Standards of Eating and Physical Activity among Medical Students of 1st Year

Padrões de Alimentação e Atividade Física entre Estudantes de Medicina do 1º Ano

Lucas Guilherme Vieira Pacini*[a]; Paulo Vinício Coelho Dobelin[a]; Rafael Thomaz Chaves[a]; Sidney Ferreira de Moraes Neto[a]; Ana Lucia Lyrio de Oliveira[a]; Leda Márcia Araújo Bento[a]

[a]Anhanguera University Uniderp. MS, Brazil.
*E-mail: lucasguipacini@gmail.com

Abstract

medical students integrate a group that is susceptible to change eating habits and Cervical Circumference (CC), due to the integral curricular load, high pressure and stress, with high demand of performance and time in studies. The academics standard diet changes are associated to health damage. A descriptive, longitudinal and prospective study was performed, with the objective of describe the CC measures evolution in students after they initiate Medical School. Such study was realized through obtained data of two questionnaires - within the inclusion and exclusion criteria - about diet and physical activity; and with CC assessed with measure tape. This work found different results from the literature, like the increase of physic activity practice (+29,73%), the increase of ideal cervical circumference (88% to 92% for women, and 52% to 72% for men, from the first to the second sample, respectively) and the prevalence of eating at home in both samples. The results that were according to the bibliographies consisted the substitution of healthy food by fast foods, even if it is not prevalent, it had a discrete increase. Considering the heterogeneous data, the research concludes that there were a global improvement in eating habits and CC's measurements, reducing cardiovascular issues. As the physics activity data were divergent from the established literatures, the main hypothesis is that there is a cult of the body and not necessarily the search for a better quality of life.

Keywords: Medicine. Feeding Behavior. Weight Gain.

Resumo

Os estudantes de Medicina integram um grupo suscetível às alterações dos hábitos alimentares e de Circunferência Cervical (CC), devido à carga curricular integral, da grande pressão e estresse, exigindo alto rendimento nos estudos. A alteração da prática alimentar para o padrão percebido nos acadêmicos está relacionada a danos à saúde. Um estudo descritivo, longitudinal e prospectivo foi realizado, objetivando descrever a evolução das medidas de CC em estudantes após iniciarem a faculdade de Medicina. Tal estudo foi realizado através de dados obtidos em dois questionários - dentro dos critérios de exclusão e inclusão - sobre hábitos alimentares e atividade física; e com CC aferida com fita métrica. Este trabalho encontrou resultados diferentes da literatura, como o aumento da prática de atividade física (+29,73%), aumento da circunferência cervical ideal (88% a 92% para mulheres, e 52% a 72% para homens, da primeira para segunda coleta, respectivamente) e a prevalência de alimentação em casa nas duas coletas. Os resultados que foram conforme as bibliografias consistiram na substituição de alimentos saudáveis por fast-food, que mesmo não sendo prevalente, teve discreto aumento. Considerando os dados heterogêneos, a pesquisa conclui que houve uma melhora global tanto dos hábitos alimentares quanto dos parâmetros de CC, reduzindo riscos cardiovasculares. Como os dados de atividade física foram divergentes das literaturas consolidadas, havendo aumento deste item, a principal hipótese para tal é que há um culto ao corpo e não necessariamente a busca por uma melhor qualidade de vida.

Palavras-chave: *Medicina. Comportamento Alimentar. Ganho de Peso.*

1 Introduction

The transition from school period for graduation causes major impacts in the student's life, resulting in a change in social relations, in body and in mind of the individual. These changes commonly generate an overload of stress due to a change of life habits, sometimes not healthy, as improper diet and lack of physical activity[1].

The change of habits was confirmed by a study carried out by Ali *et al.*[2] concluding that the life habits and food of students suffer great impact at the university, mainly by the replacement of traditional supply of culture by *fast-food restaurants*. In this scientific work it was found that 64.7% of the students were with the weight within normal (49% men

and 76.8% women) in accordance with the table of Body Mass Index (BMI) of the World Health Organization (WHO). The prevalence of overweight and obesity is more common among men (37.5% and 12.5%, respectively) than among women (13.6% and 3.2%, respectively). On the other hand, it is in women that prevails the low weight (6.4%) compared to men (1%).

