

Physical Activity Level and Eating Habits of University Professors in a Private Educational Institution

Nível de Atividade Física e os Hábitos Alimentares de Docentes Universitários em uma Instituição de Ensino Privada

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Abstract

The low level of physical activity and poor nutritional quality are related to metabolic alterations related to chronic diseases. Objective: To evaluate the level of physical activity and eating habits of university professors from a private educational institution, RJ, Brazil. Methods: cross-sectional study conducted in university professors at the Anhanguera University Center of Niterói, RJ. Data collected online (Microsoft forms): weight and height for nutritional status (low weight, normal weight, overweight and obesity and "excessive weight or no excessive weight"), international physical activity questionnaire IPAQ and "How is your diet?", a national questionnaire. Classification of physical activity level: low, moderate or high and classification of diet: poor, regular and excellent. Statistical analysis: SPSS, v.25. Results: 101 professors (female 51.4%), with means: 45.4 years, weight 79.2 kg, body mass index 27.4 kg/m²; 1% (n=1), 28.7% (n=29), 40.6% (n=41), 29.7% (n=30) were low weight, normal weight, overweight and obesity, respectively. Overweight in 70.3% of the sample (83.7% male). Poor, regular and excellent eating habits, 19.8% (n=20), 25.7% (n=26), 54.5 (n=55), with no significant difference by sex (p=0.31) and nutritional status (p=0.58). Low level of physical activity 31.7% (n=32), moderate level 34.7% (n=35), and high level 33.7% (n=34), more prevalent in men (p=0.048). Conclusion: High prevalence of overweight, approximately half of the sample with inadequate eating habits and one third with low level of physical activity. Professor's awareness about regular physical exercise and eating habits in health promotion is necessary, including institutional programs for this purpose.

Keywords: Exercise. Feeding Behavior. Quality of Life.

Resumo

O baixo nível de atividade física e a má qualidade nutricional relacionam-se à alterações metabólicas preditoras de doenças crônicas. Objetivou-se avaliar o nível de atividade física e os hábitos alimentares de docentes universitários de uma instituição de ensino privada, RJ, Brasil. Estudo transversal em docentes universitários do Centro universitário Anhanguera de Niterói, RJ. Dados coletados online (Microsoft forms): pessoais, peso e estatura para estado nutricional (baixo peso, eutrofia, sobrepeso e obesidade e "sem e com excesso de peso"), questionário internacional de atividade física IPAQ e questionário do Ministério da Saúde "Como está sua alimentação?". Classificação do nível de atividade física: baixo, moderado ou elevado e da alimentação: ruim, regular e excelente. Análise estatística: SPSS, v.25. Foram avaliados 101 docentes (feminino 51,4%), com médias: 45,4 anos, peso 79,2 kg, índice de massa corporal 27,4 kg/m²; 1% (n=1), 28,7% (n=29), 40,6% (n=41), 29,7% (n=30) apresentaram baixo peso, eutrofia, sobrepeso e obesidade, respectivamente. Excesso de peso em 70,3% da amostra (83,7% sexo masculino). Hábitos alimentares ruim, regular e excelente, 19,8% (n=20), 25,7% (n=26), 54,5 (n=55), sem diferença significativa por sexo (p=0,31) e estado nutricional (p=0,58). Identificou-se em 31,7% (n=32) nível de atividade física baixo, em 34,7% (n=35), moderado e em 33,7% (n=34), elevado, superior nos homens (p=0,048). O estudo apontou elevada prevalência de excesso de peso, inadequação nos hábitos alimentares e um terço com nível baixo de atividade física. Faz-se necessária a conscientização dos docentes acerca do exercício físico regular e dos hábitos alimentares na promoção da saúde, incluindo programas institucionais com este fim.

Palavras-chave: Exercício Físico. Comportamento Alimentar. Qualidade de Vida.

