9,10] and in other countries[3,16] have shown high prevalences of physical inactivity.

Systematic review of physical activity in Brazil at different ages and with different instruments, with a predominance of adults and use of IPAQ, showed a wide variation in the range of physical inactivity[17]. The existence in IPAQ of questions related to domestic activities with the quotation of examples can contribute in some cultural and social contexts for the overestimation, especially among women[9].

During leisure time the prevalence of physical inactivity was of 65.4% (56.2% in men and 73.8% in women). These values were lower than those found in research

Table 2 – Prevalence (%) of overall sedentarism and sedentary during leisure, according to demographic and socioeconomic factors in women in areas of the state of São Paulo, Brazil.

	MULHER				
		Leisure inactivity		IPAQ inactivity	
	N	Prevalence (%)	Prevalence ratio (IC 95%)	Prevalence (%)	Prevalence ratio (IC 95%)
Age (years)					
18 a 29	482	76,6	1	12,9	1
30 a 39	217	75,9	1,00 (0,94-1,05)	10,7	0,98 (0,92-1,04)
40 a 49	185	72,3	0,98 (0,92-1,04)	12,3	0,99 (0,93-1,07)
50 a 59	139	56,0	**0,88 (0,82-0,95)**	9,3	0,97 (0,91-1,03)
Total	1028	73,9		11,7	
		p=0,008		p=0,779	
Race/ethnicity *					
Write	728	68,2	1	13,4	1
Black/mixed	289	81,3	**1,08 (1,03-1,12)**	7,8	**0,95 (0,91-0,99)**
		p=0,001		p=0,041	
Marital status					
Married	403	69,1	1	12,2	1
Together but not married	148	80,2	**1,07 (1,01-1,12)**	9,4	0,98 (0,95-1,05)
Single	315	69,0	1,00 (0,94-1,06)	12,3	1,00 (0,95-1,06)
Separated	93	72,2	1,02 (0,94-1,10)	13,0	1,01 (0,92-1,10)
widowed	53	87,8	**1,11 (1,04-1,17)**	11,2	0,99 (0,91-1,08)
		p=0,061		p=0,937	
Religion					
Evangelical	196	77,6	1	6,1	**1**
Other	828	71,4	0,96 (0,92-1,01)	12,9	**1,06 (1,01-1,12)**
		p=0,185		p=0,05	
Schooling (years)					
0 a 7	366	82,6	1	4,9	1
8 a 11	472	70,1	**0,93 (0,89-0,97)**	10,7	**1,06 (1,01-1,10)**
12 or more	188	58,6	**0,87 (0,81-0,93)**	26,7	**1,21 (1,13-1,30)**
		p=0,000		p=0,000	
Per capita household income - minimum salaries					
<=2	553	77,7	1	7,3	1
> 2	475	66,8	**0,94 (0,89-0,98)**	16,4	**1,10 (1,02-1,19)**
		p=0,007		p=0,002	
Occupation					
Higher qualifying occupations	162	55,4	1	15,5	1
Lower qualifying occupations	471	77,3	**1,14 (1,06-1,22)**	13,1	0,93 (0,84-1,04)
Unemployed	39	80,6	**1,16 (1,04-1,30)**	6,4	0,95 (0,88-1,03)
Household activities	232	74,5	**1,12 (1,04-1,21)**	6,1	0,87 (0,94-1,06)
Students	84	64,7	1,06 (0,94-1,20)	12,9	**0,90 (0,84-0,97)**
		p=0,000		p=0,027	
Car ownership					
No	441	81,21	1	9,7	1
Yes	579	66,0	**0,92 (0,88-0,96)**	13,3	1,03 (0,99-1,08)
		p=0,000		p=0,174	

* excluded 15 others

Table 3 – Poisson multivariate regression model for overall sedentarism and sedentary during leisure in adults in areas of the state of São Paulo, Brazil.