The high popularity of networks of *fast-food*, usually, predispose the scholars to unhealthy habits. This thesis was confirmed by a study conducted by Gazibara *et al.*[3], whose objective was to assess the health and food habits of the scholars. The finding of this study was surprising, because it showed that there was a greater prevalence of low birth

weight, according to the scale of BMI from the Center for Disease Control and Prevention (CDC), than obesity. Thus, it is possible to show that the ingress into the university can cause variations in weight due to bad habits due to academic workload.

In another study, conducted by Lessa and Montenegro[4], it was noted that major changes in life habits of scholars such as food, socialization and stress and, especially, in sports practice, because with the workload overload , students prefer to study and sleep to accomplish some type of physical activity. To Varela-Mato et al.[5], the life habits of university students are important because they represent a large segment of the young population. This phase is where substantial changes occur that determine health in the future, in particular of the scholars of health courses, because this perspective of healthy habits can influence the future professional practice.

The cervical circumference is a parameter, which had its suggested use by Cassia da Silva et al.[6] as a screening procedure, due to their ease of evaluation, both for assessment of cardiovascular risk (CVR) and insulin resistance (IR). This fact was justified by the same author to show that this measure is correlated positively with the systemic blood pressure and triglycerides, possessing good sensitivity in detecting RCV and RI.

In another analysis, Frizon and Boscaini[7] went beyond and concluded that the changes in the pattern of the individual impact of direct way in cervical circumference (CC), showing the individuals with CC high consumed more lipids, which reinforces the sensitivity in the relationship between this measure and the CVR.

Considering the studies previously reported, the objective of this work was to evaluate the variation of dietary and physical activity of scholars from the first year of Medicine of public universities and particularly the city of Campo Grande, MS. To this end, the cervical circumference, the eating patterns and physical activity were evaluated with the justification of measuring the possible effects of academic life on health.

2 Material and Methods

The study is descriptive, longitudinal and prospective. Students were assessed in the first year of Medicine in Campo Grande - MS in three Colleges, namely: Federal University of Mato Grosso do Sul (UFMS) with the traditional method, State University of Mato Grosso do Sul (UEMS) And Anhanguera-Uniderp University with the teaching method PBL. The sample consisted of 88 students, being 46, 14 and 28 students, respectively (between the months of March and April of 2017). Figure 1 illustrates the process of inclusion and exclusion of students in the present study.

Figure 1 - Flow diagram of selection of students.
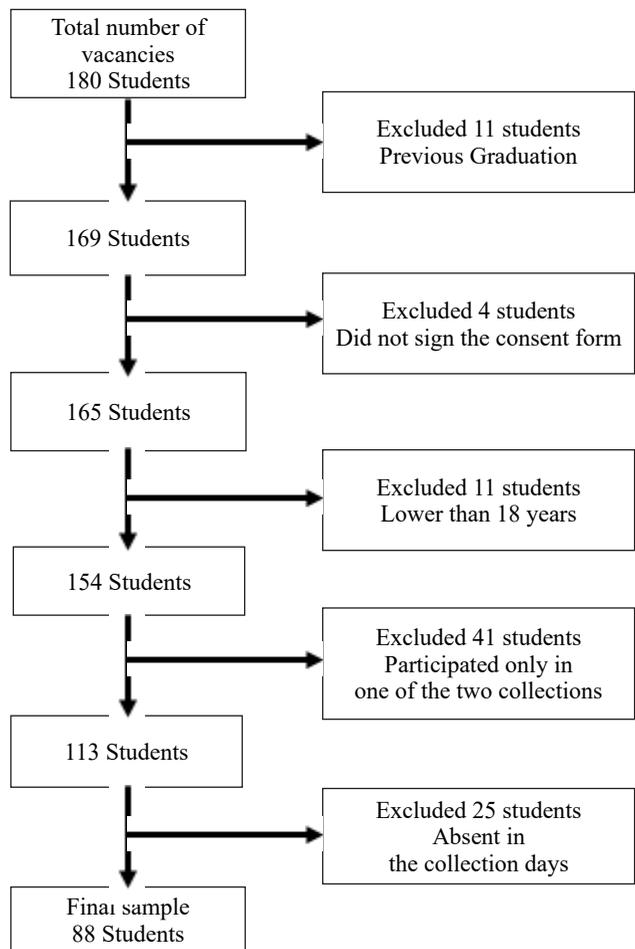
Source: Research Data.

