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original article

Perceived barriers by university students in relation the leisure-time physical activity

Barreiras para a prática de atividade física no lazer em estudantes universitários

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Abstract – To estimate the prevalence and socio-demographic indicators and program affiliation associated with the perceived barriers for physical activity practice; and, to analyze the association between the perceived barriers with leisure-time physical inactivity in university students. A cross-sectional study was carried out with a representative sample (n=1084) of university students (N=5,461) of a public university from the state of Bahia, Brazil. The information were obtained for Isaq-A questionnaire and the perceived barriers in relation to the leisure-time physical activity were categorized as situational, personal and arising from resources and analyzed in relation the socio-demographic indicators (gender, age, partner status and hours in occupational activities), program affiliation (period of study and year of entrance at the university) and leisure-time physical inactivity. The association was estimated by Prevalence Ratio (Poisson Regression Analysis). The significance value was of 5%. The most prevalent barrier was situational (56.7%), and higher with more years of exposure academic (p=0.02). Higher prevalence of leisure-time physical inactivity was observed in university students that perceived the barriers of resources (PR=2.59; 95%CI=1.17-5.71). The barriers situational were more mentioned, especially, in the final years of the course, however, the barriers of resources represented association with leisure-time physical inactivity.

Key words: Cross-sectional studies; Sendentary lifestyle; Students.

Resumo – *Estimar a prevalência e os fatores sócio-demográficos e de vínculo com a universidade associados às barreiras para a prática de atividade física no lazer; e, analisar a associação entre as barreiras para a prática de atividade física no lazer com a inatividade física no lazer em estudantes universitários. Estudo transversal realizado com uma amostra representativa (n=1.084) de estudantes universitários (N=5.461) de uma instituição pública do Estado da Bahia. As informações foram obtidas por meio do questionário Isaq-A e as barreiras para a prática de atividade física no lazer foram categorizadas em situacionais, pessoais e de recursos e, analisadas em relação aos indicadores sócio-demográficos (sexo, faixa de idade, situação conjugal e carga horária semanal em estágio/trabalho), de vínculo com a universidade (período de estudo e ano de ingresso na universidade) e inatividade física no lazer. As estimativas de associação foram realizadas pela Razão de Prevalências. O valor de significância adotado foi de 5%. A barreira mais referida foi referente à situação (56,7%), sendo a proporção dessa barreira maior em estudantes com mais tempo de vivência acadêmica (p=0,02). Estudantes que perceberam as barreiras relacionadas aos recursos apresentaram maior prevalência de inatividade física no lazer (RP=2,59; IC95%=1,17-5,71). As barreiras situacionais foram as mais prevalentes e mais referidas por estudantes dos anos finais dos cursos, no entanto, as barreiras dos recursos estiveram associadas de forma independente a inatividade física no lazer.*

Palavras-chave: *Estilo de vida sedentário, Estudantes, Estudos transversais.*

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INTRODUCTION

Scientific evidence of the benefits of regular practice of physical activities for health is documented in literature[1,2], including in the leisure, active commuting, occupational and domestic activities contexts[1]. The practice of leisure-time physical activities (physical exercises, sports, dances, fight or martial arts) represents the most easily modifiable and conducive context to stimulating the practice of physical activities, as well as for potential health benefits[2].

The annual surveys of the Brazilian surveillance system, VIGITEL, have shown stagnation in the prevalence of practitioners of leisure-time physical activities over the years[3]. The prevalence of adults practicing physical activities at leisure varied from 14.7% in 2006 to 15.2% in 2009[3]. The lack of motivation for the practice of physical exercises[4], the feeling of tiredness[4,5], the obligations with the studies[5], and the lack of money[4,5], are related to the leisure-time physical inactivity. Among population subgroups, college students represent a group with a high prevalence of low levels of physical activity[6]. However, there are still little information on the characterization of the perceived barriers for the leisure-time physical activity practice in this population segment.