Variable	MEN		WOMEN	
	LEISURE Prevalence ratio (IC 95%)	IPAQ Prevalence ratio (IC 95%)	LEISURE Prevalence ratio (IC 95%)	IPAQ Prevalence ratio (IC 95%)
Age (years)				
18 a 29	1		1	
30 a 39	1,06 (0,99-1,14)		0,98 (0,93-1,04)	
40 a 49	1,10 (1,03-1,18)		0,96 (0,90-1,03)	
50 a 59	1,10 (1,01-1,19)		0,85 (0,79-0,92)	
Marital status				
Married		1	1	
Together but not married		0,99 (0,93-1,06)	1,01 (0,96-1,07)	
Single		**0,92 (0,85-0,97)**	0,98 (0,92-1,04)	
Separated		**0,86 (0,76-0,96)**	1,02 (0,94-1,10)	
Widowed		1,18 (0,95-1,46)	**1,08 (1,01-1,16)**	
Schooling (years)				
0 a 7	1		1	1
8 a 11	0,90 (0,84-0,96)		0,92 (0,88-0,96)	1,06 (1,02-1,10)
12 or more	0,90 (0,83-0,99)		0,90 (0,83-0,98)	1,25 (1,17-1,34)
Occupation				
Higher qualifying occupations	1	1	1	1
Lowest qualifying occupations	1,07 (0,99-1,16)	0,94 (0,88-1,01)	**1,09 (1,01-1,17)**	**1,09 (1,02-1,16)**
Unemployed	0,94 (0,82-1,09)	0,96 (0,85-1,10)	1,09 (0,97-1,24)	1,00 (0,92-1,10)
Household activities	*	*	1,08 (0,99-1,17)	1,03 (0,97-1,09)
Students	**0,87 (0,78-0,97)**	**0,88 (0,79-0,98)**	1,02 (0,90-1,16)	1,02 (0,93-1,12)
Car ownership				
No		1		
Yes		1,08 (1,02-1,15)		

**2 man declared "home worker" were excluded.

conducted at northern and northeastern regions of Brazil (87%, 81.8% in men and 91.8% in women)[2] and similar to those observed in population of Peru (61.8%, 55, 5% in men and 67.6% in women), that study used similar questions about the of the practice exercise of leisure at least once a week. In this survey, only 10% among those who were not sedentary reached the recommendations of 150 minutes per week[18]. One study conducted in Brazilian capital cities showed that São Paulo had the lowest prevalence of the practice of leisure physical activity for 30 minutes, five or more days a week (12.1%), being 13.8% in men and 10 6% in women[14]. Studies which examine physical activity have been using different instruments and definitions for sedentary behavior at leisure time, turning difficult the comparisons among the results obtained. Systematic review of Brazilian studies found wide range of prevalence of sedentary behavior during leisure time ranging from 55.3% to 96.7%[17].

In this study men were more inactive than women according to IPAQ. Similar findings were observed in other studies in the state of São Paulo[9,11] and in south and southeast regions of Brazil[5]. Several studies, however, have detected a greater overall

Table 4 – Prevalence (%) of sports modalities practiced during leisure, according to schooling in women and men in areas of the state of São Paulo, Brazil.