The inclusion criteria were: students aged 18 years, without prior undergraduate, who accept to participate in the research and signed the Informed Consent Form (ICF) and had the data collected in two moments of the study. The exclusion criteria were: students younger than 18 years old, with previous graduation (even if he or she has not completed), who agreed to participate in the research and signed the informed consent form and who did not have the data collected in two moments.

The study was carried out by means of obtaining the cervical circumference, measured by the researchers, twice, in the months from April to September 2017 (approximately, the beginning of the first and second semesters, respectively). The cervical circumference was measured with a tape measure, not elastic at the base of the neck, at the height of the thyroid cartilage, in centimeters (cm); being used as reference values of 34cm for women and 37 cm for men, in agreement with the study of Frizon and Boscaini[7]. The data of practice of physical activity and food habits were collected by means of two questionnaires, which were drawn up by the researchers themselves due to the lack of similar works and appropriate questionnaires for the present study. The intensity of physical activity was assessed by the Borg CR10 Scale Modified by Foster et al.[8] being adapted by the researchers (Table 1).

Table 1 - The Borg CR10 Scale Modified by Foster *et al.*

Level	Effort	Physical Signs
( ) 0	None	None
( ) 1	Minimum	None
( ) 2	Little	Sensation of movement
( ) 3	Moderate	Strong sensation of movement
( ) 4	A little difficult	Heat
( ) 5	Difficult	Begins to sweat
( ) 6	More difficult	Moderate sweating.
( ) 7	Very difficult	Moderate sweating and normal breathing
( ) 8	Extremely difficult	Intense sweating and difficulty breathing
( ) 9	Maximum Effort	Maximum sweating and exercise without breathing
( ) 10	Fatigue	Exhaustion

Source: Research Data.

The data were stored on EPI INFO 3.5.2 (2010), conducting the analysis by means of the Generation of tables and graphs plotted by the same, considering percentages and standard deviations. The comparison was performed between the data obtained in the two collections, taking as a basis the answers of questions present in questionnaires developed in the program itself.

The project for this study was approved by the Research Ethics Committee (CEP) of the University Anhanguera-Uniderp under the code 2.075.667.

3 Results and Discussion

The age profile of the academic sample is 88.9% of people aged between 18 and 21 years (mean of 19.94 and standard deviation of 3.07), thus characterizing a young population and compatible with the studies used for theoretical foundation. This datum was obtained taking into consideration only the first data collection, because it serves only for descriptive purposes.

Considering the cervical circumference (CC) as the first parameter analyzed in the female population, it was found 46 individuals (88.46%) with normal value/below 34 cm (borderline value) in the first and 48 individuals (92.31%) in the second collection.

Still using CC as a parameter, in relation to the male population, a prevalence of individuals with normal circumference/below 37 cm (borderline value) was found, being 19 (52.78%) in the first and 26 (72.22%) in the second measurement. The values of CC described can be observed in Table 2.

Table 2 - Distribution of absolute and relative frequencies of cervical circumference, stratified by sex and by collecting on the collections held between April and September 2017

Female					Male				
	Collection 1		Collection 2			Collection 1		Collection 2	
CC	N	%	N	%	CC	N	%	N	%
< 34	39	75.00%	45	86.54%	< 37	15	41.67%	17	47.22%
34	7	13.46%	3	5.77%	37	4	11.11%	9	25.00%
> 34	6	11.54%	4	7.69%	> 37	17	47.22%	10	27.78%
Total	52	100.00%	52	100.00%	**Total**	36	100.00%	36	100.00%

Source: Research Data.

