Physical activity practice among undergraduate students in nursing

Prática de atividade física entre estudantes de graduação em enfermagem

Cláudia Geovana da Silva Pires[1]
Fernanda Carneiro Mussi[1]
Bruna Borges de Cerqueira[1]
Francisco José Gondim Pitanga[2]
Diorlene Oliveira da Silva[1]

Keywords
Physical fitness; Nursing, students; Sedentary lifestyle; Nursing education; Motor activity

Descritores
Aptidão física; Estudantes de enfermagem; Estilo de vida sedentário; Educação em enfermagem; Atividade motora

Submitted
October 20, 2013

Accepted
November 11, 2013

Abstract

Objective: To compare physical activity practice among undergraduate students in nursing freshmen and in nursing seniors.

Methods: Cross-sectional study conducted with a sample of 154 students. The research instruments were a questionnaire with sociodemographic and academic life and for the data on physical activity practice we used the international physical activity questionnaire. For data analysis, we used descriptive statistics and for bivariate analysis Pearson chi-square test, Fisher exact test.

Results: We identified a predominance of female freshmen aged 20 to 24 years old, who were also single. Sedentarism were predominantly. There was statistically significant difference for sitting time and year of enrollment ($p = 0.010$).

Conclusion: Sedentarism was predominant in the groups of freshmen and senior students. There was statistically significant difference for sitting time and year of enrollment, with higher percentage for freshmen.

Resumo

Objetivo: Comparar a prática de atividade física entre estudantes de graduação em enfermagem ingressantes e concluintes.

Métodos: Estudo transversal desenvolvido com amostra de 154 estudantes. Os instrumentos de pesquisa foram um questionário com dados sociodemográficos e da vida acadêmica e para os dados sobre a prática de atividade física utilizou-se o questionário internacional sobre atividade física. Para a análise dos dados empregou-se estatísticas descritivas e para as análises bivariadas o teste de Qui-quadrado de *Pearson*, Exato de *Fischer.*

Resultados: Identificou-se predomínio de ingressantes do sexo feminino com idade entre 20 a 24 anos, solteiros. Houve predominância do padrão sedentário. Houve diferença estatisticamente significante para tempo gasto sentado e ano em curso (p=0,010).

Conclusão: O padrão sedentário mostrou-se predominante para os grupos de estudantes ingressantes e concluintes do curso. Houve diferença estatisticamente significante para tempo gasto sentado e ano em curso, com maior percentual para ingressantes.

Corresponding author
Cláudia Geovana da Silva Pires
Doutor Augusto Viana Filho Avenue SN, *Campus* Universitário do Canela, Salvador, BA, Brazil.
Zip Code: 40110-060
cgspires@uol.com.br

[1]Escola de Enfermagem, Universidade Federal da Bahia, Salvador, BA, Brazil.
[2]Faculdade de Educação, Universidade Federal da Bahia, Salvador, BA, Brazil.

Conflict of interest: there are no conflicts of interest to declare.

Introduction

Physical inactivity has been increasingly growing and it has become a serious public health problem, a major consequence of modern society, in which capitalism and technological advances dictate the rules of social behavior. It is known that 70% of the world population is sedentary, it is estimated that two million deaths per year are caused by non-adherence to physical activity.[1]

Changes in lifestyle generated by capitalism and technological advances have affected the patterns of exercise and nutrition, increasing exposure of the population to the risk of chronic diseases. The main causes of these diseases are modifiable risk factors that are associated with lifestyle habits such as smoking, excessive alcohol consumption, physical inactivity, inadequate diet and chronic stress.[2]

Included in this group of risk factors, physical activity appears as a relevant component in the prevention of non-communicable chronic diseases such as type 2 diabetes mellitus, cardiovascular diseases, chronic respiratory diseases and cancer, also playing a role as a protective factor for overweight and obesity. Although most of these diseases manifest only in adulthood, it is increasingly evident that development begins in childhood and adolescence, and the regular practice of physical activity in the first two decades of life are very effective in prevention.[3,4]

Based on the above, it is important to know the trends and patterns of physical activity among undergraduate students, emphasizing that it is during this period that the personality and habits are consolidated and university enrollment arises new relations and possibilities of adopting sedentary behavior.[5] The prevalence of physical inactivity among young undergraduate students was very high, especially for freshmen. The main aspects associated with this sedentary behavior are lack of time, motivation and social support and the distance between the residence and places for exercising.[6] Therefore, although students are attending an institution for health training, preventive behaviors might prove less frequent. Especially in university enrollment, students report having less time for physical activity due to the obligations of academic life.

