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Leisure time physical activity among Brazilian adults: National Health Survey 2013 and 2019

Atividade física de lazer na população adulta brasileira: Pesquisa Nacional de Saúde 2013 e 2019

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ABSTRACT: ***Objective***: The aim of this study was to analyze the prevalence of leisure-time physical activity in 2013 and 2019 according to sociodemographic characteristics in Brazilian adults. ***Methods:*** We analyzed data from the National Health Surveys conducted in 2013 and 2019. Prevalence of leisure-time physical activity (150+ minutes per week in physical activities) was calculated according to gender, age, education, race/skin color, Federative Units, and regions of Brazil in 2013 and 2019. Poisson regression models and 95% confidence intervals (95%CI) were used to compare leisure-time physical activity across different groups in 2013 and 2019. ***Results:*** The proportion of Brazilian adults active in leisure-time increased from 22.7% (95%CI 22.06–23.34) in 2013 to 30.1% (95%CI 29.44–30.67) in 2019. The prevalence of leisure-time physical activity increased between 2013 and 2019 in 23 of the 27 Federative Units in Brazil. Both in 2013 and in 2019, the proportion of active people during leisure time was higher in men, young people, with a high level of education and individuals with white skin color. Overall, the magnitude of the observed differences in leisure-time physical activity between sociodemographic groups slightly decreased from 2013 to 2019. ***Conclusions:*** Despite the increase in the prevalence of leisure-time physical activity among Brazilian adults in the last six years, marked sociodemographic inequalities persist. The success of future public policies to promote physical activity in leisure must be evaluated from the perspective of social determinants of health and the reduction of inequalities in the practice of physical activity.

Keywords: physical activity; exercise; population surveys; health promotion

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RESUMO: ***Objetivo:*** Analisar a prática de atividade física no lazer, de 2013 e 2019, na população adulta brasileira e segundo características sociodemográficas. ***Métodos:*** Análise da base de dados da Pesquisa Nacional de Saúde, comparando-se o indicador de atividade física no lazer na Pesquisa Nacional de Saúde 2013 e 2019. A prevalência de atividade física no lazer (150+ minutos por semana em atividades físicas) foi calculada de acordo com sexo, idade, escolaridade, raça/cor da pele, unidades federativas e regiões do Brasil em 2013 e 2019. Análises de regressão de Poisson e intervalos de confiança de 95% (IC95%) foram utilizados para comparação da atividade física no lazer de diferentes grupos populacionais em 2013 e 2019. ***Resultados:*** A proporção de adultos brasileiros ativos no lazer aumentou de 22,7% (IC95% 22,06–23,34), em 2013, para 30,1% (IC95% 29,44–30,67), em 2019. A prevalência de atividade física no lazer aumentou entre 2013 e 2019 em 23 das 27 unidades federativas do Brasil. Tanto em 2013 quanto em 2019, a proporção de ativos no lazer foi maior em homens, jovens, com alta escolaridade e indivíduos com cor da pele branca. De forma geral, a magnitude da diferença na prática de atividade física entre grupos sociodemográficos observada em 2013 diminuiu ligeiramente em 2019. ***Conclusões:*** Apesar do aumento na prevalência de atividade física no lazer em adultos brasileiros nos últimos seis anos, marcadas desigualdades sociodemográficas ainda persistem. O sucesso de futuras políticas públicas de promoção da atividade física no lazer deve ser avaliado sob a óptica dos determinantes sociais de saúde e da redução de desigualdades na prática de atividade física.

Palavras-chave: Atividade física. Exercício físico. Inquéritos populacionais. Promoção de saúde.

INTRODUCTION

Physical activity (PA) is an important protective factor against numerous non-communicable chronic diseases, in addition to being associated with positive aspects in socialization, stress reduction, and mental illnesses[1]. Globally, it is estimated that approximately one in four adults do not do at least 150 minutes of moderate to vigorous intensity PA per week[2], as recommended by the World Health Organization[1].

Due to the benefits of PA, in 2013, the goal of reducing physical inactivity by 10% by 2025 was included in the Global Action Plan for the Prevention and Control of Non-communicable chronic diseases proposed by the World Health Organization. The Global Action Plan for Physical Activity 2018-2030[3] was launched, which aims to reduce physical inactivity by 10% by 2025 and by 15% by 2030. This bold and innovative plan aims to globally and locally promote a framework of viable policy actions that can be universally implemented.