In the female CC values, the first collection, in relation to the frequency of physical activity, it is noted the prevalence (9 people) - 60% of women within the limits of normality (≤ 34 cm) of CC that practice physical activity two to three times a week. In the second collection, it was observed an increase of 33% in the practice of physical activity among the scholars, keeping the prevalence of two to three times per week (13 people - 65%) (Table 3).

Table 3 - Frequency of physical activity related to the frequency of Female cervical circumference on the collections held between April and September 2017

Frequency of Physical Activity						
Collection	CC	Once a week	Twice a week	Three times a week	Four times a week	More than four times	Total
1	< 34	1	2	5	1	0	9
	34	0	1	1	0	0	2
	> 34	0	0	1	2	1	4
	Total	1	3	7	3	1	15
2	< 37	4	4	7	1	0	16
	37	0	2	0	0	0	2
	> 37	0	0	2	0	0	2
	Total	4	6	9	1	0	20

Source: Research Data.

It is perceived in the first collection a well distributed values for the values of male cervical circumference in relation to the frequency of physical exercises. However, the analysis shows a higher percentage for those who practiced physical exercises with more frequency and with a circumference greater than 37 cm (11 - 50%). Whereas in a second moment, the number of people subscribing to sports practice has increased and with it there was a reduction of cervical circumference values (≤ 37 cm), keeping the frequency of physical activity in the previous collection (14 people - 50%) (Table 4).

Table 4 - Frequency of physical activity related to the frequency of Female cervical circumference on the collections held between April and September 2017

Collection	CC	Frequency of Physical Activity					
		Once a week	Twice a week	Three times a week	Four times a week	More than four times	Total
1	1	2	0	1	1	2	6
	2	1	1	1	0	0	3
	3	1	1	3	4	4	13
	Total	4	2	5	5	6	22
2	1	0	3	3	4	3	13
	2	2	1	1	1	2	7
	3	2	1	3	1	1	8
	Total	4	5	7	6	6	28

Source: Research Data.

In research on the value of the intensity of the exercises practiced by female scholars it was observed a number of people (7) practicing more intense exercises (between 5 to 7 of intensity) for those who have a lower value of cervical circumference, then, it is coherent to relate with one another. This becomes even more true when one observes the second collection, where the amount of people (10) is increases that stepped up their intensity exercises (7 to 8) and concomitant decreases the number of people with cervical circumference <34.

In the first collection of male scholars we have an intensity of physical activity prevalent that varies from 5 to 8, being overwhelmingly adopted by the population with a value of cervical circumference greater than 37. In the second collection, we see a total reversal, more people practicing exercises and of higher intensities, being 11 people at the same intensity range (5 to 8) and cervical circumference <37.

Among the 88 interviewees, who met the criteria of the research, 51 individuals, i.e., 57.95%, did not practice any kind of physical activity at school /pre-vestibular period.

Among practitioners of physical exercise in the first collection, totaling 37 respondents (42.04%), only 31 individuals (or 83.78%) practice exercises with intensity ranging between five and eight. In addition, of these 31 individuals practicing exercises with such intensity, only nine individuals (or 29.03%) make at least three times per week or more.

An inversion of the practice of physical exercise, which became the most adopted after the beginning of the academic life, totaling 48 (54.54%) of the interviewees in the second collection, even if this activity taking more time during the day of students, which represents an increase of 29.73%. The change of intensity when compared to the frequency of exercises was insignificant, with a difference of less than 1%.

Comparing the two collections relating to food groups eaten at breakfast, there is a slight reduction of percentages, what characterizes a lower ingestion of these groups. Now when evaluating the collections relating to lunch, note that there is a slight reduction in all food groups, with the exception of proteins that had a slight increase, characterizing higher intake of protein in relation to the other groups. Finally, the results observed of dinner followed a different pattern of other meals, there was an increase in the consumption of carbohydrates, while there was a reduction in the ingestion of other food groups (Table 5).