A literature search on physical activity practice in Brazilians undergraduate students in nursing was conducted at the database of the Virtual Health Library and in the Journals Portal from the Coordination of Improvement of Higher Education Personnel, using the keywords: students, undergraduate, physical activity and sedentarism, we found two studies that investigated young adults and nursing students in semesters and isolated years of the course.[7,8]

In this sense, the objective of this study was to compare physical activity practice among freshmen and seniors students of a nursing course.

Methods

It is a cross-sectional study in the nursing course at the *Universidade Federal da Bahia*, northeastern Brazil, conducted during the period from july to november 2011.

We chose a non-probability sample of convenience consisted of 154 nursing students, 91 freshmen and 63 seniors.

Inclusion criteria were: to be enrolled and to be attending the first two or last two semesters of undergraduate Nursing course, with a minimum age of 18 years old.

The research instruments were a questionnaire on sociodemographic data and data from academics life and the International Physical Activity Questionnaire - IPAQ. This questionnaire is recommended by the World Health Organization to assess physical activity in adults aged 15 to 69 years.[9,10] This instrument contains questions related to the frequency, duration and intensity of work-related physical activity, transport-related physical activity questions, domestic and leisure physical activity time.

Individuals can be classified as very active, active, irregularly active and sedentary, according to the score found. Those groups classified as sedentary or irregularly active were considered as risk groups.

For the section sitting time, we classified as sedentary individuals who stayed sited for ≥ 180 minutes/day.[9]

Data collection was conducted in the classroom, at a previously scheduled time.

Data were coded and entered into SPSS version 18.0 and after typing, exported to the statistical software STATA v.12 for treatment, construction of the main indicators of a sedentary lifestyle and generation of results. Descriptive analyzes were performed by using distributions of absolute (n) and relative (%) frequencies, univariate and bivariate, mean and standard deviation. To evaluate the magnitude of associations between variables, we employed the chi-square test and Fisher's exact test. The level of statistical significance in the analysis was 5% (p <0,05). We also used a measure of association odds ratio (OR). To obtain the OR and 95% confidence intervals, we used tabular analysis for dichotomous variables and multinomial logistic regression models for polytomous variables.

The power of this study was estimated for a prevalence between outcomes of cardiovascular risk factors of 35%, we adopted a mean difference of prevalence for sedentarism risk factors among the groups (freshmen and seniors) of 8%. The level of significance was set at 5% and we found a test power of 94.1%.

The study followed the development of national and international standards of ethics in research involving humans.

Results

The sample consisted of 154 undergraduate nursing students (59.1%) freshmen and (40.9%) seniors. Of this total, 89.6% were female and 10.4% were male.

The mean age of the sample was 22.4 years (SD = 4.5), and for the enrolled year the predominant age group was between 20-24 years (52.6%). Freshmen students were majority in the age group 18-19 years (42.8%) and seniors in the age group 25 years and over (42.8%). There were statistically significant differences in proportion as the age distribution and the current year (p = 0.000).

Students self-reported themselves as brown-skinned (57.2%) followed by black (21.4%) and white and others (21.4%). The groups were similar with respect to skin color. We observed in the sample high proportion of single people with regular partner (51.3%) or without regular partner (42.2%) and a low proportion of married people (6.5%). There was statistically significant differences in proportion of marital status and the year of enrollment, with a predominance of singles with regular partner and increasing the proportion of married (12.7%) for seniors (p = 0.017).

