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# Practice of physical activity and perceived environment of users of the Unified Health System

Práctica de actividad física y ambiente enferma de enfermid del Sistema Único de Salud

Prática de atividade física e ambiente percebido de usuários do Sistema Único de Saúde

## ABSTRACT

Objective: to analyze the relationship between leisure-time physical activity and active commuting with the perception of the environment in people with chronic non-communicable diseases. Methods: cross-sectional study consisting of 719 SUS users. For data collection, the IPAQ and the Neighborhood Environmental Walkability Scale were used. Pearson's chi-square test and logistic regression model were used. Results: of the 719 (100%), 512 (71.2%) participants were female and 504 (70.1%) reported having a chronic non-communicable disease. There are no relationships between women with chronic disease and perception of the environment for the practice of physical activity during leisure and active commuting. On the other hand, men and the elderly were more likely to be more active in the practice of physical activity. Conclusion: interventions to increase the practice of physical activity in women should be implemented in order to prevent and treat chronic non-communicable diseases.

**DESCRIPTORS:** Physical activity; Chronic diseases; Environment; Health Unic System.

## RESUMEN

Objetivo: analizar la relación entre la actividad física con el nfer libre y los desplazamientos activos con la percepción del entorno com personas com nfermidades crónicas no transmisibles. Métodos: nfermi transversal compuesto por 719 usuarios del SUS. Para la recolección de datos, se utilizaron el IPAQ y la Escala de Caminabilidad Ambiental del Vecindario. Se nfermi la prueba de chi-cuadrado de Pearson y el modelo de regresión logística. Resultados: de los 719 (100%), 512 (71,2%) participantes eran mujeres y 504 (70,1%) informaron tener com enfermedad crónica no transmisible. No existen relaciones entre mujeres com enfermedad crónica y percepción del entorno para la práctica de actividad física durante el nfe y los desplazamientos activos. Por com lado, los hombres y los ancianos tenían más probabilidades de ser más activos com la práctica de actividad física. Conclusión: se deben implementar intervenciones para incrementar la práctica de actividad física com las mujeres com el fin de prevenir y tratar las nfermidades crónicas no transmisibles.

**DESCRIPTORES:** Actividad física; Enfermedades crónicas; Ambiente; Sistema único de Salud.

## RESUMO

Objetivo: analisar a relação da atividade física no lazer e de deslocamento ativo com a percepção do ambiente em pessoas com doenças crônicas não transmissíveis. Métodos: estudo transversal constituído por 719 usuários do SUS. Para a coleta de dados utilizou-se o IPAQ e o Neighborhood Environmental Walkability Scale. Utilizou-se o teste qui-quadrado de Pearson e o modelo de regressão logística. Resultados: dos 719 (100%), 512 (71,2%) participantes eram do sexo feminino e 504 (70,1%) relataram ter doença crônica não transmissível. Não há relações entre mulheres com doença crônica e percepção do ambiente para a prática de atividade física no lazer e de deslocamento ativo. Por outro lado, os homens e os idosos apresentaram maior chance de serem mais ativos para a prática de atividade física. Conclusão: intervenções para incrementar a prática de atividade física em mulheres devem ser implementadas com vistas a prevenção e tratamento das doenças crônicas não transmissíveis.

**DESCRITORES:** Atividade Física; Doenças Crônicas; Ambiente; Sistema Único de saúde.

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**INTRODUCTION**

The regular practice of physical activity is one of the strategic actions for the prevention of chronic non-communicable diseases (CNCD) and its complications, considered an important indicator for monitoring and evaluating the effectiveness of health promotion strategies by the National Health Promotion Policy. Even a minimal amount of physical activity has a protective effect on health against chronic diseases and reduces mortality. Evidence shows reduced risk of premature mortality by at least 20,0% to 30,0% for more than 25 types of chronic diseases.<sup>1,2</sup>

However, only 38,1% of the adult Brazilian population complies with the minimum recommended by the World Health Organization regarding the frequency of physical activity during free time (leisure), which is equivalent to 150 minutes of moderate activity per week. Regarding active commuting, only 14,4% of Brazilians over 18 years of age perform physical activity for at least 150 minutes a week.<sup>3</sup> People with chronic conditions are able to sustain physical activity for more than three months, under different degrees of su-

pervision by the professionals involved, at levels sufficient for health.<sup>3</sup> On the other hand, physical inactivity, unhealthy diet, alcohol abuse and smoking are behavioral risk factors for NCDs, as they result in hyperglycemia, hypertension, hypercholesterolemia and excess body weight.<sup>4</sup>