In view of the growth of the number of university students in the last years, especially in the Northeastern region of Brazil[7]; the high prevalence of physical inactivity at leisure of university students[6]; and the acknowledged Brazilian social inequality, the obtaining of information on the main limiters to the practice of leisure-time physical activities may provide information to implement institutional actions aiming at the increase of this practice, preferably with the use of spaces at the university. Thus, in view of the geographical context and relevance to public health, as to dose-response gradient on the regular practice of physical activities for leisure[2], this study aimed at: (a) estimate the prevalence and socio-demographic indicators and program affiliation associated with the perceived barriers for leisure-time physical activity practice; and, (b) analyze the relation between the barriers to physical activity practice with leisure-time physical inactivity in public university students in northeast Brazil.

METHODOLOGICAL PROCEDURES

This cross-sectional design study is derived from the first survey of the MONISA Study (*Monitoring of Health Indicators and Quality of Life in Academics*), approved by the Research Ethics Committee of Universidade Estadual de Santa Cruz (no. 382/10). The MONISA Study aimed at monitoring the indicators related to health and quality of life of university students of a public institution in Bahia state, for a period of 10 years.

The study population was composed of university students enrolled in 2nd academic semester of 2010 in undergraduate courses (n=5,461). Freshmen students, distance education students, and students with special

registration were not part of the study population. The following parameters were used for the sample calculation[8]: reference population in 2010, confidence level in 95%, prevalence estimated in 50% for the unknown prevalence and sample error of 3 percentage points. The calculated sample was 893 students plus 20% for losses and refusals, and 15% for the control of confounding factors in adjusted analysis, totaling a final sample of 1,232 university students.

Considering the power of 80%, confidence level of 95% and the amount of subjects in the categories of the barrier perceived for the leisure-time physical activity practice variable, *have not perceived* (not exposed to leisure-time physical inactivity) and *resources barriers* (exposed to leisure-time physical inactivity), it was observed that the study sample may estimate significant Prevalence Ratios, higher than 3.1 and lower than 0.3. The power calculated of this study was performed *a posteriori* with the program *Epi-Info 6.04*.

The sampling was stratified by considering the proportionality of the 30 courses of the institution; period of study (nighttime and daytime); and, years from entrance at the university (2010, 2009, 2008 and 2007 or before). In each stratum, the university students were randomly selected, with the aid of the list in alphabetical order. To avoid the losses, the university students were sought in up to three attempts, on different days and times. University students that were not found and who had no interest in participating were not replaced. The training for data collection was conducted in July and August and the collection in the months from September to November 2010, in the classrooms at the university, before, during, or at the end of classes. The information were obtained by means of the Isaq-A questionnaire (Indicators of University Students Health and Quality of Life), built based on other tools for adults and university students, and appreciated as to the face value and content (mean index of 92%), clearness (mean index of 96%) and pre-testing (mean filling time of 30 minutes), and reproducibility with one-week interval[9]. The observed reproducibility level by means of the *Kappa* (k) test, for the main barriers for the practice of physical activity at leisure was k=0.51 and for leisure-time physical inactivity was k=0.67[9].

In this study, the first dependent variable were the barriers perceived for the practice of leisure-time physical activity[9] categorized as[10]: situational barriers (uncomfortable climate, overwork, family obligations and study); personal barriers (tiredness, lack of desire, lack of motor skills and lack of physical conditions); and barriers related to resources (distance to the place of practice, lack of facilities, lack of money and safety conditions). It should be noted that this categorization of barriers derived from the analysis of responses to open questions obtained from cross-sectional epidemiological study with 4,225 Santa Catarina (southern Brazil) industry workers[11].

The students were asked to inform, in order of importance (from the most important to the least important), the three main barriers to the practice of leisure-time physical activity. The 1st option of barriers perceived

was analyzed as outcome. Moreover, this first option of perceived barriers was also analyzed in relation to a second outcome: leisure-time physical inactivity[9]. Those university students that did not practice a physical activity but wanted to practice in the near future, or did not practice and did not want to, were considered as inactive at leisure-time.

The exploratory variables considered in relation to the barriers and used as possible confounding control in adjusted analyses between perceived barriers and leisure-time physical inactivity: *gender*; *age*, categorized in third parts (17 to 20 years, 21 to 23 and ≥24 years); *partner status* (with or without partner); *weekly hours in internship or work activities* in hours/week (zero; 1 to 19; 20 to 29; 30 to 39; ≥40), they were prompted to consider the larger weekly workload activity in case of two activities. The variables related to affiliation with the university were: *period of study* (daytime and nighttime); and, *year of entrance at the university* (2010, 2009, 2008 and 2007 or earlier). The other two options of perceived barriers were used as control variables.

