

Nutritional Status and Physical Activity Level of Administrative Employees in a Private Higher Education Institution

Estado Nutricional e Nível de Atividade Física de Colaboradores Administrativos em uma Instituição de Nível Superior Privada

Fabiana da Costa Teixeira^{*a}; Gabrielle Nascimento dos Santos^a; Marcos Vinícius Fidelis da Silva^a; João Lucas Figueiredo Perrenoud^a

^aCentro Universitário Anhanguera de Niterói. RJ, Brazil.

^{*}E-mail: fcosta.nut@uol.com.br

Abstract

The low level of physical activity as well as overweight/obesity are associated with chronic diseases, which are the predominant causes of mortality, especially in developing countries. The aim of this study was to evaluate the nutritional status and the physical activity level of administrative collaborators in a private high education institution. A cross-sectional study was performed in 2023 in administrative collaborators of an university located in Niterói, RJ. Collected data: personal information and health data (questionnaire), weight and height for nutrition status ("adequate body weight or overweight/obese" according to body mass index) and physical activity level ("low or adequate") according to international questionnaire (IPAQ, short version). Statistical analysis: SPSS, v.21. Results: A total of 54 administrative collaborators (female 70.4%), with means: 37.7 (10.9) years old, body weight 78.0 (22.3) kg, body mass index 28.2 (6.4) Kg/m², with no statistical difference in age by sex ($p=0.78$) and higher body mass index in men ($p=0.012$) compared to women. Overweight/obesity was observed in 61.1% ($n=33$) (CI: 46.9; 76.4.1%) of the sample. Low physical activity level in 37% ($n=20$) (CI: 24.3; 51.3%) and adequate in 63% ($n=34$) (CI: 48.7; 75.7%) of the administrative collaborators, with no statistical difference by nutritional status ($p=0.89$) nor by sex ($p=0.96$). It is necessary the development of actions to promote regular physical activity practices among administrative collaborators, including institutional programs for this purpose. These actions can minimize the risk of obesity/overweight, in addition to other complications associated with low level of physical activity.

Keywords: Employees. Exercise. Nutritional Status.

Resumo

O baixo nível de atividade física, bem como o sobrepeso/obesidade estão associados à doenças crônicas não transmissíveis, principais causas de mortalidade, especialmente nos países em desenvolvimento. O objetivo foi avaliar o estado nutricional e o nível de atividade física de colaboradores administrativos de uma instituição privada de ensino superior. Estudo transversal realizado no ano de 2023 em colaboradores administrativos de uma universidade localizada em Niterói, RJ. Os dados coletados foram: informações pessoais e dados de saúde (questionário), peso e altura para estado nutricional ("peso corporal adequado ou sobrepeso/obesidade", conforme índice de massa corporal) e nível de atividade física ("baixo ou adequado") de acordo com questionário internacional (IPAQ, versão curta). Análise estatística: SPSS, v.21. Foram avaliados 54 colaboradores administrativos (sexo feminino 70,4%), com médias: 37,7 (10,9) anos, peso corporal 78,0 (22,3) kg, índice de massa corporal 28,2 (6,4) Kg/m², sem diferença estatística na idade por sexo ($p=0,78$) e maior índice de massa corporal entre homens em relação às mulheres ($p=0,012$). Sobrepeso/obesidade foi observado em 61,1% ($n=33$) (IC: 46,9; 74,1%) da amostra. Baixo nível de atividade física em 37% ($n=20$) (IC: 24,3; 51,3%) e adequado em 63% ($n=34$) (IC: 48,7; 75,7%) dos colaboradores administrativos, sem diferença estatística por estado nutricional ($p=0,89$) e sexo ($p=0,96$). Conclui-se serem necessárias ações que promovam a prática regular de atividade física entre colaboradores administrativos, incluindo programas institucionais para esse fim. Essas ações podem minimizar o risco de obesidade/sobrepeso, além de outras intercorrências associadas ao baixo nível de atividade física.

Palavras-chave: Funcionários Atividade. Exercício Físico. Estado Nutricional

1 Introduction

The low level of physical activity and excess weight are risk factors for early metabolic changes, including the increase in blood pressure, glycemia, blood lipids related to the atherosclerosis process, among others^{1,2}. These alterations are predictors of chronic non-communicable diseases (NCDs), which are responsible for the main causes of morbidity and mortality in Brazil and the world^{3,4}. On the other hand, being physically active contributes to a healthy lifestyle and prevention of excess weight and NCDs, as widely reported in

the literature.

In this context, the World Health Organization (who) recommends the weekly practice of at least 150 minutes of moderate physical activity, or 75 minutes of vigorous aerobic activity, or a combination of these⁶. In addition, the increase in physically active behavior in daily activities is advocated in order to increase daily energy expenditure, favor adequate nutritional status and benefit health⁷. However, in contemporary society, the low level of physical activity in daily activities is frequent, both at work and at leisure.

Data from the national Research Risk Factors and

Protection for Chronic Diseases⁴ - VIGITEL (2022) reported about 50% of adults with insufficient physical activity, considering WHO's recommendation⁶. A large-scale study of workers using the National household sample Survey indicated that only 31.8% of the individuals evaluated practiced physical activity⁹. In this case, physical activity was considered exclusively in the free time of the worker. Parallel to data on low levels of physical activity, excess weight is frequent among Brazilians, reaching more than half of the adult population⁴.

Inadequate lifestyle and high prevalence of overweight are related, among others, to advances in technology, such as the use of computers for several hours at work, often observed in workers in modern society. In this sense, workers in administrative positions are usually susceptible to the low level of physical activity and its consequences, including overweight¹².

