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original article

Walking for leisure and commuting and association with socioeconomic factors and perceived environment in adults

Prática de caminhada no lazer e no deslocamento e associação com fatores socioeconômicos e ambiente percebido em adultos

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Abstract – This study aimed to analyze the association between walking for leisure and commuting and the perceived environment in adults living in Rio Claro, São Paulo, Brazil. A cross-sectional household-based study was conducted with 470 adults (45.7±17.8 years). Subjects responded to the International Physical Activity Questionnaire (long version) and to an adapted version of the Neighborhood Environmental Walkability Scale, which was used to evaluate the perceived built and social environments. Data analysis was performed using logistic regression. The outcome was walking ≥10minutes/week for leisure or commuting. The prevalence of participants who regularly walked ranged from 20.6% (walking for leisure) to 58.9% (walking for commuting). The prevalence of walking for commuting was higher in women than in men (66.3% and 50.0%, respectively), and walking for leisure was more common among men (21.7% when compared to 19.8% of women). Walking for commuting was associated with the female sex, lower economic classes (C, D, and E), and perceived availability of crosswalks. Walking for leisure was associated with the following individual and environmental variables: age (60 years or above), social class (B2, C, D, and E), invitations by friends and/or neighbors for walking. The results demonstrate that there is an association between perceived environment and walking for leisure or commuting.

Key words: Leisure activities; Perception; Transportation; Walking.

Resumo – *O objetivo do presente estudo foi analisar a associação da prática de caminhada no domínio lazer e no domínio deslocamento com a percepção do ambiente em adultos residentes no município de Rio Claro - SP. Foi realizado um estudo transversal de base domiciliar com amostra composta por 470 adultos (45,7±17,8 anos). Os sujeitos responderam o Questionário Internacional de Atividades Físicas (versão longa) e uma versão adaptada da Escala de Mobilidade Ativa no Ambiente Comunitário, que foi utilizada para investigar a percepção do ambiente construído e social. Para análise dos dados foi realizada uma regressão logística, sendo considerado como desfecho, caminhar ≥10minutos/semana no domínio lazer e no deslocamento. A prevalência de sujeitos que realizavam caminhada no lazer foi de 20,6% e 58,9% para a caminhada no deslocamento. A prevalência de caminhada no deslocamento entre as mulheres foi maior quando comparado com os homens (66,3% e 50,0%, respectivamente) e menor no domínio lazer (19,8% e 21,7%, respectivamente). A caminhada como forma de deslocamento foi associada com sexo feminino, classe econômica mais baixas (C, D e E) e percepção da disponibilidade da presença de faixa de pedestre. Para a caminhada no domínio lazer as variáveis pessoais e do ambiente que se associaram foram: idade (60 anos ou mais), classe econômica (B2, C, D e E), convite de amigos e/ou vizinhos para a prática. Os resultados apresentados demonstram que há uma associação entre a percepção do ambiente e a prática de caminhada no lazer e no deslocamento.*

Palavras-chave: *Atividades de lazer; Caminhada; Percepção; Transportes.*

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INTRODUCTION

The regular practice of physical activity is recognized as an important component of a healthy lifestyle, and consequently has been associated with increased longevity and reduced risk of mortality and morbidity due to chronic non-communicable diseases[1].

Among the various forms of physical activity, walking is gaining prominence as it is a simple activity that can be performed by most of the population, does not require special skills or special facilities and can be performed at home or outdoors, alone or with other people[2]. Therefore, various types of interventions have been proposed with the aim of promoting walking[3] and contribute to reduce the high prevalence of physical inactivity that reaches 31.1% of people worldwide [4] and its harmful health consequences.

In Brazil, walking is among the primary means of locomotion for 24% of the population, being even more common than family car (16%)[5]. As for leisure, studies in Brazil indicate a variation from 8.8%[6] to 35%[7] of people practicing walking in the leisure domain.

In a recent paper, Bauman et al.[8] pointed out that several original studies and systematic reviews have searched for patterns and characteristics associated with the practice of physical activity and the characteristics of the perception of natural, social and built environments. For this, objective measures such as direct observation and Geographic Information System and subjective measures through questionnaires[8] have been both used. Also in this work, Bauman et al.[8] highlight key environmental variables that are associated with physical activity for leisure and commuting; however, in Latin America as in middle- or low-income countries, further studies on this topic are need.