With respect to socioeconomic status of students, the largest proportion belonged to the C class (45.5%) and B (35.1%), a similar proportion was observed between groups. As for family income/month, the highest proportion of students came from families who earn three to five minimum salaries (40.3%) or values higher than six minimum salaries (40.2%). Whereas 19.5% were from families earning less than two minimum salaries. The groups were homogeneous with respect to family income/month and socioeconomic status.

It was observed that for 50% of students, monthly expenses corresponded to less than the minimum salary. Similar proportion was observed for freshmen (57.1%). We found an increase in the frequency of senior students with personal expenses between one and two minimum salaries (42.9%). However, despite the variations of monthly expenses, the groups were proportionally similar (p = 0.095) (Table 1).

Table 2 presents the data of the academic life of students. It was found for the sample that their predominant background was of public high schools (52.6%), as verified for the year of enrollment. Most students enrolled in the course through an admission exam (96.1%), which was also observed for the beginning and end of the course.

A greater proportion of the sample attended the course from five to six days (79.2%) which was observed for both freshmen and seniors. However, a higher percentage of seniors (97.8%) remained lower number of days in the university in relation

Table 1. Sociodemographic characteristics

Sociodemographic characteristics	Total 154(100%)	Freshmen 91(50.1%)	Seniors 63(40.9%)	p-value
Gender				
Male	16(10.4)	8(8.8)	8(12.7)	***0.435
Female	138(89.6)	83(91.2)	55(87.3)	
Age group				**0.000
18 to 19 years	39(25.3)	39(42.8)	0(0.0)	
20 to 24 years	81(52.6)	45(49.4)	36(57.1)	
25 and over	34(22.1)	7(7.7)	27(42.8)	
Skin color				**0.835
White and others	33(21.4)	19(20.8)	14(22.2)	
Black	33(21.4)	21(23.1)	12(19.0)	
Brown	88(57.2)	51(56.1)	37(58.8)	
Marital status				
Married/Stable union	10(6.5)	2(2.2)	8(12.7)	***0.017
Single, without regular partner	65(42.2)	44(48.4)	21(33.3)	
Single, with regular partner	79(51.3)	45(49.5)	34(53.9)	
Socioeconomic status				
A	14(9.1)	8(8.8)	6(9.5)	**0.847
B	54(35.1)	30(32.9)	24(38.1)	
C	70(45.5)	44(48.3)	26(41.3)	
D e E	16(10.4)	9(9.9)	7(11.1)	
Family income/month (in minimum salary)				
Until 2	30(19.5)	18(19.8)	12(19.1)	**0.997
3 to 5	62(40.3)	36(39.6)	26(41.3)	
6 to 8	25(16.2)	15(16.5)	10(15.9)	
9 and over	37(24.0)	22(24.2)	15(23.8)	
Personal expense/month (in minimum salary)				
< 1	77(50.0)	52(57.1)	25(39.7)	***0.095
1 to 2	53(34.4)	26(28.6)	27(42.9)	
3 and over	24(15.6)	13(14.3)	11(17.5)	

Legend: *Minimum salary (MS) R$545,00; **Pearson Chi-square test; ***Fisher's Exact Chi-square test

to the freshmen (52.4%). Proportional significant differences were observed between days in university and year of enrollment (p = 0.000).

Students were engaged in academic activities predominantly in two shifts (55.9%). However, there was a reversal in this proportion between the year of enrollment, as a higher percentage of freshmen (68.1%) attended two shifts and a higher percentage of seniors (61.9%) one shift. We identified statistically significant differences in proportions between groups (p = 0.000).

We found a predominance of conducting extracurricular activity for the sample (94.2 %) for the group of freshmen (95.6%) and seniors (92.1%), which included participation in research groups, community activities, data collection for undergraduate research projects and final paperwork activities.

Regarding distribution of workload in the semester, it was predominant in the sample (78.6%) and for the year of enrollment greater than or equal to 400 hours divided into theoretical activities, technical visits, supervised clinical field activities and curricular activity in the community. However, there was a decline in workload linked to enrollment in the end of the course. It was noticed that there was a statistically significant relationship between this variable and the year of enrollment (p = 0.000).