Table 5 - Percentage of students who eat each food group in their daily meals, on the collections held between April and September 2017

	Collection	Carbohydrates	Proteins	Fats	Fruits	Vegetables Legumes	Soft Drinks
Breakfast	1	88.64%	68.18%	44.32%	35.23%	–	–
	2	84.09%	63.64%	35.23%	31.82%	–	–
Lunch	1	95.45%	90.91%	38.64%	–	68.18%	18.18%
	2	92.05%	92.05%	26.14%	–	60.23%	14.77%
Dinner	1	86.36%	82.95%	28.41%	–	46.59%	17.05%
	2	92.05%	78.41%	22.73%	–	40.91%	15.91%

Source: Research Data.

Upon comparing the origin of food at lunch, it should be noted that the vast majority of scholars have lunch at home. Despite this, there has been a considerable increase in the consumption of *fast-food* when comparing the two collections. At dinner, most of the scholars kept the feeding standard. The prevalence in both collections was at home as a source of food, however there was a reduction of this value. Whereas in relation to networks of *fast-foods* at dinner, it should be noted that there was a significant increase of this value (Table 6).

Table 6 - Distribution of absolute and relative frequencies of cervical circumference, stratified by Lunch and Dinner, regarding the collections held between April and September 2017

	Collection	At Home		Marmitex/Lunch Box		Fast-Food		Self-Service		Total	
		N	%	N	%	N	%	N	%	N	%
Lunch	1	45	51.14	11	12.50	1	1.14	31	35.23	88	100.00
	2	54	61.36	8	9.09	7	7.95	19	21.59	88	100.00
Dinner	1	84	95.45	−	−	3	3.41	1	1.14	88	100.00
	2	77	87.50	−	−	9	10.23	2	2.27	88	100.00

Source: Research Data.

There was a slight increase in normal values of CC, with a tendency to decrease this measure and consequent reduction of cardiovascular risk factors in the female population. Whereas in the male population, the findings infer that there is a significant reduction in risk for cardiovascular diseases, since there was an increase in the prevalence of individuals with normal values or below the limit.

When the female CC values are compared, not only the first collection but also the second collection, in relation to the frequency of physical activity, it is noted the prevalence women within the limits of normality of CC that practice physical activity two to three times a week. However, there was a considerable increase in women with normal/below CC who practice physical activity one to two times per week.

As there was an increase of the practitioners of exercise with inversion of the percentages, it is possible to infer that those with the circumference above the appropriate value began to practice exercises and normalized the measure, reducing cardiovascular risks (Table 4).

Considering the patterns found by Santos et al.[9], the young population would be considered more active. However, the data found in the first collection were largely discrepant from the author mentioned above. For a population of individuals predominantly between 18 and 21 years, the results show us an index which is quite high, since the trend is increasing due to the expected changes in life habits during the graduation.

Contrary to the expectations based on the study by Santos et al.[10] an inversion in the practice of exercises, once the result presented before the two questionnaires applied in universities showed that scholars are increasingly active. Even having many hours of studies, they are still able to perform physical activities, as shown in the results of the second collection. This finding was surprising because the sedentary lifestyle among university students had already been observed in the study by Santos et al.[10], showing that the academic life is not a discouraging factor for the practice of physical exercises.

Finally, the results obtained in relation to the food groups agree, in a certain way, with the study of Al-Rethaia *et al.*[11], because the same author found a low consumption of fruits and vegetables among university students. The present study confirms the low consumption of fruits; however, the consumption of vegetables was not one of the smallest, being the third most consumed.

In addition, both at lunch and dinner, the prevalence was food at home, characterizing a supply of higher quality, because the study of Casaccone *et al.*[12] found that eating away from home has a lower dietary quality. Whereas the consumption of *fast food* has increased in both the meals, being characterized, according to a study of Favoretto and Viertz, food with a high content of sugar and fat, and poor in vitamins and fiber.