The data were tabulated in the EpiData 3.1 program; the statistical analysis carried out in SPSS®, version 16.0. The analyses included descriptive statistics (absolute and relative frequencies, mean, median, standard deviation (SD), minimum and maximum values). The relation between perceived barriers and socio-demographic indicators and linking with the University was analyzed by Chi-square test (χ^2) and chi-square trend test (χ^2). The Prevalence Ratios (RP), estimated by Poisson regression, in crude and adjusted analyses, was used as a measure of association between perceived barriers and leisure-time physical inactivity. The adjustment was carried out in three models in the adjusted analysis. For model I the variables were gender, age and partner status; Model II, the same variables of Model I plus weekly hours in internship/work activities, study period and year of entrance at the university; and, Model III, variables of Models I and II plus the 2nd and 3rd options of perceived barriers. The variables that presented p value of Wald test <0.20 remained adjusted at the end of each models, by means of the backward variables selection procedures. The significance level adopted was 5%.

RESULTS

The study counted with the participation of 1,084 university students (88%); there were no differences between the sample obtained and the losses/refusals, as regards gender and period of study (data not shown). The median and the age mean were 22 and 23.5 years (SD=5.2; 17 to 52 years), respectively. The socio-demographic characteristics and relationship with the university, total and by gender are presented in Table 1.

The situational and personal barriers were the most mentioned by university students, with prevalence of 56.7% and 30.3%, respectively (Figure 1). The year of entrance at the university was associated to the perceived barriers, and the prevalence of the situational barriers grew with the longer

time of academic experience and the barriers related to recourses decreased over the years at the university (Table 2).

Table 1. Distribution of students according to socio-demographic and program affiliation variables. MONISA 2010.

Variables	Global		Male		Female	
	n	%	n	%	n	%
	1,084	100	491	45.3	592	54.7
Age						
17 to 20 years	285	26.7	124	25.6	161	27.6
21 to 23 years	400	37.4	180	37.1	220	37.7
≥24 years	384	35.9	181	37.3	202	34.6
Partner status						
Without partner	937	86.4	427	87.0	509	86.0
With partner	147	13.6	64	13.0	83	14.0
Weekly hours in internship or work activities in hours/week						
Zero hours/week	447	41.9	197	40.5	250	43.2
1 to 19 hours/week	122	11.4	44	9.1	77	13.3
20 to 29 hours/week	252	23.6	106	21.8	146	25.2
30 to 39 hours/week	83	7.8	45	9.3	38	6.6
≥40 hours/week	162	15.2	94	19.3	68	11.7
Period of study						
Daytime	735	67.8	318	64.8	416	70.3
Nighttime	349	32.2	173	35.2	176	29.7
Year of entrance at the university						
2010	233	21.5	103	21.0	130	22.0
2009	267	24.6	103	21.0	164	27.7
2008	225	20.8	114	23.2	111	18.7
2007 and earlier	359	33.1	171	34.8	187	31.6

%=Prevalence.

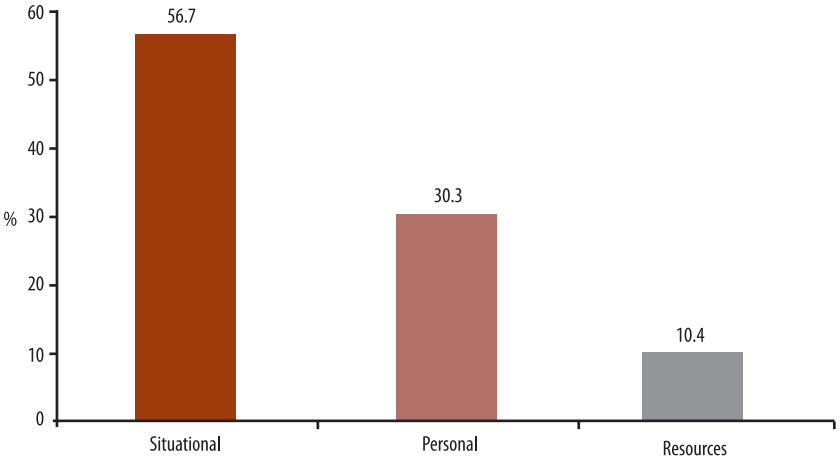

Figure 1. Prevalence of perceived barriers of practice of leisure-time physical activity in university students. MONISA 2010.