Tabela 2. Characteristics of academic life

Characteristics of academic life	Year of enrollment			p-value
	Total 154(100%)	Freshmen 91(50.1%)	Seniors 63(40.9%)	
Background				
Public school	81(52.6)	47(51.6)	34(53.9)	*0.077
Private school	73(47.4)	44(48.3)	29(46.0)	
Admission form				
Admission exam	148(96.1)	88(96.7)	60(95.2)	*0.475
Other way of admission	6(3.9)	3(3.3)	3(4.7)	
Days of course				
Until 2 days	16(10.4)	2(2.2)	14(22.2)	*0.000
4 days	16(10.4)	0(0)	16(25.4)	
5 to 6 days	122(79.2)	89(97.8)	33(52.4)	
Shifts dedicated to the activities of the course				
One	68(44.2)	29(31.8)	39(61.9)	*0.000
Two	86(55.9)	62(68.1)	24(38.1)	
Extracurricular activity				
Yes	145(94.2)	87(95.6)	58(92)	*0.281
No	9(5.9)	4(4.4)	5(7.9)	
Workload in the semester				
< 400	33(21.4)	2(2.2)	31(49.2)	*0.000
≥ 400	121(78.6)	89(97.8)	32(50.8)	

Legend: * Fisher's Exact Chi-square test; p-value obtained by Pearson Chi-square test

Table 3. Prevalence and Odds ratio

IPAQ sections: indicators of physical activity	Prev.(%)	Year of enrollment		p-value	Odds ratio	95% Confidence Interval
		Freshmen 91(59.1%) Prev.(%)	Seniors 63(40.9%) Prev.(%)			
Work-related physical activity (n=81)				0.770(*)		
Active						
Sedentary	71(87.6)	39(88.6)	32(86.5)		0.82	(0.31-2.90)
Transport-related physical activity				0.702(*)		
Active						
Sedentary	95(61.7)	55(60.4)	40(63.5)		0.82	(0.31-2.90)
Domestic physical activity				0.400(*)		
Active						
Sedentary	127(82.5)	77(84.6)	50(70.4)		0.82	(0.31-2.90)
Leisure time physical activity, sport and exercise				0.527(*)		
Active						
Sedentary	89(57.8)	56(61.5)	33(52.4)		0.82	(0.31-2.90)
Insufficient active	39(25.3)	21(23.1)	18(28.6)			
Sitting time				0.017(**)		
Active						
Sedentary	127(82.5)	81(89.0)	46(73.0)		0.13	(0.0 - 0.86)

Legend: (*)Pearson Chi-square test; (**)Fisher's Exact test

Table 3 shows the indicators of physical activity practice of freshmen and seniors undergraduate nursing students according to the cutoff point established by IPAQ section.

Out of 154 students, only 88 reported receiving some type of paid or voluntary work, of these 87.7% were classified as sedentary, being 88.6% freshmen and 86.5% seniors.

In the transport-related physical activity domain, 61.7% undergraduates were sedentary, with 60.4% freshmen and 63.5% seniors. In the domestic physical activities, sedentary behavior was also observed as 82.5% did not perform significant domestic activities, a greater presence of sedentarism in freshmen was observed when comparing to seniors.

In the leisure physical activity, sport and exercise domain 57.8% students were classified as sedentary, 61.5% freshmen and 52.4% seniors.

The sitting time showed to be the indicator with the highest percentage of sedentary people. Out of 154 students, 96.1 % presented this behavior, 89% freshmen and 73% seniors.

In all IPAQ domains, in the sample both freshmen and seniors were predominantly classified as sedentary. There was no statistically significant difference between the indicators of physical activity practice and the year of enrollment, except for the domain sitting time, in which there was a higher prevalence of sedentarism in the freshmen group (89%) compared to the seniors group (73%) ($p = 0.017$). The odds ratio followed the same direction.

Discussion

This study focused on physical activity in a population of young university students who were, predominantly, female. The presence of women in the nursing course, even after the inclusion of men in the profession, is still prevalent.[11,12] The limits of the results of this study are related to the cross-sectional design, which does not allow us to establish cause and effect and the fact that the population of the study came from a higher education institution.

