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Physical activity levels in public school teachers

ABSTRACT

OBJECTIVE: To assess the level of physical activity in public school teachers.

METHODS: Cross-sectional study conducted with 1,681 teachers from the city of São Paulo, southeastern Brazil, in 2009. The International Physical Activity Questionnaire short version was applied and the level of physical activity was categorized as low, moderate or high. The study sample was stratified by age, gender and area of the city (south and east). The chi-square test was used for comparisons at a 5% level of significance.

RESULTS: The prevalence of low, moderate and high levels of physical activity was 46.3%, 42.7% and 11%, respectively. Low physical activity was more prevalent among those aged 31 to 42 years (19.5%) and less prevalent among those aged 55 to 66 (5.7%). Moderate and high levels of physical activity were less prevalent among older teachers. A greater proportion of teachers showed low and high levels of physical activity in the east compared to the south of the city (50.5% vs. 48.6%; 11.4% vs. 8.1%, respectively). The proportion of teachers reporting moderate physical activity was significantly lower in the east (38.1%) compared to the south of the city (43.3%). Low and high levels of physical activity were significantly higher in men than women (53% vs. 42.9%; 14.1% vs. 9.4%, respectively). The prevalence of moderate level of physical activity was significantly lower in men (32.9%) than women (47.7%).

CONCLUSIONS: The prevalence of low physical activity was strikingly high. Variables such as age, gender and city area should be taken into account while planning and targeting campaigns aimed at promoting increased physical activity in this population.

DESCRIPTORS: Faculty. Education, Primary and Secondary. Motor Activityt. Sedentary Lifestyle. Physical activity level.

INTRODUCTION

Low physical activity level (PAL) is a major risk factor for development of chronic degenerative diseases such as heart diseases, cancer, hypertension, diabetes and obesity.[17,a] Epidemiological studies have shown high rates of physical inactivity world. In Finland, for example, this rate is as high as 71%, outweighing other major risk factors such as smoking, hypercholesterolemia, arterial hypertension and obesity.[18] Low PAL is also extremely high (greater than 60%) in countries like the United States, Australia and England.[7]

Monteiro et al[12] reported that 3.3% of the Brazilian population is regularly active. Data from the Brazilian National Health System database (DATASUS)[b]

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[a] World Health Organization. Physical activity. Geneva; 2010 [cited 2010 Jun 10]. Available from: http://www.who.int/topics/physical_activity/en/

[b] DATASUS. Indicadores de morbidade e fatores de risco. Brasília; 2007 [cited 2009 Sep 15]. Available from: http://tabnet.datasus.gov.br/cgi/idb2007/d26a.htm

for the years 2002–2003 and 2004–2005 showed low PAL in most Brazilian state capitals. João Pessoa (Northeastern Brazil), Rio de Janeiro (Southeastern) and Florianópolis (Southern) had the highest rates of irregularly active individuals (about 55.1%, 44.6% and 44.4%, respectively). In São Paulo (Southeastern), 35% of the population was considered irregularly active.

In addition to the impact of a sedentary lifestyle to people's health, inadequate levels of physical activity are also associated with considerable economic costs for governments.[1] Having a physically active lifestyle entails health promotion and improved quality of life and may be a sound investment in public health.[3,10,11,18]

Data available show the need for ongoing monitoring of PAL in the population, which basically rely on effective public health programs to encourage a physically active life. There are scarce studies on PAL among teachers but they are necessary to characterize this risk factor. This study aimed to assess PAL in public school teachers.

METHODS

A retrospective study with a sample of 1,681 teachers from state public schools in the city of São Paulo was carried out in 2009. This study was part of an institutional assessment in 2009. At that time, there were 257,464 teachers distributed in 91 regional school districts statewide. Of these, 48,785 served 13 school districts in the capital São Paulo.[c]

A communication detailing the proposed research project was sent to all school districts in the capital for consideration and approval. Following consultation, two school districts and their related schools agreed to participate in the research study. The study was conducted in 40 randomly selected schools in the east (eastern regional district 1) and 40 in the south area of the city (southern-central regional district).

The study was conducted between November and December 2009. In addition, data here presented are part of another study aimed to assess the association between different PALs and excess body mass.