The Strategic Action Plan for Coping with NCDs in Brazil, 2011-2022, with the purpose of promoting the development of effective and sustainable public policies for the prevention and control of NCDs and their risk factors, aims to reduce morbidity, disability and mortality, through a set of preventive and promotional health actions, reordering the health services of the Unified Health System (SUS), based on Primary Care and community participation.<sup>5</sup>

The environment interferes in a positive or negative way in the population's behavior and lifestyle, primarily with regard to the adoption of healthy lifestyle habits.<sup>6</sup> Environmental factors unevenly affect the different social segments of the population.<sup>6</sup> In this context, the environment is considered one of the factors that lead to decision-making in the health area.

In this direction, the literature points out interventions that require

urgent implementation and monitoring by managers and public policies.<sup>7</sup>

In Brazil, it is worth noting that the profile of SUS users is made up of individuals with lower income and education, people with chronic diseases, mostly women and who refer to seeking care due to illness/complaint.<sup>8</sup> Thus, investigating the sociodemographic and health profile of the population using SUS health services can contribute to foster future strategies in relation to the perception of the environment and PA of people with CNCD.

Given the above, this study aims to investigate the perception of the environment for the practice of physical activity and active commuting in people with CNCD. It is hoped that the result of this study can provide subsidies to direct public policies regarding the promotion of physical activity as a preventive action for the development of NCDs.

**METHODS**

Quantitative, descriptive, observational and cross-sectional study, carried out in five Health Districts in the municipality of Ribeirão Preto, SP, whose population according to the 2010 census

is 604.682 inhabitants, considered the eighth most populous municipality in the state.<sup>9</sup> It is a reference in the health region of the Regional Health Directorate XIII (DRSXIII - Direção Regional de Saúde XIII).<sup>10</sup> The sample was calculated by stratified random sampling, in which each stratum was formed by the health districts of Ribeirão Preto, SP. Adopting the parameters of relative sampling errors of 10%, significance level of 5% and the total number of monthly average visits to pharmacies in the five districts, in 2016, 53.240 monthly visits were obtained. The sample on PA was obtained from a pilot study, carried out with 50 individuals, distributed equally in the five health districts. Studies with people who evaluated the perception of the environment for the practice of PA were used as a reference. The sample consisted of 719 adult people ( $\geq 18$  years old), of both sexes, attended in the five Health Districts of Ribeirão Preto, SP, and who reported presenting or not NCDs (Table 1).

The sociodemographic variables were chosen: sex, age, education,<sup>11</sup> occupation, marital status and economic class according to the Brazilian Association of Research Companies (ABEP - Associação Brasileira de Empresas de Pesquisa).<sup>12</sup> Regarding clinical variables, chronic non-transmissible diseases were self-reported by people and classified as yes/no. Systemic arterial hypertension (SAH), stroke, heart disease (HD), Type 1 Diabetes Mellitus

(DM1), Type 2 Diabetes Mellitus (DM2), cancer, rhinitis, sinusitis, obstructive pulmonary disease were considered chronic, asthma and bronchitis and other self-reported diseases.<sup>3,13</sup>

To obtain data on physical activity, the International Physical Activity Questionnaire (IPAQ), long version, was used. The IPAQ has as domains physical activity for recreation, sport, exercise and leisure, called leisure physical activity (LPA), and physical activity during transportation (PADT). To classify the level of physical activity, the recommendation of the World Health Organization (WHO) was used, which considers active those who perform at least 150 minutes of moderate physical activity in the week or 75 minutes of vigorous physical activity in the week.<sup>14</sup> characteristics of the perceived environment, the adapted Neighborhood Environmental Walkability Scale (NEWS) was used,<sup>5,15</sup> which allows to evaluate the perception of the environment for the practice of physical activity in adults and the elderly. The first part of the adapted NEWS consists of 18 questions regarding accessibility and convenience. These issues are related to the time it would take the individual walking from home to commercial, service or leisure conveniences in the neighborhood where they lived. The second part consists of 20 questions related to the environmental structure close to the residence. Of these, three issues refer to traffic sa-

fety such as heavy traffic that can make walking or cycling difficult, safety lanes for pedestrians, respect for pedestrians by drivers in safety lanes.<sup>5</sup>