The study group was composed mostly of single students who were Afro-descendents, characteristic of the city of Salvador, which is the city with the highest number of African descendants outside Africa. The prevalence of Income was from three to five minimum salaries and the socioeconomic predominant class was C.

The pattern of physical activity among freshmen and senior students showed that both groups are sedentary. A study conducted at a university from the state of Santa Catarina, southern Brazil, freshmen women behaved more sedentarily than men, with 17.4% of women being inactive and 11.2% of sedentary men ($p=0.016$).[6] Another study showed that in the leisure time domain only 18.3% of men were physically active, and among women the prevalence was even lower (11.9%). Considering work-related physical activity, 53.2% of men were physically active versus 33.9% of women. In the category transportation, we observed the same trend with 14.2% of men being physically active and 9.6% of women. The only domain in which women were more active corresponded to domestic activities (71.4% vs. 1.7%). These data reflect social constructions that men from childhood engage in vigorous sport activities while women participate in low intensity recreational activity.[13,14]

The predominance of class C in this study may also have contributed to the increasing prevalence of physical inactivity among students. In a study that evaluated the association between physical inactivity and socioeconomic status, the highest prevalence of leisure time physical inactivity was in classes C and D.[14] One possible explanation for this behavior is the lack of time, because the type of work in these classes is difficult and consumes a lot of time and lack of adequate public places for physical activity practice also contribute to this high prevalence.[14,15]

The prevalence of physical inactivity among young university students seems to be the result of multiple factors emphasizing the moment in which the labor market, highly competitive, requires increasingly skilled professionals generating, as the undergraduate course advances, the search for activities that facilitate such option. Nursing students

engage increasingly in academic and extracurricular activities as evidenced by the prevalence by the years enrolled with workload greater than or equal to 400 hour of conducting extracurricular activities which may constitute a limiting factor for physical activity practice. Over the years in undergraduate course, seeking direct its activities to areas that have higher ability such as placements in hospitals, not prioritizing physical activity, an indispensable component for disease prevention and health maintenance. Other relevant aspects can be personal barriers imposed by students such as lack of money and companionship for physical activity practice, and lack of motivation.[5,9,14]

The prevalence of sedentary in sitting time domain for the freshmen might be associated with the fact that a higher percentage of freshmen remained greater number of days in the university in relation to seniors, as well as attending to two shifts and providing higher workload. Another factor, possibly associated with greater sitting time in both groups, is the technological evolution that favors spending much time in front of the television or computer, as well as a tool for work and entertainment, widely used among young people.[9]

Sedentarism is a major risk factor for three of the four classes of non-communicable chronic diseases.[1,15] Thus, the concern that arises on these results is about the risk of developing these diseases among young students. It is during the first two decades of life that one acquires and consolidates the lifestyle habits that they will endure into old age. Observing that since that time, the young have sedentary behavior, the trend is that these habits become more pronounced over each decade lived enabling the emergence of diseases at early ages.[1,3,9]

Furthermore, the prevalence of sedentarism in university students demand the investigation of their association with other cardiovascular risk factors considering the contribution of physical activity to reduce blood glucose levels and blood pressure, increasing the level of HDL-cholesterol, lowering body weight, reducing all-cause mortality.[3,16,17]

The results showed especially the need for orientation and stimulation for physical activity practice throughout the undergraduate course in nursing with a view to its application in everyday life of students. The high prevalence of sedentarism in seniors suggested that the process of nursing education has failed to encourage good results in the modification of students' lifestyle. The results also bring reflection on the importance of competence development in academic learning process, so that, future nurses are able to encourage healthy behaviors in people who will be under their professional care.

Conclusion

The sedentary pattern was predominant in freshmen and seniors groups of students. Statistically significant difference was found for sitting time and year of enrollment, with highest percentage for freshmen.

Collaborations

Pires CGS e Mussi FC contributed to the project design, analysis and interpretation of data, drafting the article, adequacy for journal standards and approval of the final version. Pitanga FJG contributed to data collection, project design and approval of the final version. Cerqueira BB and Silva DO collaborated in the analysis and interpretation of data and approved the final version to be published.