Specifically regarding walking, some studies carried out in Brazil have investigated the relationship between walking and the natural, social and built environments[6,10-13]. The results of these studies showed that the environment interacts differently with walking in commuting and leisure domains and in commuting, security seems to play an important role[7,13] and in leisure, structures such as sidewalks[6] appear as prominent. Other attributes such as street lighting and proximity of residence in relation to the health facility, soccer field and square are associated with the practice of walking in a more general way (leisure + commuting)[12,13].

It is noteworthy that all these studies were conducted in large urban centers (State Capitals). Whereas the structure of a large and medium city is different, the way in which the population perceives this environment may also occur differently, thus interacting in different ways with the practice of physical activity. Thus, the aim of this study was to analyze the association between walking in the leisure and commuting domains and the perceived environment in adults living in the city of Rio Claro, SP, Brazil.

METHODS

This home-based cross-sectional study was conducted from January 2011 to January 2012 with a sample of adults of both sexes aged over 18 years living in the urban area of the municipality of Rio Claro - SP.

Rio Claro is located in the southeastern region of the state of São Paulo and has 187,637 inhabitants, mostly women (51.3%) and had a population growth of 10.7% in the last decade[14]. The *per capita* GDP is around 27 thousand Reais / year[14] and the Human Development Index (HDI) in 2011 was 0.825[15].

Study Design

The sample size calculation was based on the following formula: $n = [p(1-p)/(d/z)^2]$. Deff, regarding the estimation of proportions proposed by Kish (1965) apud Salvador and colleagues[12]. To this end, the proportion of inactive subjects (P) as equal to 0.5; Z = 1.96 was adopted, regarding the value of the standard normal curve corresponding to the 95% confidence level used in determining the confidence interval; d = 0.065, referring to the maximum allowed sampling error; and deff = 2, corresponding to the design effect. Applying the values in the formula, the minimum sample size of 455 adults was estimated.

The sampling process was conducted in five stages according to the following procedures: 1 - Listing of all urban census tracts in the city of Rio Claro registered at IBGE (n = 200); 2 – Drawing of census tracts (n = 100); 3 - Listing of all households in the selected sectors (enrollment); 4 – Drawing of households proportionally to the sector area, ranging from two to ten houses per sector; 5 - Drawing of one adult resident in the selected household.

To select individuals living in the household, the methodology of Kish[16] was used, which defines six tables with identification numbers varying according to the total number of residents.

Exclusion criteria for this study included institutionalized individuals (hospitals, long term care facilities - nursing homes, prisons), people who had diseases or problems that affected the practice of physical activity in the week prior to the interview, mental problems that prevented them from answering the questionnaire independently.

Individuals who did not want to answer the interviewer or did not accept signing the informed consent form were considered refusals. Losses were characterized as situation in which the resident (possible research subject) was absent in 5 visits of the interviewer.

Outcomes

The outcomes of the present study were the practice of walking in the leisure and commuting domains and in both cases, the cutoff point was considered 10 or more minutes of walking per week. To access the walking

time in each domain, the International Physical Activity Questionnaire (IPAQ) in its long version was used. The period of seven days preceding the interview was considered as the reference.

Independent variables

Independent variables were related to the perceived environment collected through an adapted version of the scale Neighborhood Environment Walkability Scale (NEWS) [17] previously used in other studies[10,12,13]. Such adaptation was performed in order to improve the scale understanding, being discussed by experts in the field of environment and physical activity in Brazil and showing intraclass correlation coefficient ≥ 0.70 for all scores elaborated based on individual questions[13].

The first part of NEWS consists of 18 structured questions so that respondents report how long they walk from their homes to different business, services or recreation (parks, squares, places to walk, exercise lanes, clubs, sports courts, soccer fields, bus shelters, health clinics, pharmacies, churches or religious temples, bakeries, banks, bars, fairs, stores, markets and supermarkets) in the neighborhood in which they live.

The second part consists of 41 questions related to environmental structures nearby the residence, such as the presence and quality of sidewalks and green areas, if streets are flat, presence of garbage near residences, open sewage, if traffic makes walking or bicycle riding difficult, existence of crosswalk to cross the street and if drivers tend to respect them, pollution, smoke, street lighting at night, safety in walking during day and night, invitation of friends, neighbors and relatives to walk, ride bike or play sports in the neighborhood, weather and presence of pets. Individuals were asked to assess how close to their residence were places they could reach in up to 10 minutes walking.