The Global Action Plan for Physical Activity 2018–2030 addresses the cultural, environmental, and individual determinants of PA[3], and recognizes that, for the successful implementation of the plan, the design and maintenance of public policies focused on promoting PA in the population scope need to consider the sociodemographic distribution, as well as population groups with lower levels of PA, for example, women, aged people, and individuals in a position of socioeconomic disadvantage[4-6].

In Brazil, a country with continental dimensions, accentuated economic inequalities[7] and in health indicators[8] persist across the five macro-regions. Specifically in relation to leisure time physical activity (LTPA), data from the 2013 National Health Survey showed

that, despite the small variations in the prevalence of LTPA among the five macro-regions, important differences between population subgroups are observed[5]. For example, in 2013, the proportion of the population active in leisure time ranged from 22% in the South to 24% in the Midwest, with men and young people being more active than women and individuals aged 75+ years old[7]. Furthermore, these differences were more accentuated in the North Region, which suggests the need for actions to promote physical activity with different approaches in different population groups and in each of the five macro-regions of Brazil.

Brazil has substantially evolved with regard to monitoring risk factors for chronic non-communicable diseases, including different domains of PA[9-11]. Among the investments, population surveys at the local level stand out[12,13], as well as surveys and surveillance systems nationwide[5,9,10,14]. Thus, the aim of this study was to describe the prevalence of LTPA in 2013 and 2019 in Brazilian adults according to sociodemographic characteristics.

METHODS

This study used data from the National Health Survey (*Pesquisa Nacional de Saúde* – PNS) 2013 and 2019. The PNS is a household survey of national coverage carried out by the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística* – IBGE) in partnership with the Ministry of Health (MoH)[15,16]. The PNS sample is probabilistic and was conducted in three stages:

1. census sectors;
2. random selection of households;
3. random selection of the resident of each household.

In 2013, the sample size was calculated at approximately 80 thousand households and information was collected from 64,348 households. In 2019, the sample was calculated in 108,525 households; data were collected from 94,111 households, with a response rate of 93.6%. To allow comparison of surveys, this study used data from selected residents aged 18 years old or older, totaling 60,202 individuals in 2013 and 88,531 individuals in 2019. The PNS was conducted in accordance with the guidelines of Resolution No. 466/2012 of the National Health Council, which deals with research involving human beings. PNS databases are available for public access and use. Both editions of the PNS were approved by the National Research Ethics Committee of the MoH, under opinions No. 328.159 (2013) and No. 3.529.376 (2019). More details about the methodology can be found in specific publications[15,16].

LTPA was measured using standardized instruments in 2013 and 2019. These instruments included the following questions:

1. Have you participated in any type of physical activity or sport in the last three months?
2. What is the main type of physical activity or sport that you have practiced?
3. Do you exercise at least once a week?

4. How many days a week do you usually do physical activities or sports?
5. On the days you do exercises or sports, how long does this activity last?

A weekly physical activity score was calculated based on the time spent in physical activities, number of days, and type of activity. Running, aerobics/spinning/step/jump, soccer, basketball or tennis were considered vigorous physical activities. Thus, individuals who reported these activities had their weekly time multiplied by two. This strategy was adopted to incorporate the current PA recommendations of at least 150 minutes per week of moderate activities or 75 minutes per week of vigorous activities, or a combination of moderate and vigorous activities equivalent to 150 minutes per week of moderate physical activities. Participants who reported at least 150 minutes per week of LTPA were classified as active during leisure time.

The following sociodemographic information was collected and used in this study:

- gender (male, female);
- age group (18–24, 25–39, 40–59, and 60 years old or older);
- education (no education and incomplete elementary/middle education; complete elementary/middle education and incomplete high school education; complete high school education and incomplete higher education; and complete higher education);
- race/color (Caucasian/white, black, and brown);
- region (North, Northeast, Southeast, South, and Midwest).

Initially, the prevalence of leisure-time PA and respective 95% confidence intervals (95%CI) were calculated for each of the sociodemographic groups in 2013 and 2019. To verify the association of leisure-time PA with sociodemographic variables, Poisson regression models with robust variance were used, and the crude and adjusted prevalence ratios (PR) were estimated. Adjusted analysis models included mutual adjustment for all sociodemographic variables analyzed (gender, age, education, race/color, and region). Due to the number of comparisons performed and to reduce the possibility of type 1 error, 95% confidence intervals were used in the interpretation and comparison of physical activity estimates for different population groups in 2013 and 2019. All analyses were conducted in the statistics package Stata, version 16.1.