1 Introduction

Physical activity is defined as any body movement produced by skeletal muscles that results in expenditure of energy superior to rest, such as exercises, sports and physical activities performed in day-by-day, leisure or work¹. The eating habit refers to the attitude of an individual to food, having influence of social, cultural, economic factors, among others, directly reflecting on food choices and, consequently, on the nutritional status of individuals².

Both low levels of physical activity and poor nutritional

quality are related to overweight and early metabolic changes, such as high blood pressure, dyslipidemias, changes in glucose metabolism, among others^{3,4}. These alterations represent risk factors for chronic non-communicable diseases (NCDs), among them cardiovascular, type 2 diabetes mellitus, systemic arterial hypertension, cancer and osteomyoarticular diseases. NCDs are responsible for the main causes of morbidity and mortality in Brazil and worldwide and represent a serious public health problem⁵⁻⁶.

Regular physical activity provides numerous benefits,

including improved health-oriented physical fitness, such as increased cardiovascular capacity, strength, flexibility and improved body composition, as well as improved quality of life⁷⁻⁸. On the other hand, adequate energy and nutrient feeding favors the maintenance of healthy body weight and full organic functioning⁹⁻¹⁰. In addition to the most nutritious food choices, the importance of planning and the domestic organization is highlighted, as well as the way of eating (e.g.: local, meals/day, attention, time available, company, among others) as good food favors, as recommended by the Food Guide for the Brazilian Population (GAPB)¹¹. In this sense, being physically active and adept to adequate food contributes to a healthy lifestyle and disease prevention, as widely reported in the literature.^{7,9,12-14}

Although studies on the subject exclusively among university professors are not frequent, the available literature indicates, in large part, a high prevalence of low physical activity level and poor eating habits also in this group.¹⁵⁻¹⁷

Considering that most NCDs are prevented by a healthy lifestyle, identifying the level of physical activity and eating habits of university professors may contribute to identifying individuals in risk behavior, in addition to the awareness about the importance of adequate nutrition and the practice of regular physical activity in health promotion. The results will also favor the development of strategies to promote health in the institution itself.

In this sense, the present study aimed to evaluate the level of physical activity and the eating habits of university professors of the Anhanguera University Center of Niterói, RJ, Brazil.

2 Material and Methods

2.1 Study population and sample composition

The cross-sectional study was conducted in 2022 in professors of the Anhanguera University Center of Niterói – UNIAN, RJ, Brazil. The dissemination of the research and the invitation to professors to volunteer was via *institutional WhatsApp*, a means of communication regularly used for academic subjects and it covers all professors.

It was used as inclusion criterion to be a professor in an undergraduate course of the Anhanguera University Center of Niterói and, as exclusion criterion, to be on leave or away from teaching for other reasons. Considering a simple random sample, with sample error not exceeding 5% and CI of 95%, a sample of 103 professors was estimated. After the eligibility criteria, the final sample was 101 professors.

2.2 Data collection

A leading researcher and two trained scientific initiation students conducted data collection. The interested professors were duly informed about the research and filled out the informed consent form.

All the data collection was *online* via *Microsoft forms*,

including personal data (gender, age, date of birth, contact), as well as anthropometric data (body weight and self-reported stature) and questionnaires on the level of physical activity and eating habits.

2.3 Nutritional status

To calculate the Body Mass Index (BMI) in kg/m², self-reported body weight and height were used, a validated procedure widely used in the literature¹⁸. Then the professors were classified by nutritional status according to the World Health Organization (2004)¹⁹ in thinness, eutrophy, overweight and obesity and “with and without excess weight”.

2.4 Evaluation of the level of physical activity

The short version of the International *Physical Activity Questionnaire* (IPAQ) was used, validated in Brazil by Matsudo et al.²⁰. The questionnaire allows to estimate the weekly expenditure of time in different dimensions of physical activity (exercise during working hours, exercise during domestic activities, exercise during sports and sitting) considering the week preceding its completion.