Table 2. Association between the perceived barriers to leisure-time physical activity with the socio-demographic and program affiliation variables. MONISA 2010.

Variáveis		Situational	Personal	Resources	
	n	%	%	%	p
Gender					0.09
Male	465	58.7	30.8	7.7	
Female	545	54.9	29.9	12.7	
Age					0.19**
17 to 20 years	273	50.2	31.1	14.3	
21 to 23 years	378	60.6	29.1	8.7	
≥24 years	347	57.3	31.1	9.2	
Partner status					0.99*
Without partner	879	56.8	30.1	10.4	
With partner	132	56.1	31.1	10.6	
Weekly hours in internship or work activities in hours/week					0.14**
Zero hours/week	424	55.7	27.8	13.2	
1 to 19 hours/week	112	57.1	33.0	7.1	
20 to 29 hours/week	235	56.2	31.9	10.2	
30 to 39 hours/week	81	65.4	28.4	4.9	
≥40 hours/week	142	59.9	29.6	7.7	
Period of study					0.49*
Daytime	688	58.0	29.1	10.0	
Nighttime	323	53.9	32.8	11.1	
Year of entrance at the university					0.02**
2010	215	50.7	26.0	18.1	
2009	250	56.8	31.2	9.6	
2008	214	53.7	36.0	8.4	
2007 e earlier	332	62.3	28.6	7.2	

%=Prevalence; *Chi-square test ($\chi 2$); **Chi-square trend test ($\chi 2$).

The students who reported have not perceived difficulties for leisure-time physical activities practice, the prevalence of leisure-time physical inactivity was 23.1%; on the other hand, those who noticed the recourses barriers the prevalence of leisure-time physical inactivity was 70.9% (Table 3). In the crude analysis between the barriers and leisure-time physical inactivity, there was an association for all types of perceived barriers; the PR for the leisure-time physical inactivity related to resources was higher (Table 3). In the adjusted analysis (Table 3), for the variables of the last model, only the resources barrier remained associated. Students that mentioned the resources as barriers to the practice of physical activity at leisure presented prevalence of leisure-time physical inactivity 2.6 times higher (PR=2.59; 95%CI=1.17-5.71) when compared to their peers who did not mention any barrier.

Table 3. Association between the perceived barriers to leisure-time physical activity with leisure-time physical inactivity in university students. MONISA 2010.

Variables	Inactive during leisure-time					
			Crued analysis	Adjusted Analysis Model I	Adjusted Analysis Model II	Adjusted Analysis Model III
	n	%	PR (95%CI)	PR (95%CI)	PR (95%CI)	PR (95%CI)
Perceived Barriers						
Have not perceived	26	23.1	1.00*	1.00*§	1.00*†	1.00*‡
Situational	564	47.5	2.06 (1.01-4.18)	2.08 (1.05-4.11)	2.07 (1.05-4.06)	1.74 (0.79-3.85)
Personal	303	49.8	2.16 (1.06-4.40)	2.17 (1.09-4.29)	2.14 (1.09-4.22)	1.90 (0.86-4.21)
Resources	103	70.9	3.07 (1.51-6.26)	2.87 (1.45-5.70)	2.82 (1.43-5.57)	2.59 (1.17-5.71)

%=Prevalence de leisure-time physical inactivity; PR=Prevalence Ratios; 95%CI=95% Confidence Interval; Model I=Gender, Age and Partner status; Model II=Variables of Model I plus weekly hours in internship/work activities, study period and year of entrance at the university; Model III=Variables of Models I and II plus the 2nd and 3rd options of perceived barriers; §Variables of Model I that remain adjusted with value p <0,20: gender; †Variables of Model II that remain adjusted with value p <0,20: gender and study period; ‡Variables of Model III that remain adjusted with value p <0,20: gender, study period, weekly hours in internship/work activities and 2nd and 3rd options of perceived barriers; *value p of Wald test for heterogeneity: <0,001.