Data collection was carried out from May 2017 to April 2018, through interviews with SUS users in each Health District in the municipality. Statistically significant questions were added to the regression analysis. Later, logistic regression was used to analyze whether there was a difference in the practice of LPA and TPA with the perception of the environment in users of the public health service, and the Odds ratio (OR) was calculated. A 95% confidence interval was used. In all analyzes, a significance level of 5% ( $\alpha = 0.05$ ) was considered. The analyzes were performed using the program R version 3.3.0.16

The project was approved by the Research Ethics Committee, opinion No. 1.875.599. Access to the Health Districts was allowed upon request submitted to the Municipal Health Secretariat of the municipality. Health service users signed a Free and Informed Consent Form to participate in the study.

## RESULTS

Of the 719 (100%) users of public health services in the municipality, most of them were female. The mean age was 44,83 years, with a standard deviation of 17,64. Most were married or in a stable relationship. Significant

Table 1 – Number of participants from each Health District of SUS users according to monthly pharmacy visits (2016); pilot study; sample size and study sample Ribeirão Preto – SP, 2019

DISTRICTS	MONTHLY APPOINTMENTS (2016)	PILOT STUDY	SAMPLE SIZE (10% RELATIVE ERROR)	STUDY SAMPLE (2017 AND 2018)
West	7.015	10	84	107
Central	14.909	10	192	192
South	12.077	10	91	99
North	12.757	10	165	165
East	6.482	10	156	156
Total	53.240	50	688	719

Source: own elaboration

part had low education with a job or were retired or pensioners, most were from class C, most said they had NCDs (Table 2).

Regarding the perception of the en-

vironment and LPA of SUS users, it was found that men are more likely to be active than women (OR 1,55). Participants who live far from the health center are more likely to be more active at leisure (OR

1,72). And the participants who do not know or said they do not have a fair in the neighborhood where they live, presented the value of opposite chances of being active in leisure (OR 0,51) (Table 3). With

Table 2 – Numerical and percentage distribution of users of Health Districts according to sociodemographic variables and the presence or absence of NCDs, Ribeirão Preto - SP, 2019

	NCDs <sup>a</sup>				TOTAL	N=719	P VALUE
	NO (N=215)		YES (N=504)				
	N (%)	N (%)	N	(%)			
Health Districts							0,008*
West	19	(17,8)	88	(82,2)	107	(14,9)	
Central	60	(31,2)	132	(68,7)	192	(26,7)	
South	33	(33,0)	67	(67,0)	100	(13,9)	
North	62	(37,6)	103	(62,4)	165	(22,9)	
East	41	(26,4)	114	(73,5)	155	(21,6)	
Sex							0,461
Female	149	(29,1)	363	(70,9)	512	(71,2)	
Male	66	(31,9)	141	(68,1)	207	(28,8)	
Age - Average: 44,83 (17,64)							< 0,001*
18 to 34 years	115	(47,5)	127	(52,5)	242	(33,7)	
35 to 59 years	76	(25,9)	217	(74,1)	293	(40,7)	
60 or older	24	(13,0)	160	(87,0)	184	(25,6)	
Marital Status							0,010*
Single	98	(36,0)	174	(64,0)	272	(37,8)	
Married or in a stable relationship	95	(28,0)	244	(72,0)	339	(47,1)	
Widowed	6	(14,3)	36	(85,7)	42	(5,8)	
Separated or divorced	16	(24,2)	50	(75,8)	66	(9,9)	
Education							0,031*
Incomplete Elementary School	70	(23,9)	223	(76,1)	293	(40,7)	
Complete Elementary School	17	(30,4)	39	(69,6)	56	(7,8)	
Complete High School	93	(35,1)	172	(64,9)	265	(36,9)	
University Education	35	(33,3)	70	(66,7)	105	(14,6)	
Ocupação							<0,001*
With job	107	(34,3)	205	(65,7)	312	(43,4)	
Retired / Pensioner	17	(10,2)	150	(89,8)	167	(23,2)	
Unemployed	91	(37,9)	149	(62,1)	240	(33,4)	
Economic Class							0,203
A+B	85	(34,0)	165	(66,0)	250	(34,8)	
C	102	(27,3)	271	(72,6)	373	(51,9)	
D+E	28	(29,2)	68	(70,8)	96	(13,3)	