Ethics committee: The National Health Survey (*Pesquisa Nacional de Saúde*) was approved by the National Research Ethics Committee of the Ministry of Health, Opinion No. 3.529.376 (2019).

RESULTS

The prevalence of LTPA according to gender, age, education level, and race/color for Brazil, five major regions, in 2013 and 2019, is presented in Table 1. The proportion of Brazilian adults who reported at least 150 minutes per week of moderate to vigorous physical activity increased from 22.7% (95%CI 22.06–23.34), in 2013, to 30.1% (95%CI 29.44–30.67),

in 2019, which represents a 33% increase in the proportion of adults who are active in leisure. Both in 2013 and in 2019, the proportion of active people in leisure time was higher in men, young people, with a high level of education, and white individuals.

Table 1. Prevalence of leisure-time physical activity, according to sociodemographic characteristics. National Health Survey, 2013 and 2019. Brazil.

	2013 % (95%CI)	2019 % (95%CI)
Total	22.7 (22.06–23.34)	30.1 (29.44–30.67)
Gender		
Male	27.3 (26.35–28.30)	34.22 (33.33–35.12)
Female	18.6 (17.76–19.41)	26.38 (25.65–27.13)
Age range (years)		
18–24	35.6 (33.64–37.67)	41.0 (39.01–43.00)
25–39	25.8 (24.66–26.95)	35.4 (34.34–36.46)
40–59	18.5 (17.53–19.50)	27.6 (26.64–28.65)
6 or more	13.8 (12.72–14.90)	19.8 (18.85–20.71)
Education		
No education and incomplete elementary/middle education	11.8 (11.07–12.55)	16.6 (15.89–17.35)
Complete elementary/middle education and incomplete high school	23.8 (22.26–25.41)	26.8 (25.44–28.18)
Complete High School and incomplete higher education	28.9 (27.78–30.05)	36.2 (35.14–37.20)
Complete higher education	38.8 (36.77–40.77)	49.1 (47.60–50.55)
Race/color		
Caucasian/White	23.9 (22.91–24.83)	31.6 (30.60–32.66)
Black	20.0 (18.23–21.85)	29.4 (27.95–30.95)
Brown	21.8 (20.90–22.67)	28.7 (27.91–29.45)
Others (yellow/indigenous)	28.5 (23.36–34.22)	29.7 (25.28–34.43)
Region		
North	22.2 (20.79–23.77)	28.4 (27.32–29.58)
Northeast	22.4 (21.28–23.46)	29.5 (28.69–30.36)
Southeast	22.9 (21.79–24.05)	31.2 (29.97–32.38)
South	22.1 (20.50–23.72)	27.7 (26.41–29.00)
Midwest	24.4 (23.06–25.70)	31.8 (29.44–30.67)

Source: National Health Survey, 2013 and 2019.

As observed in Figure 1, the prevalence of leisure-time PA increased from 2013 to 2019 in 23 of the 27 states in Brazil (Rondônia, Acre, Pará, Amapá, Tocantins, Maranhão, Piauí, Ceará, Rio Grande do Norte, Paraíba, Pernambuco, Alagoas, Sergipe, Bahia, Minas Gerais, Espírito Santo, Rio de Janeiro, São Paulo, Paraná, Mato Grosso do Sul, Mato Grosso, Goiás, and the Federal District). Both in 2013 and 2019, the highest prevalence of leisure-time PA was observed in the Federal District.

Table 2 shows the crude and adjusted prevalence ratio for the association of leisure-time PA with sociodemographic variables in 2013 and 2019. In 2013, the prevalence of physical