Some scores based on individual questions were also generated, being assigned a concept that ranged from poor to great, namely:

- Pollution: This score took into account places with accumulation of garbage on streets close to residences, if there are places with open sewage in streets close to residences and if there are many walls with graffiti close to residences. This score ranged from 0 to 3, and for those who answered no positive aspect to the practice of physical activity, the score was 0, for those who responded one positive aspect, the score was 1 and so on.
- Access to recreational areas: This score took into account seven structures for the practice of physical activity in leisure time: parks, squares, places to walk, exercise lanes, clubs, sports courts and soccer field. Each item received a score from 0 to 2 (no structure = 0; presence of structure, more than 10 minutes walking = 1, and presence of structure, less than 10 minutes walking = 2). The total score was obtained by summing the seven items, ranging from 0 to 14, and was

later transformed into quartiles (Poor - 0-3, Regular - 4-7, Good - 8-10 and Great - 11-14).

- Places of convenience: This score took into account 10 structures of convenience: health centers, pharmacies, churches or religious temples, bakeries, banks, bars, fairs, grocery stores, supermarkets and restaurants. Each item received a score from 0 to 2 (no structure = 0, presence of structure, more than 10 minutes walking = 1, and presence of structure, less than 10 minutes walking = 2). The total score was obtained by summing the ten items, ranging from 0 to 20, and later transformed into quartiles (Poor - 0-4, Regular - 5-9, Good - 10-14 and Great - 15-20).
- Access to total areas: This score took into account 18 structures: parks, squares, places to walk, exercise lanes, clubs, sports courts, soccer fields, bus shelters, health clinics, pharmacies, churches or religious temples, bakeries, banks, bars, fairs, restaurants, markets and supermarkets. Each item received a score from 0 to 2 (no structure = 0, presence of structure, more than 10 minutes walking = 1, and presence of structure, less than 10 minutes walking = 2). The total score was obtained by summing the eighteen items, ranging from 0 to 36, and was later transformed into quartiles (Poor - 0-9, Regular – 10-8, Good - 19-27 and Great - 28-36).

In addition to the variables above, questions regarding year of birth/age, religion, skin color (white, black, brown, yellow, indigenous, others), marital status (single, married, widowed, divorced, cohabiting) and educational level were performed (illiterate, incomplete elementary school; complete elementary school, incomplete high school; complete high school, incomplete higher education and complete higher education). To access the economic class, the questionnaire proposed by the Brazilian Association of Research Companies that groups individuals into economic classes A (high), B, C, D and E (low) according to the purchasing power was used[19].

The questionnaires were applied by nine interviewers who were submitted to a ten-hour training period on the research tools and interviewing techniques, followed by two interviews accompanied by responsible for the research.

The study was approved by the Ethics Committee on Human Research, Institute of Biosciences, State University of São Paulo (UNESP), Campus of Rio Claro (process No.: 078/2010).

Statistical Analysis

A descriptive analysis was performed and results are presented as absolute numbers, percentages and confidence intervals of 95%. To verify association between practice of walking (outcome) and environmental characteristics (independent variables), binary logistic regression analysis was

used. Statistical analyses were performed in four steps: 1) Chi-square of all independent variables with two walking outcomes; 2) Variables with p values <0.20 in the previous step were used for the elaboration of bivariate analyses, being individually tested; 3) For the elaboration of multiple models, only variables with p <0.20 in the previous step were selected [19] 4) For the final model, only variables with p <0.05 in the previous step were included. The final model was adjusted for control variables sex, age and economic class. All statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) version 17.0.

RESULTS

Of the 579 eligible households, 42 (7.3%) were classified as refusals and 67 (11.5%) as losses. Overall, 470 subjects were interviewed (81.7%) and the average time spent for the application of the questionnaire was 21.1 ± 7.5 minutes (mean ± standard deviation). The results of sociodemographic variables showed that most respondents were married or cohabiting (54.5%), with 12 or more years of schooling (57.7%), with 10 or more years of residence in the neighborhood (61.3 %), Caucasians (70.4%) and Catholics (60.2%) (Table 1).

The prevalence of at least 10 minutes of walking in the commuting domain per week was 58.9%, being more prevalent among women (66.3%) compared to men (50.0%). For walking in the leisure domain, 20.6% of respondents reported doing this activity for at least 10 minutes per week (women - 19.8%; men - 21.7%) (Figure 1).