Test performed: Pearson's chi-square; \* p <0,05; <sup>a</sup> Non-Communicable Chronic Diseases; Source: own elaboration

regard to the results regarding the practice of TPA, it was found that men are more likely to practice TPA than women (OR 1,62). Regarding the age group, users of public health services between 35 and 59 years old (OR 1,85) and 18 to 34 years

old (OR 1,99) are more likely to practice TPA in relation to people aged 60 or over. People with lower economic class (D and E) (OR 2,42) and those from class C (OR 2,01) are more likely to practice TPA compared to people of higher economic

class (A). And the participants who did not know or reported not having a place to walk in the neighborhood where they live, seem to have the value of opposite opportunities (OR 0,52) chances of being active at leisure (Table 4).

Table 3 – Logistic regression model between perception of the environment according to sex, referred distance between home and health post and fair of users of health services, Ribeirão Preto - SP, 2019

VARIABLE	OR	MULTIPLE MODEL		
		CI 95%		P*
<b>Leisure Physical Activity</b>				
<b>Sex</b>				
Female	1			
Male	1,5505	1,0061	2,3679	<b>0,0441*</b>
<b>Health Center</b>				
Near <sup>1</sup>	1			
Far <sup>2</sup>	1,7187	1,1261	2,6514	0,0130*
There isn't / Doesn't know	0,7617	0,1762	2,2865	0,6664
<b>Market</b>				
Near	1			
Far	0,8330	0,4802	1,4279	0,5097
There isn't / Doesn't know	0,5082	0,3180	0,8124	<b>0,0046*</b>

Test performed: Multiple Model Logistic Regression; 95% CI = 95% Confidence Interval; \* p < 0,005; OR = Odds ratio; <sup>1</sup>Places close to the residence, considering a walk of up to 10 minutes; <sup>2</sup>Places away from the residence, considering a walk of more than 10 minutes. Source: own elaboration

Table 4 – Logistic regression model between perception of the environment according to sex, age, economic class and place to walk for health service users, Ribeirão Preto - SP, 2019

VARIABLE	ODDS RATIO	MULTIPLE MODEL		
		CI95%		P*
<b>Transport Physical Activity</b>				
<b>Sex</b>				
Female	1			
Male	1,6168	1,0833	2,4008	<b>0,0178*</b>
<b>Age</b>				
60 years or older	1			
35 to 59 years	1,8557	1,1398	3,0889	<b>0,0148*</b>
18 to 34 years	1,9882	1,1919	3,3815	<b>0,0096*</b>
<b>Economic Class</b>				
A + B	1			
C	2,0122	1,3157	3,1289	<b>0,0015*</b>
D + E	2,4211	1,2993	4,4696	<b>0,0049*</b>
<b>Place to walk</b>				
Near <sup>1</sup>	1			
Far <sup>2</sup>	1,0072	0,6545	1,5373	<b>0,9736</b>

There isn't / Doesn't know

0,5212

0,3106

0,8511

0,0110\*

Test performed: Multiple Model Logistic Regression; 95% CI = 95% Confidence Interval; \* p < 0,005; OR = Oddsratio; <sup>1</sup>Places close to the residence, considering a walk of up to 10 minutes; <sup>2</sup>Places away from the residence, considering a walk of more than 10 minutes. Source: own elaboration

## DISCUSSION

The development of NCDs is intrinsically related to the social determinants of health, that is, the environment and the living conditions imposed on certain populations translate into a lifestyle that is harmful to the health of the user and his collective or inversely, in a preventive and health-promoting lifestyle.<sup>17</sup> The majority, 71.21%, of the participants in the present study were female, corroborating with another national survey that showed greater use of SUS health services by women, which is justified by a greater understanding of women about signs and disease symptoms and, therefore, greater search for health services.<sup>18</sup>