The questionnaire was divided into six questions, two of which were related to each of the following types of activities (frequency and duration): walking, moderate physical activity and vigorous physical activity. The level of physical activity was determined by the sum of the minutes spent in all domains, taking into account its intensity. At the end, the data were inserted in the electronic spreadsheet of IPAQ itself and the professors were classified as: low, moderate or high level of physical activity.

2.5 Evaluation of eating habits

The questionnaire “What is your food like?” was used proposed by the Ministry of Health¹², with reference the GAPB¹¹. The self-application questionnaire, online version (*Microsoft forms*), was composed of 24 qualitative questions regarding food (planning, household organization, food choice and eating mode). Every question with 4 frequency options: never, rarely, sometimes or always. After filling, each answer received the score and then the points of each question were added and the eating habits classified as: bad, regular and excellent.

At the end of the investigations, each volunteer received by *email* his or her results with the appropriate classifications, as well as educational material about food and physical activity practice focused on health.

2.6. Statistical analysis

Data analysis was performed using *the Statistical Program for the Social Sciences*, version 25.0 (SPSS, Chicago, IL). Mean and standard deviation of continuous variables and frequencies of categorical variables were calculated. To compare the continuous variables by sex and nutritional

status, the T test of two samples was used and to evaluate the adequacy of the level of physical activity and eating habits according to nutritional status and sex, the Chi-square and Fisher exact tests were used. The value of $p < 0.05$ was considered for statistical significance.

The research was approved by the Ethics and Research Committee Salgado de Oliveira (Opinion 5.518,159).

3 Results and Discussion

101 volunteers participated in the evaluations, of which 51.4% were female ($n= 52$) and 48.5% male ($n= 49$) with mean values: age 45.4 years, weight 79.2 kg, body mass index 27.4 kg/m² (Table 1).

Table 1 - Sample characteristics according to sex in university professors, Anhanguera, Niteroi, Brazil, 2022

Variable	All n=101 Mean (SD)	Female n=52 Mean (SD)	Male n=49 Mean (SD)	p value
Age (years)	45.4 (10.5)	44 (9.6)	46.8 (1.2)	0.179
Weight (kg)	79.2 (16.3)	72.7 (16)	86.2 (13.6)	<0.001
Height (m)	1.69 (0.86)	1.63 (0.59)	1.75 (0.68)	<0.001
BMI (kg/m ²)	27.4 (4.8)	27 (5.4)	27.9 (3.9)	0.33

BMI (body mass index), SD (standard deviation)

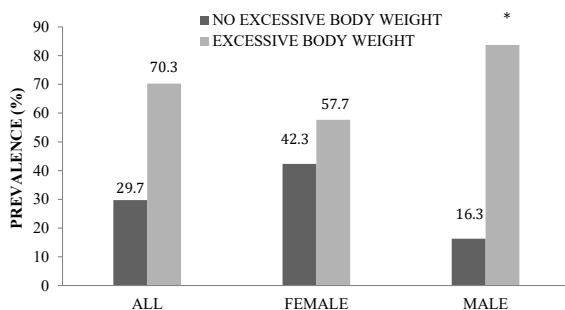
Student t-test for sex

p value < 0,05

Source: Resource data.

Among the evaluated individuals, 1% ($n=1$), 28.7% ($n=29$), 40.6% ($n=41$), 29.7% ($n=30$) were classified as low weight, eutrophy, overweight and obesity, respectively. Therefore, 70.3% ($n=71$) presented overweight. By sex, the male presented a higher prevalence of overweight (83.7%) in relation to the female (57.7%) ($p=0.005$) (Figure 1).

Figure 1 - Prevalence (%) of nutritional status according to sex in university professors, Anhanguera, Niteroi, Brazil, 2022



Chi-square test/ Fisher's Exact test for sex

*p value < 0.05

Source: Resource data.