		WOMEN Schooling (years)				
Physical activities	n	Total	0-7	8-11	12 or more	p
Walking	179	16,7 (13,9-20,0)	10,7 (7,5-14,9)	18,3 (13,9-23,7)	24,6 (17,1-34,1)	0,006
Gymnastics or bodybuilding	101	8,8 (6,8-11,4)	3,7 (1,8-7,4)	10,6 (7,4-15,0)	14,4 (9,2-21,9)	0,003
Cycling	29	2,3 (1,4-3,9)	1,0 (0,2-4,2)	2,8 (1,4-5,6)	3,9 (1,5-9,8)	0,249
Outros	60	5,3 (3,7-7,6)	3,6 (1,8-7,1)	4,3 (2,5-7,3)	10,6 (6,2-17,6)	0,011
		MEN Schooling (years)				
Physical activities	**n**	**Total**	**0-7**	**8-11**	**12 or more**	***p***
Soccer	242	20,8 (17,6-24,4)	15,9 (12,2-20,5)	27,6 (22,2-33,8)	15,7 (10,5-22,9)	0,000
Walking	177	16,3 (13,7-19,3)	11,3 (8,1-15,5)	17,0 (13,1-21,8)	26,9 (18,2-37,8)	0,004
Gymnastics or bodybuilding	171	12,7 (10,3-15,7)	5,6 (3,3-9,4)	18,0 (13,6-23,3)	17,3 (11,8-24,7)	0,000
Cycling	94	6,1 (4,7-7,9)	4,1 (2,5-6,8)	8,5 (5,9-12,3)	5,2 (2,3-11,3)	0,076
Swimming	28	2,2 (1,3-3,6)	0,6 (0,1-3,0)	2,2 (1,0-4,7)	6,2 (2,9-12,4)	0,005
Others	95	6,7 (4,8-9,2)	1,6 (0,1-3,1)	9,1 (5,9-13,8)	12,9 (7,4-21,4)	0,000

sedentary lifestyle in women[15,16,19-22].

Physical inactivity in leisure time context was more prevalent among women which has been consistently reported[4,8,14,23].

The gender differences can be explained by different social and family roles that men and women in adult age have, influenced by culture and social organization in which they live. Women are usually responsible for household chores, care giving for children and relatives with limitations, and generally have paid jobs or are dependent on the husband, therefore, they end up having less time available and less opportunities for leisure time activities[24].

It was observed that physical inactivity by IPAQ increase with age, which is frequently documented in research[9,11,15,19-21]. Some studies, however, have not been detecting significant associations between overall physical inactivity and age[14,25]. The physical inactivity during leisure time tends to increase with age, as found in other studies in Brazil[2,4,7], although this association was not found in adults and elderly in the European Union[23]. Our study found that physical inactivity during leisure time was lower among women between 50 and 59 years old compared to the ones that are less than 29 years old, which is consistent with a study conducted in Europe, in which physical activity during leisure time was more prevalent with the increasing of age[26] and also with results from VIGITEL[14] in which women between 18 to 24 years old were less active during leisure time.

After multiple regression analysis, the finds that black/brown individuals were more inactive during leisure time as well as with the highest inactivity detected by IPAQ in Caucasians lost the statistic significance, agreeing with the findings of Dias-da-Costa et al.[4] that found no racial differences in leisure time physical inactivity in the adult population of the city of Pelotas and those results of Siqueira et al.[5] in a survey conducted with IPAQ in the south and northeast regions of Brazil.

Being active during leisure time was associated to marital status, being more prevalent among single men, even after adjusting for age, this result is similar to other

Brazilian studies[4,8]. It was also the single men along with separated men, that most engaged in physical activities as measured by IPAQ, similar to the findings of research conducted in 15 countries from the European Union[20]. However, study in Portugal not found significant differences in relation to marital status and overall physical activity[25].

The association observed in women between physical activity measured by IPAQ and religious affiliation in the simple analysis, was no longer significant in the final model. It can be partially explained by the fact that the data from this study showed significant association between religion and education (p = 0.038), with evangelicals having less years of study.

This study found inequality in physical inactivity during leisure time according to schooling. This finding is in agreement with results from other surveys conducted in Brazil[2,4,9,14] and in other countries[18,23,25,27]. Adults with higher educational levels have greater access to knowledge and also material living conditions that promote healthy practices and habits.

In physical inactivity as measured by IPAQ, there was a direct association with educational level, which may partly be attributed to the fact that people with less education have higher prevalence of occupational and transportation physical activities. Several Brazilian studies show that overall physical inactivity is more prevalent in individuals with higher education[1,5,9,11,22]. In a study using IPAQ in 15 Brazilian capitals and in the Federal District, detected in the cities of Rio de Janeiro and Porto Alegre higher prevalences of inactive individuals with lower schooling[15]. Researches in European countries have found the opposite: in Genova[19] and in 15 countries from the European Union[20], to be inactive in a general way was more common in individuals of lower socioeconomic status.