It was also found that the majority (70,1%) of users had CNCND, which is in consensus with the National Health Survey (PNS - Pesquisa Nacional de Saúde), carried out in Brazil, in 2013, in which it was evidenced that people with CNCND use twice as many SUS services than people without CNCND, due to the high periodic demand for assessing the health status of these users.<sup>18</sup> As well, there is a failure in the dissemination of knowledge about the services offered by SUS, causing users to seek the services only when they feel sick, and not in a preventive manner, as provided for in primary care.<sup>19</sup> In agreement with our results regarding occupation, a study showed that most users were employed.<sup>20</sup> On the other hand, a study carried out only with male users found that those who used the services the most were the unemployed.<sup>21</sup>

Regarding the sociodemographic characteristics that can interfere with the individual's level of physical activity, most of the participants had incomplete elementary education (40,7%) and only 14,6% had higher education. A study carried out in 2011 with the popula-

tion of Ribeirão Preto-SP, showed that the prevalence of insufficient PA practice was high among women with low income and education.<sup>22</sup> In Brazil, the practice of PA is proportionally higher in individuals with a higher level of education, as pointed out by the Brazilian Institute of Geography and Statistics (IBGE - Instituto Brasileiro de Geografia e Estatística) and by the National Household Sample Survey (PNAD - Pesquisa Nacional por Amostra de Domicílios) of 2015<sup>23</sup>. In reference to economic class, the majority, 51,9% were from class C. A study that investigated the practice of PA and the association with the environment, with women living in the south of Brazil, showed that women belonging to an upper economic class practiced more PA, because they seemed to have greater access to the academy and private professionals.<sup>24</sup> On the other hand, in our study, most live

in conditions of low economic class and depend on public places for the practice of PA that are in favorable conditions, such as more green areas close to the residence, squares and parks.

The relationship between perception of the environment and physical activity has been shown in studies carried out in different cities in Brazil, such as the one carried out in the city of São Paulo, with men and women over the age of 18, low income and education, which related the LPA and TPA and individual and environmental factors.

This study showed that receiving invitations from friends for activities, little environmental pollution and safety are attributes considered positive for the practice of AF.<sup>6</sup> Our study showed that men are more likely to be physically active than women, for both LPA and TPA. These results are in agreement with other studies that also investigated the practice of PA and the environment.<sup>25,26</sup>

Age and social class seem to have a strong influence on the amount of active commuting carried out. It was found that elderly participants (over 60 years old) are less likely to be active in commuting than younger ones, corroborating with findings from other studies that identified a progressive reduction in the performance of physical activity regarding commuting during the aging process. The reasons for this reduction would be related to the functional losses of the aerobic capacity, flexibility, agility, coordination, in addition to the involvement by CNCND.<sup>27,28</sup> Another relevant aspect evidenced was that people belonging to the lower economic classes (C, D and E) are more likely to perform TPA compared to people from the higher economic classes (A and B).

These results are compatible with the results published in the Supplement on Health of the National Household

**Our study showed that men are more likely to be physically active than women, for both LPA and TPA.**

Sample Survey (PNAD), carried out by the Brazilian Institute of Geography and Statistics (IBGE). These results showed that factors such as the precariousness of public transport and the budgetary constraints of the poorest families in relation to the acquisition of means of transport are determinant for the practice of TPA in the most needy population, except, in this way, a practice stimulated by the socioenvironmental and health benefits.<sup>29</sup>

In a study that investigated the factors of the social and built environment of cyclists residing in the United States, it showed that the environmental fac-

tors perceived in relation to at least one item of accessibility was significantly associated both with the use of bicycles for leisure and as a means of commuting. And traffic safety, residential density, street connectivity and infrastructure have been significantly associated with the use of bicycles as a means of commuting.<sup>30</sup> Another study showed that the practice of PA of people who live near or far from an intervention center for the practice of PA, as occurs in some health centers in Brazil, that the promotion of PA practice is facilitated as the user resides closest to those locations.<sup>31</sup>

## CONCLUSION

It is concluded that interventions for health promotion in relation to the practice of PA of users of SUS services must consider the creation and maintenance of an environment conducive to the practice of LPA and TPA as places for accessible walking and access to green areas of good quality. Also pay attention to the profile of the population in order to develop public health policies that focus on actions promoting PA aimed at women, older people, economic class and low schooling. ■

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