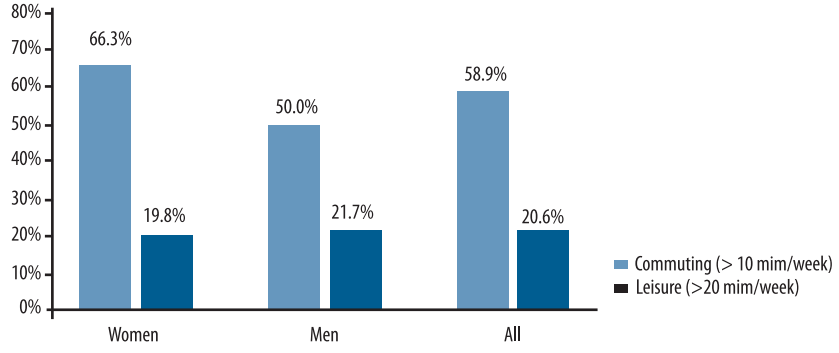

Figure 1. Prevalence of walking in commuting and leisure domains stratified by sex. Rio Claro - SP. (n = 470 adults).

Table 2 presents the results of the binary logistic regression for walking in commuting and leisure domains and the control variables age, gender, and economic class. For walking in the leisure domain, it was observed that older adults (60 years or more) had higher odds of practicing at least 10 minutes / week of walking in the leisure domain (OR = 1.85 CI95% = 1.04 to 3 , 31) compared to younger adults (≤ 39 years).

Regarding walking in the commuting domain, men had lower odds compared with women. Additionally, people from lower economic classes

(C, D and E) had higher odds compared with those of class A and B1. As in walking in the commuting domain, people of lower economic classes (B2, C, D and E) had lower odds of walking in the leisure domain when compared with people of class A and B1.

Table 1. Demographic characteristics of participants. Rio Claro, SP. Brazil (n = 470 adults).

Variables	%	CI95%		n(470)
		Lower	Upper	
Sex				
Male	45.1	39.2	51.0	212
Female	54.9	49.0	60.8	258
Age group				
18 to 39 years	44.0	38.1	49.9	207
40 to 59 years	31.3	25.8	36.8	147
60 years or more	24.7	19.6	29.8	116
Marital status				
Single	27.2	21.9	32.5	128
Separated, widowed, divorced	18.3	13.7	22.9	86
Married and cohabiting	54.5	48.6	60.4	256
Educational level				
0 to 7 years	27.4	22.1	32.7	129
8 to 11 years	14.9	10.7	19.1	70
12 years or more	57.7	51.8	63.6	271
Economic class				
A1, A2 and B1	21.5	16.6	26.4	101
B2	28.9	23.5	34.3	136
C1 and C2	43.8	37.9	49.7	206
D and E	5.8	3.0	8.6	27
Time of residence in the neighborhood				
1 year or less	11.1	7.4	14.8	52
1 to 10 years	27.7	22.4	33.0	130
10 years or more	61.2	55.5	67.1	288
Skin color				
White	70.4	65.0	75.8	331
Non white	29.6	24.2	35.0	139
Religion				
Catholic	60.2	54.4	66.0	283
Evangelical	20.6	15.8	25.4	97
None	11.3	7.5	15.1	53
Others	7.9	4.7	11.1	37

Environmental variables with $p < 0.20$ in the bivariate analysis for the practice of at least 10 minutes walking in the commuting domain were: Quartile of access to total areas, convenience and leisure, presence of cross-

walk in the neighborhood, feeling of safety at night, weather as a barrier to practice and pollution smoke. All independent variables previously mentioned composed the multivariate model (gross) and only presence of crosswalk in the neighborhood showed p <0.05. After adjustment for sex, age and economic class, it remained with significant association (p = 0.032). Thus, people who perceived the presence of crosswalks in the neighborhood were 73% more likely to perform at least 10 minutes of walking per week as a form of displacement when compared with those who did not perceive such structures (Table 3).

Table 2. Binary logistic regression of physical activity outcomes with independent variables age, gender and economic class

Variables	Commuting walking				Leisure walking			
	RO	CI (95%)		p	RO	CI (95%)		p
Age group								
18 to 39 years	1				1			
40 to 59 years	0.94	0.6	1.46	0.774	1.6	0.93	2.76	0.091
60 years or more	0.65	0.4	1.05	0.075	1.85	1.04	3.31	0.037*
Sex								
Female	1				1			
Male	0.53	0.36	0.77	0.001*	1.04	0.65	1.65	0.871
Economic class								
A1, A2 and B1	1				1			
B2	1.32	0.78	2.23	0.307	0.34	0.2	0.6	0.000*
C1 and C2	1.74	1.06	2.85	0.027*	0.37	0.2	0.68	0.001*
D and E	3.78	1.37	10.39	0.001*	0.28	0.09	0.88	0.003*