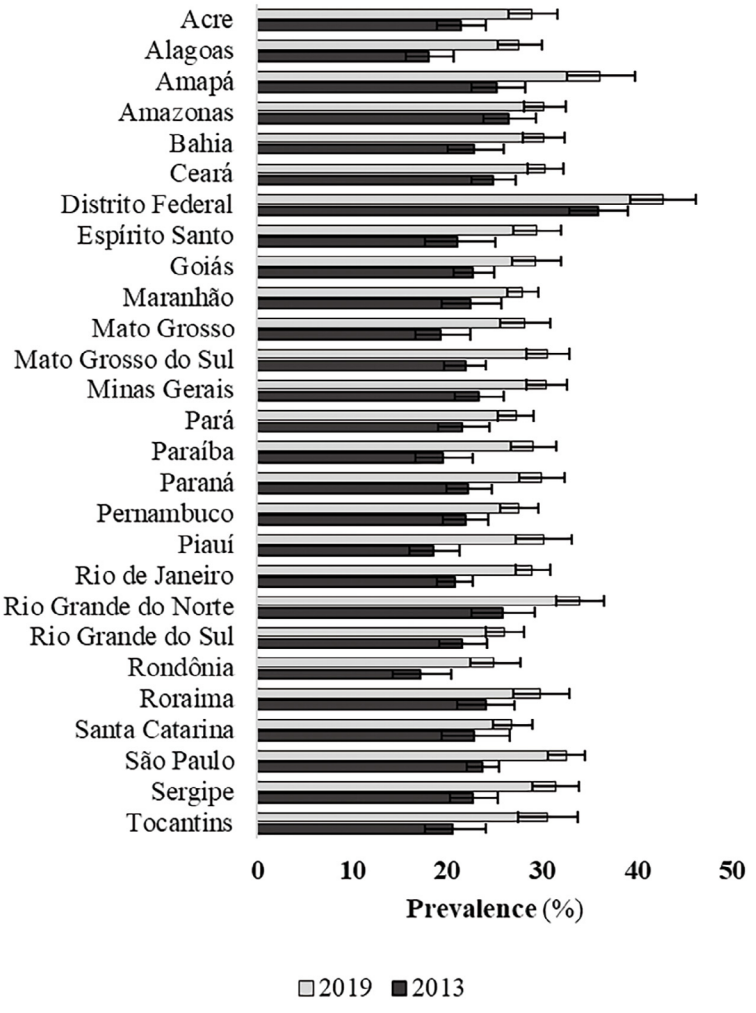

Figure 1. Prevalence of adults aged (18+ years old) who meeting the recommend level of leisure-time physical activity, with a 95% confidence interval, by federated unit. National Health Survey, 2013 and 2019. Brazil. Source: National Health Survey, 2013 and 2019.

Table 2. Crude and adjusted analyses of the association of sociodemographic variables with the practice of leisure-time physical activity. National Health Survey, 2013 and 2019.

	2013		2019	
	Crude PR (95%CI)	Adjusted PR (95%CI)	Crude PR (95%CI)	Adjusted PR (95%CI)
Gender				
Male	1.00	1.00	1.00	1.00
Female	0.68 (0.64–0.72)	0.66 (0.62–0.70)	0.77 (0.74–0.80)	0.75 (0.73–0.78)
Age range (years)				
18–24	1.00	1.00	1.00	1.00
25–39	0.72 (0.67–0.78)	0.70 (0.65–0.75)	0.86 (0.81–0.91)	0.80 (0.76–0.85)
40–59	0.52 (0.48–0.56)	0.57 (0.53–0.62)	0.67 (0.63–0.71)	0.72 (0.68–0.77)
60 or more	0.38 (0.35–0.42)	0.53 (0.47–0.59)	0.48 (0.45–0.51)	0.61 (0.57–0.66)
Education				
No education and incomplete elementary/ middle education	1.00	1.00	1.00	1.00
Complete elementary/ middle education and incomplete high school	2.02 (1.85–2.19)	1.70 (1.56–1.86)	1.61 (1.51–1.72)	1.43 (1.34–1.53)
Complete High School and incomplete higher education	2.45 (2.27–2.64)	2.10 (1.94–2.28)	2.18 (2.07–2.29)	1.93 (1.82–2.04)
Complete higher education	3.28 (3.03–3.56)	3.23 (2.96–3.52)	2.95 (2.80–3.11)	2.85 (2.69–3.02)
Race/color				
Caucasian/White	1.00	1.00	1.00	1.00
Black	0.84 (0.76–0.92)	0.99 (0.93–1.04)	0.93 (0.88–0.99)	0.98 (0.94–1.03)
Brown	0.91 (0.86–0.96)	0.95 (0.87–1.05)	0.91 (0.87–0.94)	1.00 (0.95–1.06)
Others (yellow/indigenous)	1.19 (0.98–1.45)	1.18 (0.99–1.39)	0.94 (0.80–1.10)	0.92 (0.77–1.09)
Region				
North	1.00	1.00	1.00	1.00
Northeast	1.00 (0.92–1.09)	1.08 (1.00–1.16)	1.04 (0.99–1.09)	1.10 (1.05–1.15)
Southeast	1.03 (0.95–1.12)	0.98 (0.91–1.06)	1.09 (1.03–1.16)	1.02 (0.97–1.08)
South	0.99 (0.90–1.09)	0.97 (0.88–1.06)	0.97 (0.91–1.03)	0.94 (0.88–1.00)
Midwest	1.09 (1.00–1.19)	1.05 (0.97–1.14)	1.12 (1.05–1.19)	1.06 (0.99–1.12)