Before the data submitted, an improvement of the parameters of the cervical circumference was observed among the students surveyed, leading to believe that the life habits of these students became healthier. In addition to the reduction of cardiovascular risks by reducing the cervical circumference, it was observed a greater commitment to the practice of physical activity, which reduces the predisposition to cardiovascular and metabolic diseases, not to mention the improvement that scholars have in their daily activities. Possibly these students are familiar with the pace of academic life, because this study verified that the preparation of their own meal is more frequent, with the increase of the quality of the meal after some time, reducing carbohydrates and fats.

4 Conclusion

This study has obtained different results from those presented by the authors reviewed in relation to the data regarding the practice of physical activity, with an increase of sports practice and improvement of dietary patterns. A presupposition for this fact would be the search for the ideal body or aesthetic standards more well accepted by society, forgetting the importance of a healthy lifestyle and the impact this has on the student's health and performance. This work

showed how life habits may change the transition from high school to higher education, and furthermore, change for the better, going against the common sense, that the academic environment induces less healthy habits by excessive workload and lack of time.

References

1. Wang D, Xing X-H, Wu X-B. Healthy lifestyles of university students in China and influential factors. Scie World J 2013:412950. doi: 10.1155/2013/412950

2. Yahia N, Achkar A, Abdallah A, Rizk S. Eating habits and obesity among Lebanese university students. Nutr J 2008;30:7:32. doi: 10.1186/1475-2891-7-32

3. Gazibara T, Kisic Tepavcevic DB, Popovic A, Pekmezovic T. Eating habits and body-weights of students of the university of belgrade, serbia: a cross-sectional study. J Health Popul Nutr 2013;31(3):330-3.

4. Lessa SS, Montenegro AC. Avaliação da prevalência de sobrepeso, do perfil nutricional e do nível de atividade física nos estudantes de medicina da Universidade de Ciências da Saúde de Alagoas-UNCISAL. Rev Soc Bras Clín Méd 2008;6(3):90-3.

5. Varela-Mato V, Cancela JM, Ayan C, Martín V, Molina A. Lifestyle and health among Spanish university students: differences by gender and academic discipline. Int J Environ Res Public Health 2012;9(8):2728-41. doi: 10.3390/ijerph9082728

6. Silva CC, Zambon MP, Vasques ACJ, Rodrigues AMB, Camilo DF, Antonio MÂRGM, et al. Neck circumference as a new anthropometric indicator for prediction of insulin resistance and components of metabolic syndrome in adolescents: Brazilian Metabolic Syndrome Study. Rev Paul Pediatr 2014;32(2):221-9. doi: 10.1590/0103-0582201432210713

7. Frizon V, Boscaini C. Neck circumference, cardiovascular disease risk factors and food consumption. Int J Cardiovascular Scie 2013;26(6):426-34.

8. Foster C, Florhaug JA, Franklin J, Gottschall L, Hrovatin LA, Parker S, et al. A new approach to monitoring exercise training. J Strength Cond Res 2001;15(1):109-15.

9. Santos JJA, Saracini N, Silva WC, Guilherme JH, Costa TA, Gonçalves e Silva M-RDA. Estilo de vida relacionado à saúde de estudantes universitários: comparação entre ingressantes e concluintes. ABCS Health Sci 201422;39(1). doi: 10.7322/abcshs.v39i1.256

10. Santos LR, Brito ECC, Lira Neto JCG, Alves LEP, Alves LRA, Freitas RWJF. Analysis of sedentary lifestyle among college students. Rev Enferm UERJ 2014;22(3).

11. Al-Rethaiaa AS, Fahmy A-EA, Al-Shwaiyat NM. Obesity and eating habits among college students in Saudi Arabia: a cross sectional study. Nutr J 2010;9:39. doi: 10.1186/1475-2891-9-39

12. Lachat C, Nago E, Verstraeten R, Roberfroid D, Van Camp J, Kolsteren P. Eating out of home and its association with dietary intake: a systematic review of the evidence. Obes Rev 2012;13(4):329-46. doi: 10.1111/j.1467-789X.2011.00953.x

13. Favoretto C, Los Wiernetz P. Alimentação sustentável x alimentos de fast food: quem ganha e quem perde na escolha? Ponta Grossa: Secretaria de Educação do Paraná; 2013.