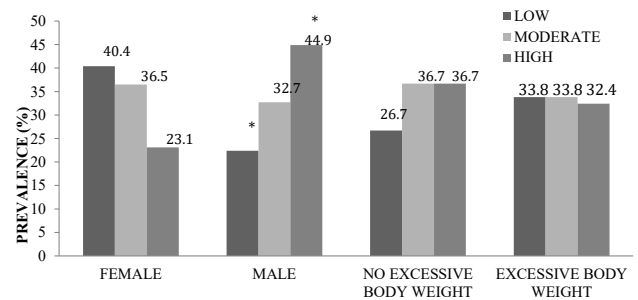
High prevalence of overweight among university professors has been pointed out by different authors, including Mónica et al.¹⁵, Dias et al.²¹ and Leal et al.²². In the present study overweight was observed in more than 70%

of the sample, even higher in the male group, exceeding the prevalence of 83%. This result is alarming considering the possible repercussions of excessive weight on health⁴.

Pinotti et al.²³ also observed more overweight among male teachers when evaluating university professors in Santa Catarina. National data from the survey "Surveillance of risk and protection factors for chronic diseases by telephone survey" VIGITEL⁶ indicated that the adult population had 57.2% of overweight, being also higher among men (60%) compared to women (57%), although both inferior to those of the studied sample.

It was identified in 31.7% ($n=32$) of professors low physical activity level, in 34.7% ($n=35$), moderate and in 33.7% ($n=34$), high, with statistical difference between the sexes ($p=0.048$) and not by nutritional status ($p=0.82$) (Figure 2).

Figure 2 - Prevalence (%) of physical activity level according to sex and nutritional status in university professors, Anhanguera, Niteroi, Brazil, 2022



Chi-square test/ Fisher's Exact test for sex and nutritional status

*p value < 0.05

Source: Resource data.

Adequate physical activity level favors quality of life, well-being and general health⁷⁻⁸. In the present study, a low level of physical activity was observed in most of the sample, especially in women, exceeding 40%. National data from the last VIGITEL survey indicated a low level of physical activity among adults (48.2%), also higher in the female population (55.7% versus 39.3%)⁶.

Several authors also highlighted insufficiently active behavior in the university environment, including professors. As examples of national studies, we can cite Oliveira Filho et al.²⁴, Wilches-Luna²⁵, Dias et al.²¹, Pinotti et al.²³, Dumith²⁶ e Petroski e Oliveira²⁷ in universities in Southern Brazil, besides Leal et al.²² in the Northeast and Lira et al.²⁸ and Neves et al.⁸ in the West Center. International studies also point to the same trend, including that of Monica et al.¹⁵ and Neeraj and Ahluwalia²⁹, both in Indian professors.

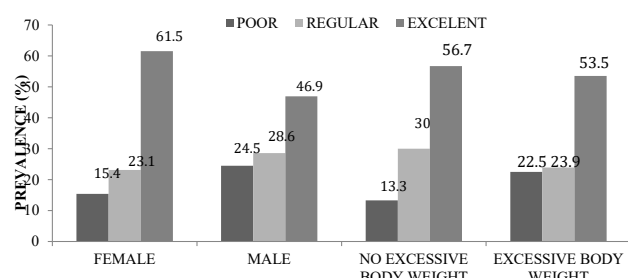
The above-mentioned studies point to inadequacy in the level of activity ranging from 30 to 70% in different samples and methods. In the present study, we chose to use the international IPAQ questionnaire, short version, due to its practicality, low cost and national validation²⁰. Comparing the results observed here with other nationals in which the same instrument was used, Oliveira Filho et al.²⁴ and Lira et

al.²⁸ identified higher prevalence of inadequacy in physical activity: 56.7% of the 293 professors in an institution in the South and 61.4% of the 285 professors in an institution located in Brasilia, respectively.

Dumith²⁶ in professors at Federal University of Rio Grande, RS, Brazil, in addition to physically active behavior in less than half of university professors, observed a positive linear association between physical activity practice with higher quality of life. Similarly, Sanchez et al.³⁰ observed in a national university in the Midwest that professors who practice physical activity presented better quality of life, including at work, in addition to better sleep quality, lower habit of using medications. Neves et al.⁸ reinforced the association between the level of physical activity and quality of life in a study carried out nationally, also in professors, in a university in Brasilia. In this sense, the low level of physical activity identified in more than 30% of the present sample may indicate low quality of life and, consequently, the increase in the risk of NCDs.