*p < 0.05

Variables with p <0.20 in the bivariate analysis between practice of at least 10 minutes of walking in the leisure domain and independent variables were: Invitation of friends and having a dog as a pet. All independent variables previously mentioned composed the crude model and only the invitation of friends was part of the final model with p <0.05. Thus, it was observed that people who were invited by friends for physical activity (OR = 2.55, CI 95% 1.52-4.28) had higher odds of practicing at least 10 minutes of walking per week in the leisure domain (Table 4).

DISCUSSION

The practice of walking in the commuting domain was reported by 58.9% of respondents. In 2011, a study conducted in the district of Ermelindo Matarazzo with 890 subjects found that 85.7% of respondents performed at least 10 minutes of walking in the commuting domain [13], but in Curitiba, this value was 55% [7] when the national average was 53% [5]. It is noteworthy that the proportion of people who walk in the commuting domain in the city of Rio Claro is compatible with values found nationally. This high prevalence in the district of Ermelindo Matarazzo may be related to the low socioeconomic status of the region

Table 3. Gross and adjusted binary logistic regression model with dependent variable practice of at least 10 minutes of walking in the commuting domain

Variables	RO (crude)	CI (95%)		p	RO (adjusted)#	CI (95%)		p
Pollution score				0.162&				
Poor	1							
Regular	0.26	0.05	1.30					
Good	0.28	0.06	1.39					
Great	0.31	0.06	1.65					
Quartile of access to total areas				0.055&				
Poor	1							
Regular	2.19	0.81	5.93					
Good	2.22	0.60	8.17					
Great	3.68	0.66	20.39					
Quartile of access to convenience				0.246&				
Poor	1							
Regular	1.20	0.67	2.16					
Good	0.59	0.26	1.36					
Great	0.46	0.16	1.29					
Quartile of access to leisure areas				0.076&				
Poor	1							
Regular	1.33	0.49	3.62					
Good	1.16	0.39	3.45					
Great	1.08	0.29	3.99					
Crosswalk near home				0.024*				0,032
No	1				1			
Yes	1.81	1.08	3.02		1.73	1,05	2,85	
Feeling of safety for night practice				0.173				
No	1							
Yes	0.74	0.48	1.14					
Weather as barrier for practice				0.344				
No	1							
Yes	0.82	0.54	1.24					
Smoke pollution				0.098				
Presence	1							
Absence	0.62	0.36	1.09					

Note: $R^2 = 0.15$ (Nagelkerke); 0.11 (Cax and Snell); & p of trend; *p<0.05; # Model adjusted for sex, age and socioeconomic status.

Table 4. Gross and adjusted binary logistic regression model with dependent variable practice of at least 10 minutes of walking in the leisure domain.

Variáveis	RO (gross)	CI (95%)		p	RO (gross)	CI (95%)		p
Invitation of friends and / or neighbors to practice				0.002*				0.000*
No	1				1			
Yes	2.17	1.33	3.55		2.55	1.52	4.28	
Having a dog as a pet				0.170				
No	1							
Yes	1.38	0.87	2.18					

Note: R^2=0.15 (Nagelkerke); 0.11 (Cax and Snell); # Model adjusted for sex, age and socioeconomic status. *p < 0,05

which, as found in Rio Claro, can influence walking in the commuting domain (Table 2).

The prevalence of walking in the commuting domain was higher among women (66.3%) compared with men (50.0%). One possible explanation for this may be due to the high number of men who use car to go to work (44.3%) and to the place of physical activity in leisure time (15.6%) compared with women, 18.6% and 9.7% respectively (data not shown).

In the present study, 36.8% of respondents perceived the existence of crosswalks near the residence and this environmental variable was significantly associated with the practice of walking in the commuting domain (OR = 1.73 CI = 1.05-2.85).

International studies have shown that 54% of pedestrian accidents occur when the person is crossing the street[20] and in most cases, these pedestrians are not crossing the street in appropriate places for such purposes such as walkways, crosswalks and underground passages[21].

The act of crossing the street is a complex behavior that involves several skills including cognitive, physical and sensory actions. Before performing the task of crossing the street, there is a need for checking the traffic of vehicles, to integrate several sources of information, feel safe to cross it and to adjust the motor action according to the perception of surrounding vehicles. Crosswalks guarantee, even partially, pedestrian safety to accomplish this task, since according to Article 70 of the Brazilian Traffic Code, cars should give preference to the passage of pedestrians on crosswalks even if they have not completed the crossing and the lights have turned green for the vehicle.