DISCUSSION

This is the first study on perceived barriers to leisure-time physical activity practice involving representative sample of Brazilians university students of different courses. The results showed that the situational barriers (uncomfortable climate, overwork, family and study obligations) were the most referred to by students. Barriers related to resources (distance to the place of practice, lack of facilities, lack of money to pay tuition or professional and safety conditions) were independently associated with leisure-time physical inactivity.

The perception of situational barriers among students may be related to the academic period with large fluctuations, as also observed in school students, which feature educational routines similar to university students[12]. High school students of Santa Maria (Rio Grande do Sul state, southern Brazil), refer to the situational barrier of the four main options, among the 21 options of barriers: time dedicated to study, lack of adequate climate and overwork[12]. However, university students from an Egyptian institute referred as permanent barriers for the practice of physical activity, both barriers related to situation (lack of time: 41.2%), and to resources (absence of places for the practice: 35.5%; and lack of safe places: 31.9%)[13].

Some studies carried out with university students from different countries have shown divergences as regards the perceived barriers[14-16]. The main limiting factors were lack of energy, lack of motivation and lack of self-confidence (internal or personal barriers)[14] and the social support from family members and friends (relative outside barriers)[14,16]. It is believed that the differences of the present study, when compared to the researches carried out with Turkish[14] and Spanish[15] university students may be related to the characteristics of each region, mainly as regards the socio-cultural and economic context. Another relevant aspect is the planning for the practice of physical activities, i.e., the compromise with this behavior, which is an important mediator of the perception of other barriers to the practice[16].

There was an association only between the barriers for the leisure-time physical activity practice and year of entrance at the university. Students in the last years of the course mentioned mainly the situational barriers, probably due to the demand of the final years, such as the participation in internships and final project, as well as other possible demands such as need to enter the labor market. The other socio-demographic indicators, and also those relating to the affiliation program with the university, did not show an association with those barriers, similar to the survey performed in 2007, with Physical Education students of the same institution of this study[17], and also in a study with Brazilian adolescents and adults[18], and Spanish adults[19]. The university students perception of barriers is possibly similar for men and women, for students of different age ranges, study period and among those who work or have internship activities, probably because of the academic context, which seems to equally affect both groups.

The association between the barriers related to resources and the leisure-time physical inactivity, observed in this study, was not evidenced in university students from Bahia state, Brazil, which also used the same questions and categorization of answers of this study[17]. As regards high school students of Curitiba, higher chances of physical inactivity were observed for male students who perceived, as barriers, the fact that they did not afford to pay the practice, the preference for other activities, and laziness[20]. The existence of facilities, attractiveness of the places, and the location of the places[21] for the practice are strong facilitators for the practice of physical activities and both relate to resources, because both require other solutions, a higher economic level and public initiatives for the implementation of physical activity promotion programs, as well as the building of areas for the practice. Thus, the offer of these places would maximize the chances of practice, considering that the university students tend to recognize the practice of physical activity as a promoter of benefits for the improvement of physical capacity, preventive health, life expectancy and social interaction[13,22].

The cross-sectional design of this study makes the causal observation of barriers that can determine the leisure-time physical inactivity unviable; moreover, the obtaining of information on the health behaviors may represent a possible bias. However, the reproducibility level observed for the variable outcome of leisure-time physical inactivity minimizes this possible limitation. The amount of subjects in the situational and personal barriers category was a limiting factor that made the possible obtaining of statistical associations unviable. However, as strengths, the short period of data collection, which downplayed possible seasonal climate interferences, as rainy season, may be highlighted. In addition, the three main perceived barriers to leisure-time physical activity practice, in order of importance, made it possible to observe the estimated effect of the main perceived barrier under leisure-time physical inactivity in university students.

The creation of free and safe places for the practice, such as in the university campus, minimizing the distance to the places, as well as the availability of this practice at different times to the period of classes are

essential actions to minimize the impact of the barriers to the practice of physical activity at leisure in these university students. Thus, positive outcomes are expected as regards the school performance and adoption of an active lifestyle along the life.

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