Proper nutrition is also fundamental for health and disease prevention. GAPB¹¹, of qualitative character, was used as a reference to evaluate the eating habit in the present work, because it considers socio-cultural and environmental aspects in the choices, behavior and, consequently, in the food pattern. They presented eating habits considered bad, regular and excellent, 19.8% (n=20), 25.7% (n=26), 54.5 (n=55) of the evaluated individuals. Thus, 45.5% of the sample presented some degree of inadequacy in their eating habits, with no significant difference when evaluated by sex (p=0.31) and by nutritional status (p=0.58) (Figure 3).

Figure 3 - Prevalence (%) of eating habits level according to sex and nutritional status in university professors, Anhanguera, Niteroi, Brazil, 2022



Chi-square test/ Fisher's Exact test for sex and nutritional status

*p value < 0.05

Source: Resource data.

Although studies using this instrument are not frequent, especially among university professors, these predominantly point to inadequacy to GAPB's food proposals, according to a review on the topic³¹.

Despite a different methodology, a study carried out by Nunes et al.³² In higher education professors in the city of Teresina – PI, Northeast of Brazil, showed inadequate intake of macronutrients (carbohydrate, protein and lipid), micronutrients (calcium, iron, magnesium) and fibers. The

authors pointed out that the professors presented low levels of minerals, which could cause metabolic imbalance. Although the results observed here do not allow direct comparisons with these quantitative studies, it is believed that inadequacy in relation to GAPB, which refers to the food pattern, indirectly reflects on the consumption of nutrients necessary for full health.

Pinotti et al.²³ when analyzing the risk and protection factors for chronic diseases in professors of a community university in Santa Catarina, Southern Brazil, they identified, besides the insufficient physical activity practice, the inadequacy in the food pattern in both sexes. Similar results were observed by Lira et al.²⁸ in university professors in Brasilia, DF, Brazil.

Inadequate lifestyle can be explained, in part, by the stress often evidenced in today's society. Some authors point out that the routine in university teaching is, in itself, stressful, interfering in the quality of life and risk behavior for NCDs, including poor diet and insufficient physical activity practice.^{15-17,28} Suchitra³³ in an Indian study, a higher proportion of arterial hypertension among university teachers was pointed out in comparison with the general population, and its association between blood pressure changes and overweight.

An interesting finding in the present study was that both the level of physical activity and eating habits did not present statistically different prevalences by nutritional status, that is, the percentages of inadequacy were similar among individuals "with and without excess weight". The data reinforce the scope of inadequate lifestyle in the general population, including university professors, and the need for prevention and intervention measures, which could be carried out in the institutional environment itself.

Both GAPB¹¹ and the recent Physical Activity Guide for the Brazilian Population³⁴ are excellent tools developed by the Ministry of Health in order to guide the population as well as the adherence of health promoting practices. Despite the quality of these guides and the supposed scope in society, these are not yet widely known by the population. The programmed use of this material in higher education institutions could favor the change of lifestyle among teachers and prevent interferences associated with inadequate living habits.

The results found here were from a cross-sectional study in a sample of a group of professors in a specific institution, and should not be extrapolated to other groups and localities. In addition, the data of inadequacy of both the level of physical activity and eating habits in the aforementioned studies should be interpreted with caution, considering the different methods and populations of studies. However, the findings in the literature indicated mostly health risk behaviors, as well as in the present study.

4 Conclusion

A high prevalence of overweight was observed, as well as inadequate eating habits and low level of physical activity in

most of the sample studied. The data indicate the need to raise awareness among university teachers about the importance of healthy lifestyle. Thus, it is suggested the creation of institutional programs that encourage the regular practice of physical activity inside and outside the academic environment, besides promoting food and nutritional education aimed at health, quality of life and disease prevention among university professors.

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