Source: National Health Survey, 2013 and 2019.

activity among men was higher when compared to women (PRa=0.66; 95%CI 0.62–0.70). This difference was slightly reduced in 2019 (PRa=0.75; 95%CI 0.73–0.78). In 2013 and 2019, there was a reduction in the prevalence of PA during leisure time and an increase in age. In 2013, participants with the highest level of education (complete higher education) were nearly three times more active in leisure time (PRa=3.23; 95%CI 2.96–3.52) than those with no education and incomplete elementary/middle education. In 2019, this difference was smaller (PRa=2.85; 95%CI 2.69–3.02). The differences in LTPA observed in relation to race/color were similar in 2013 and 2019. Overall, no marked differences were observed in LTPA among the five Brazilian macro-regions.

DISCUSSION

The results of this study showed that, over a period of six years, there was a considerable increase in the proportion of Brazilian adults who reached the recommendations for leisure-time PA. However, only one in three adult Brazilians is active in leisure and, as expected, men, younger people, and those with higher education are more active in leisure. Furthermore, the present study showed that there was progress in reducing the great sociodemographic inequalities that exist in the LTPA.

A number of national and international studies show that LTPA is more frequent among men than in women [9,17]. A number of sociocultural factors can explain this pattern[17-20], including intrinsic sexist structures in society[21], which can impact men and women differently in the decision and enjoyment of physical activity in different periods of life[22]. For example, from childhood onward, boys are encouraged to play ball and participate in group games, while girls are more often encouraged to stay at home and play with dolls. These incentives are lifelong[23]. Furthermore, the practice of physical activity by women of reproductive age is impacted by pregnancy, which may delay the return to pre-pregnancy levels of LTPA for up to four years after childbirth[24]. Data from the present study indicated that, although the difference in LTPA between men and women persists, this difference reduced from 34% in 2013 to 25% in 2019. More actions are still needed to promote equity in LTPA among men and women and, thus, improve public health indicators at global levels[20].

It is not surprising in the scientific literature that younger individuals are more active[17]. In general, these differences can be explained by the fact that young people have more incentive to do physical activities during leisure time, as well as more opportunities for group practices and games with friends[17]. Furthermore, known biological aspects related to the aging process, such as reduced mobility and muscle capacity, may reflect less physical activity with advancing age[25]. Finally, aspects related to the environment, such as public safety, can also limit the practice of physical activity by aged people[5]. The findings presented in this study reinforce the need for investment in public policies that create a favorable environment for the practice of physical activity, especially for aged people.

The nationwide data presented by the PNS showed an increase in the practice of leisure-time PA in Brazil and in all federative units. However, important regional differences persist. In 2019, the Southeast and Midwest regions, especially the Federal District, showed higher prevalence of leisure-time PA, a fact that may reflect the immense socioeconomic inequalities in the country. Once again, these data show the importance of implementing nationwide public policies that seek fair and democratic access to opportunities for the practice of physical activity in leisure time[6,26,27].

Among the aspects that explain the increased practice in the period, there is the creation of the Health Academy Program (*Programa Academia da Saúde* – PAS) by the Ministry of Health in 2011[28]. Through the PAS, approximately four thousand units were built in more than 2,700 Brazilian municipalities, providing spaces for community interventions to promote health, including the promotion of free physical activity[26]. A series of evaluations has shown that these programs are associated with the practice of leisure-time physical activity in several Brazilian cities and capitals, especially among women, aged people, and people with low education[27,29].

In a country where the practice of physical activity for leisure is just one of the privileges of young, white, and highly educated men[30], advances in the fight against socioeconomic inequalities over the last two decades have been constantly threatened by the current Brazilian political context and for the implementation of austerity policies[31]. Socioeconomic inequalities are directly related to aspects that increase the chance of individuals to practice more or less physical activity, mainly because of issues related to opportunities to access adequate spaces for such practice. Thus, political efforts will be necessary so that the advances observed in access to PA practice, especially the continuity of the implementation of the National Health Promotion Policy and the PAS, and that their progress is not canceled[32]. Finally, these data confirm the need to understand the practice of PA as a social product and not just an individual choice.

In conclusion, despite the increase in the prevalence of leisure-time physical activity among Brazilian adults in the last six years, marked sociodemographic inequalities still exist. The success of future public policies to promote physical activity in leisure must be evaluated from the perspective of social determinants of health and the reduction of inequalities in the practice of physical activity.

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