The results of this study reinforce the idea that investment in structures aimed at providing safety for pedestrians, such as crosswalks, may contribute to the promotion of walking in the commuting domain. However, crosswalks are predominantly located at downtown, which is characterized as an area of mixed use, with high number of squares and business, and these attributes can also contribute to walking in the commuting domain.

In contrast, the present study found no positive association between perceived safety and the practice of walking in the commuting domain, as observed in other studies[7,13]. A possible explanation may be due to the fact that the population of the cities of Curitiba and São Paulo are considerably higher than that of Rio Claro (1.7 million and 11.3 million versus 187,000).

Oliveira (2005) apud Santos and Kassou [22] report that the city size is crucial to the crime rate, and the greater the city size, the higher the crime rate. Thus, perceived safety may have a greater impact on the decision to walk in large urban centers compared to smaller cities.

Regarding walking in the leisure domain, this study found a prevalence of 20.6%, which is an intermediate value and higher than that found in major cities such as Vitória (8.8%) and Recife (16%)[6] but much lower than that found in Curitiba (35%)[7].

Regarding gender, this study showed higher prevalence of walking in the leisure domain among men (21.7%) compared with women (19.8%), which is not consistent with other findings in literature[23,24]. Nevertheless, the logistic regression analysis showed no significant association between sex and practice of walking in the leisure domain, which behavior is similar to results found in the cities of Recife, Curitiba, Vitória[6] and Pelotas[24].

Regarding factors associated with walking in the leisure domain, this study found that the invitation of friends / neighbors for physical activity (OR = 2.33 CI = 1.37-3.96) was significantly associated with greater odds of practicing some walking in the leisure domain.

Several studies have shown that social support is positively associated with several outcomes for physical activity[13,25,26]. This social support can manifest in various spheres of personal relationships, which can be attributed to friends, relatives, doctors, teachers, spouses, to the fact of seeing other people practicing physical activities and also to having pets such as dogs and horses.

Some authors suggest that social support from dogs can positively impact the practice of walking[27,28]. This effect is related to the number of sessions and time of walking per week[27] and to the chance of achieving recommended levels of walking[28]. Despite such evidence, the present study found this association only in the bivariate model, which seems to disappears in the crude logistic regression model (OR = 1.38 CI = 0.87-2.18).

In contrast, social support from friends and neighbors plays an important role in the practice of walking in the leisure domain. Our results show that people who receive invitations for walks, either from friends or neighbors, are more likely to practice this modality. These findings are consistent with several studies that have evaluated the influence of relatives and friends on the practice of physical activity.

Ball et al.[29], in a study with over 1,200 women, evaluated personal, social and environmental characteristics and the practice of walking in leisure and commuting domains. They found that social support from friends was significantly associated with walking in the leisure domain (OR = 1.77 CI = 1.39-2.14), but this behavior did not occur in the commuting domain. On the other hand, the same study observed positive association between social support from family and walking in the commuting domain, a fact that was not observed in our results.

The results found in this study demonstrate that no variable of perception of built environment was significantly associated with walking in the leisure domain. However, variable social environment represented by the invitation of friends, was considered important to explain the involvement in this type of activity.

The present study showed some limitations such as the cross-sectional design, which does not allow establishing a relationship between cause and effect. Although unable to determine associations between the practice of walking and the perceived environment, it is not possible to determine that

the environment is in fact the cause for the practice of walking. Another problem that may have occurred is that the residence time in the neighborhood may be related to the way people perceive the environment around their homes; however, this limitation was minimized by the fact that 89% of subjects live more than one year in the neighborhood.

In addition, another problem that may have influenced the results refers to the notion of proximity. As it was defined as the distance equivalent to 10 minutes of walking, people may have had different notions for such distances. Finally, the sample size calculation used is not specific for the estimation of associated factors and thus, it is possible that some associations have been harmed due to the lack of statistical power.

CONCLUSION

This study identified some perceived environmental attributes that are differently associated with walking in the commuting and leisure domains. For walking in the leisure domain, social support from friends was more important than attributes of the physical environment. For walking in the commuting domain, only the perception of the presence of crosswalks was associated.

These results reinforce that public policies to promote walking should consider both variables related to the environment as those related to social support.

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