For estimation of the adequate sample size the following equation was applied:[15] $N = (z^2.p.q)e^2$, where z is the 95% confidence interval (95%CI), p is the proportion of occurrence of the event; q is the proportion of non-occurrence of the event (100–p); and e is the maximum error allowed (2.5%). P-values were derived from previously published estimates.[7] The following correction equation was applied: $N = n_0 / (1 + n_0 / n)$, where n_0 is the initial sample size; and n is the size of the study population (48,785 teachers).

Inclusion criteria included being a public school teacher; not in sick leave; and having permanent residence in the city area of the school district. Not being a practicing teacher was an exclusion criterion. A total of 1,713 teachers met the inclusion criteria. Of these, 32 were excluded because of missing information on PAL. The final sample comprised 1,681 teachers.

The International Physical Activity Questionnaire (IPAQ) version 8, validated for the Brazilian population, was used to estimate PAL.[9] Teachers were interviewed using IPAQ short form. The questions were asked regarding the preceding week, exploring the frequency and duration of physical activity (PA) including walking and moderate and vigorous physical exercise. PAL was classified into three levels:[d]

1. Low: when adequate PALs were not achieved to be in categories 2 and 3 (below);
2. Moderate:
   - 2.1. Vigorous PA: ≥3 days/week and ≥20 min/day, or
   - 2.2. Moderate exercise or walking: ≥5 days/week and ≥30 min/day, or
   - 2.3. Any cumulative PA: ≥5 days/week of any combination of walking and moderate or vigorous exercise accumulating at least 600 MET-min/week;
3. High:
   - 3.1. Vigorous PA: ≥3 days/week accumulating at least 1,500 MET-min/week; or
   - 3.2. Any cumulative PA: seven days/week of any combination of walking and moderate or vigorous exercise accumulating at least 3,000 MET-min/week.

PALs were assessed for the entire sample and stratified by age, gender and city area.

The statistical analyses were performed using GraphPad Prism version 4 (CA, US). The chi-square test was applied to compare the three categories of PA stratified by age, city area and gender. The level of significance was $p<0.05$.

The study followed the ethical standards of the National Health Council Federal Resolution and the Human

[c] Secretaria de Estado da Educação de São Paulo. Quadro – contingentes ativos da rede estadual de ensino. São Paulo; 2009[cited 2009 Mar 10]. Available from: http://drhu.edunet.sp.gov.br/Arquivos/Por_quadro.pdf

[d] International Physical Activity. Guidelines for data processing and analysis of the International Physical Activity Questionnaire (IPAQ) – short and long forms. 2005 [cited 2009 Mar 10]. Available from: www.ipaq.ki.se/scoring.pdf

Rights Declaration of Helsinki and it was approved by the Research Ethics Committee of Universidade Federal de São Paulo (0221/11).

RESULTS

The overall mean age was 40 years (range: 19 to 66). Table 1 shows the general characteristics of the sample studied.

Teachers mostly had low PAL and a small proportion had PALs. There was a median prevalence of moderate PAL in the sample (Figure).

Most teachers with low PALs were 31 to 54 years of age. There was a lower prevalence of low PAL among those aged 55 to 66 years compared to those aged 19 to 36. The same was seen for moderate and high PALs (Table 2).

The proportion of low and high PAL among teachers was higher in the eastern area of the city and the proportion of moderate PAL was higher in the southern area (Table 2).

Low and high PAL was higher among men than women. The contingency analysis showed a significantly lower proportion of moderate PAL among men than women (Table 2).

DISCUSSION

This study shows current data on PAL of residents of the city of Sao Paulo in 2009. No other studies assessing PAL of teachers in the state of São Paulo were found, which makes it an original study.

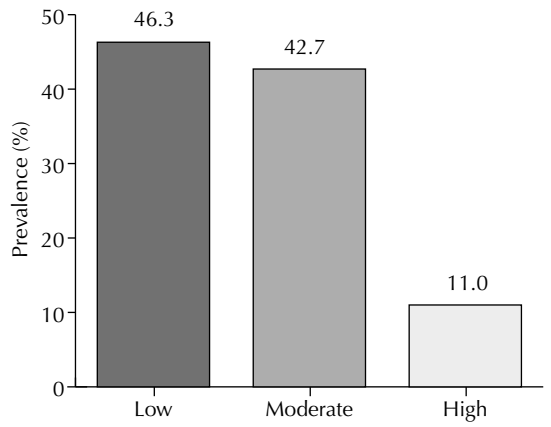

Figure. Physical activity level of public school teachers. São Paulo, Southeastern Brazil, 2009.

Table 1. Characteristics of in public school teachers. São Paulo, Southeastern Brazil, 2009.