The association found between labor occupation and physical inactivity during leisure time in both sexes was also observed in Swiss adults, in whom physical inactivity during leisure time was higher among workers with low qualification[28], as well as in Australian[29] and Portuguese[25] adults with occupational activities included in the "blue collar" (less qualified) category. Some studies showed an association between physical activities during leisure time and number of worked hours [18,29], showing that disadvantaged segments of society would have less time or energy for physical activities during leisure time[30]. Few psychosocial resources and low participation in social groups could also explain the physical inactivity during leisure time in socioeconomically disadvantaged adults[28]. Adults from disadvantaged layers tend to live farther from work, living in less secure areas, using public transportation, spending more time with commuting and doing more job overtime, thus having less time for leisure activities[29]. Improvements in general living conditions and investment in social capital are considered key factors for the decrease in unhealthy behaviors such as physical inactivity[28].

Owning a car was associated by IPAQ with physical inactivity in men after adjusting for socioeconomic status in the final model. Car ownership would discourage physical activity as a means of transportation[31]. Transportation physical activity deserves highlight in healthy promotion policies. Promoting active transportation by walking or bicycling and decreasing the use of a car is important since it can improve not only individual health, but also the health of the planet by reducing the emission of pollutants[32].

Among the sports and exercise practiced, it was found that 16.5% of adults practiced walking, a similar prevalence of 15% was observed in a study conducted in Pelotas - RS. Walking is the most prevalent physical activity both in developing and developed countries. Walking is low cost and affordability for the population in general[11]. In our study, in the higher levels of education, the prevalence of walking was around 25% in both sexes.

Nearly all physical activities examined were practiced more by groups of higher

education, agreeing with the findings of other authors[18,30], except for cycling in both sexes and soccer in men. Soccer was the most played sport by males reaching a prevalence of 20.9%, agreeing well with the study of Séclen-Palacin and Jacoby[18], who also found higher prevalence of soccer practicing in the lower socioeconomic layer. Soccer goes beyond the socioeconomic issue by being widespread culturally and by the media in Brazil.

Playing sports is an option that requires specific equipment and physical spaces, often not accessible to the portion of the population with lower purchasing power[30].

Regarding the limitations of this study, it points to the fact that the investigation did not bring more detailed information on other influence factors as socio-environmental, existence of adequate and safe public spaces close to housing, among others. Also the assessment of physical inactivity was done by means of self-reported information, which could overestimate the physical activity as this is a practice considered desirable[28] as domestic activities among women for example. Being a cross-sectional study, the possibility of reverse causality, not allow observations of cause and effect. It is worth mentioning that individuals who practice physical activity during leisure time only once a week were not considered inactive, although they could be insufficiently active (among these, only about 10% did not meet the recommendations for physical activity by IPAQ).

In relation to the benefits of the study, can be cited the fact that our sample covers different areas of the state of São Paulo, using a standardized questionnaire for overall physical activity (IPAQ), since this the most used instrument in Brazil[17], and had a sample large enough to stratification by gender and allow that relevant physical inactivity inequalities could be detected. Another quality of the study is to analyze both the activity in overall context and during leisure time, since they have distinct epidemiological patterns. Differences between the prevalence in these two contexts, as well as the associated factors, demonstrate the importance of its study separately[25,27]. The high prevalences of physical inactivity found in this and in the studies cited above, show the importance of promoting active lifestyles[18]. Understanding the associated factors of physical inactivity could contribute to the development of public policies and effective interventions programs to reduce social inequities[29]. Given these findings, strategies are needed in public health in order to disseminate and encourage physical activity taking into account the differences by sex and socioeconomic factors, and the context in which it can be practiced. Encouraging people to develop and maintain the habit of performing regular physical activity since young ages should be the target to health promotion programs[24]. Offer more physical spaces and providing physical activities that could be developed in groups are important strategies in reducing physical inactivity[28], especially in socially disadvantaged population subgroups.

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