References

1. World Health Organization. Global status report on noncommunicable diseases 2010. Geneva, World Health Organization, 2011.
2. Schmidt MI, Duncan BB, Silva GA, Menezes AM, Monteiro CA, Barreto SM, Chor D, Menezes PR. Health in Brazil 4. Chronic noncommunicable diseases in Brazil: burden and current challenges. Lancet. 2011;377(9781):1949-61.
3. Freitas D, Rodrigues CS, Yagui CM, Carvalho RS ,Marchi-Alves LM. Fatores de risco para hipertensão arterial entre estudantes do ensino médio. Acta Paul Enferm. 2012;25(3): 430-4.
4. Tenório MC, Barros MV, Tassitano RM, Bezerra J, Tenório JM, Hallal PC. Atividade física e comportamento sedentário em adolescentes estudantes do ensino médio. Rev Bras Epidemiol. 2010;13(1):105-17.
5. Fontes AC, Vianna RP. Prevalência e fatores associados ao baixo nível de atividade física entre estudantes universitários de uma universidade pública da região Nordeste - Brasil. Rev Bras Epidemiol. 2009;12(1):20-9.

6. Quadros TM, Petroski EL, Santos-Silva DA, Pinheiro-Gordia A. The prevalence of physical inactivity amongst Brazilian university students: its association with sociodemographic variables. Rev Salud Pública. 2009;11(5): 724-33.

7. Alves A, Marques IR. Fatores relacionados ao risco de doença arterial coronariana entre estudantes de enfermagem. Rev Bras Enferm. 2009; 62(6):883-8.

8. Martins MC, Ricarte IF, Rocha CH, Maia RB, Silva VB, Vera AB, Souza Filho MD. Pressão arterial, excesso de peso e nível de atividade física em estudantes de universidade pública. Arq Bras Cardiol. 2010;95(2):192-9.

9. Associação Brasileira de Empresas e Pesquisas. Critérios para levantamento de renda e classe social. 2010 [Interne]. [citado 2012 Jan 20]. Disponível em: htpp://www.abep.org.br.

10. World Health Organization. Interventions on diet and physical activity: what works. Summary report. Geneva: World Health Organization; 2009.

11. Pardini R, Matsudo S, Araújo T, Matsudo V, Andrade E, Braggion G, Andrade D,Oliveira L, Figueira Jr A, Raso V. Validação do questionário internacional de nível de atividade física (IPAQ - versão 6): estudo piloto em adultos jovens brasileiros. Rev Bras Ciên Mov. 2001; 9(3);45-51.

12. Barros AL, Vieira FS, Assis CC, Zeitoun SS. Alterações do nível pressórico e fatores de risco em graduandos de enfermagem. Acta Paul Enferm. 2009;22(6):773-8.

13. Picolotto E, Libardoni LF, Migott AM, Geib LT. Prevalência e fatores associados com o consumo de substâncias psicoativas por acadêmicos de Enfermagem da Universidade de Passo Fundo. Ciênc & Saúde Coletiva. 2010;15(3):645-54.

14. Duca GF, Rombaldi AJ, Knuth AG, Azevedo MR, Nahas MV. Associação entre nível econômico e inatividade física em diferentes domínios. Rev Bras Ativ Fis Saúde. 2009;14(2):123-31.

15. Chaves ES, de Araújo TL, Chaves DB, Costa AG, Oliveira AR, Alves FE. Children and adolescents with familiar history of high blood pressure: risk factors for cardiovascular diseases. Acta Paul Enferm. 2009;22(6):793-9.

16. Vancea DM, Vancea JN, Pires MI, Reis MA, Moura RB, Dib SA. Efeito da freqüência do exercício físico no controle glicêmico e composição corporal de diabéticos tipo 2. Arq Bras Cardiol. 2009;92(1): 23-30.

17. Rossetti MB, Britto RR, Norton RC. Prevenção primária de doenças cardiovasculares na obesidade infantojuvenil: efeito anti-inflamatório do exercício físico. Rev Bras Med Esporte. 2009;15(6): 472-5.