Variable	n	%
Age (years)		
19 - 30	296	17.6
31 - 42	612	36.4
43 - 54	582	34.6
55 - 66	191	11.4
City area		
South	836	49.7
East	845	50.3
Gender		
Male	572	34.0
Female	1109	66.0

Table 2. Physical activity level of public school teachers by age, city area and gender. São Paulo, Southeastern Brazil, 2009.

Category	Low		Moderate		High		χ^2
	n	%	n	%	n	%	
Age (years)							
19 - 30	135	8.0	109	6.5	52	3.1	
31 - 42	327	19.5	226	13.4	59	3.5	$p < 0.05$
43 - 54	256	15.2	249	14.8	77	4.6	
55 - 66	96	5.7	73	4.3	22	1.3	
City area							
South	406	48.6	362	43.3	68	8.1	$p < 0.05$
East	427	50.5	322	38.1	96	11.4	
Gender							
Male	303	53.0	188	32.9	81	14.1	$p < 0.01$
Female	476	42.9	529	47.7	104	9.4	

Monteiro et al[13] reported 47.4% of low PAL in 2,122 people in 2005 while data from the Brazilian Ministry of Health (2009)[e] showed a prevalence of 25.6%. Matsudo et al[10] assessed PAL using IPAQ in 2,001 individuals from 29 cities in the state of Sao Paulo and reported that 8.8% were sedentary. Similar results were reported by Hallal et al.[7] They studied leisure-time PAL in 2,348 individuals in São Paulo and found 8.9% prevalence of low PAL. The Brazilian Ministry of Health[f] evaluated sedentary and irregularly active individuals as a single group called insufficiently active and found a prevalence of 35.4% of inadequate PALs. Using the same approach, Rocha[14] estimated that 56.4% of the population in the southern area of the city of São Paulo were insufficiently active. The results from the current

[e] Ministério da Saúde. Vigilância de fatores de risco e proteção para doenças crônicas por inquérito telefônico. Brasília; 2008[cited 2010 Jun 30]. Available from: http://portal.saude.gov.br/portal/arquivos/pdf/ VIGITEL2008_web.pdf

[f] Ministério da Saúde. Inquérito domiciliar sobre comportamentos de risco e morbidade de referida de doenças e agravos não transmissíveis. Brasil, 15 capitais e Distrito Federal 2002-2003. Rio de Janeiro; 2004[cited 2010 May 27]. Available from: http://www.inca.gov.br/vigilancia

study are possibly different from those reported in other studies because there were adopted the current recommendations for categorizing PAL with the use of IPAQ.[d] In our study, a high prevalence of 46.3% of low PAL was found. Thus, this segment of public school teachers of São Paulo is presumably deprived of the biological, psychological and social benefits associated with adequate daily PALs.[16,a]

The positive association between low PAL and aging is strongly supported by literature.[4,6] In our study it was verified only in individuals younger than 54 and the prevalence of low PALs reduced with age (55 to 66 years). It is possible that low PALs throughout life may be associated with the development of chronic degenerative diseases, reduced performance status and lower quality of life.[2,5,a] This can be particularly valid for teachers aged 55 to 66 years as they showed reduced prevalence of moderate and high PA (Table 2).

PAL among teachers may vary by city area. There was seen a greater proportion of teachers low and high PAL in the eastern than in the southern area of the city, and moderate PAL was significantly lower in the eastern area. These findings may encourage the formulation of public policies aimed to reduce low PALs in areas of the city that require more attention.

Moderate PAL was significantly more prevalent among women than men. However, the prevalence of teachers with low and high PAL was greater in men. Household physical activity is included in the assessment of PAL with IPAQ and may be reflected in the greater proportion of moderately active teachers found in our study since household chores are mainly done by women.[8] The finding of a greater proportion of high PAL among men can be attributed to a greater amount of time spent on occupational PA and sports.[7]

The present study evaluated only public school teachers in eastern and southern areas of the capital, making the results not fully representative to the entire city of São Paulo. There is a need to assess the segments of the school system in other areas (north and west) that were not evaluated. However, the results of this study constitute a first step for further research in areas of the city with specific social and environment characteristics associated with different PALs.

In conclusion, a significant number of teachers have low PALs, which may vary according to age, gender and city area. Public and private authorities can use the study data to support the planning of actions targeted to public school teachers in the state of São Paulo and ensure greater involvement and promotion of PA.

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