Considering that most NCDs are prevented by adequate nutritional status and physically active lifestyle, identifying the occurrence of excess weight and the level of physical activity in administrative collaborators will favor the identification of individuals at risk, in addition to awareness of regular physical activity in health promotion. Therefore, the objective of the present study was to evaluate the nutritional status and physical activity level of administrative collaborators in a private higher level institution located in the State of Rio de Janeiro, Brazil.

2 Material and Methods

2.1 Study population and sample composition

A cross-sectional study was conducted in 2023 in administrative collaborators of the Anhanguera University Center in Niterói - UNIAN, located in the State of Rio de Janeiro, Brazil. To estimate the number of administrative employees, a simple random was considered, with sample error not exceeding 5% and confidence interval of 90%, reaching the number of 55 volunteers. The study was disseminated via institutional e-mail in order to reach all the eligible employees. The inclusion criterion was to be an administrative associate of UNIAN and as an exclusion, to be away from its functions or to be unable to perform any of the data collection assessments. 54 employees were included in the study.

In the end, all participants received their results by institutional email. The research project was approved by the Research Ethics Committee of Anhanguera University of São Paulo - UNIAN (opinion number 5.870.021).

2.2 Data collection

Data collection was carried out at the institution itself at a single scheduled meeting, by a team of duly trained researchers (main researcher and three students of scientific initiation). At the time, the eligible collaborators completed

the Free and Informed Consent Term, containing explanations regarding the study objectives and the procedures that would be performed. The collaborators completed a questionnaire on personal and health data, in addition to the following assessments: nutritional status and level of physical activity.

2.3 Nutritional status

Body weight and height were measured in duplicate using electronic scales and portable stadiometer. The mean value between the two measurements was used to calculate the body mass index (BMI) in kg/m², which was then categorized as: lean, eutrophication, overweight and obesity according to the criteria proposed by the World Health Organization. Volunteers were also categorized into "with excess weight" and "without excess weight".

2.4 Assessment of the physical activity level

In order to evaluate the level of physical activity, the short version of the *International Physical Activity Questionnaire* (IPAQ), self-applied, validated in Brazil by Matsudo et al.¹⁴ was used.¹⁴ The questionnaire, standardized in eight questions, evaluates the practice of physical activity at work, leisure and travel in the week before its application. According to the instrument protocol, the level of physical activity was categorized into: "low, moderate or high", based on time spent, weekly frequency and intensity of physical activities.

A high level of physical activity was considered for those who performed a weekly frequency of more than three times and 20 minutes per vigorous physical activity session, weekly frequency greater than five times and 30 minutes per moderate activity session or five or more days a week and greater than 150 minutes in total by walking, moderate or vigorous activity.

Moderate level of physical activity was the classification of individuals who practiced physical activity, but below the high parameter. Low level of physical activity was considered for individuals who did not perform any physical activity for at least 10 continuous minutes during the week.

After the initial classification, the participants were grouped in "low and adequate"(moderate + high).

2.5 Statistical analysis

The *Statistical Program for the Social Sciences*, version 21.0 (SPSS, Chicago, IL), was used for statistical analysis. After the sample normality was identified, the means and standard deviation of the continuous variables and frequencies of the categorical variables and their respective 95% confidence intervals (CI) were calculated. To compare continuous variables by sex, T-tests of two independent samples were used. The Chi-square and *Fisher's exact tests* were used to assess the adequacy of the level of physical activity by nutritional status and gender. A p value < 0.05 was considered for statistical significance.

3 Results and Discussion

54 administrative collaborators were evaluated, 70.4% (n=38) were female and 29.6% (n=16) were male. Anthropometric data according to sex are shown in Table 1.

Table 1 - Anthropometric data according to sex in the sample of administrative collaborators - Anhanguera, Niterói, 2023

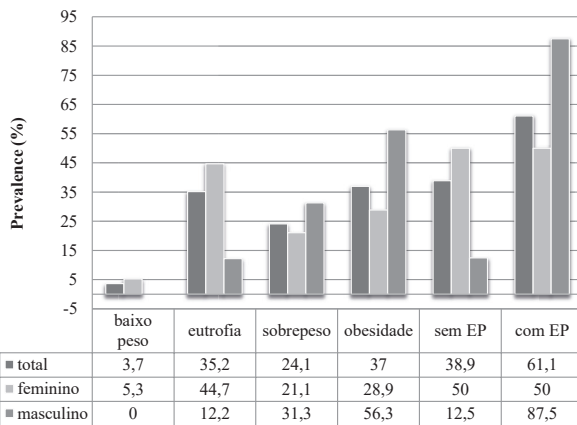
Variables	Total sample (n=54) Mean (SD)	Female (n=38) Mean (SD)	Male (n=16) Mean (SD)	P value
Age (years)	37.7 (10.9)	37.4 (11.3)	38.3 (11.2)	0.780
Weight (kg)	78.0 (22.3)	70.1 (17.8)	96.8 (20.9)	<0.001
Height (m)	1.65 (0.09)	1.61 (0.74)	1.74 (0.07)	<0.001
BMI (kg/m ²)	28.2 (6.4)	26.8 (6.1)	31.5 (5.8)	0.012

Legend: BMI (body mass index), SD (standard deviation). Data expressed as mean and standard deviation. T test of two independent samples (P value < 0.05 statistical significance)

Source: research data.

Excess weight (overweight or obesity) was observed in 61.1% (n=33) (CI: 46.9; 71.1%) of the sample (Figure 1), being superior in male and female employees (p=0.014).

Figure 1 - Frequency of administrative staff by nutritional status in the sample – Anhanguera, Niterói, 2023



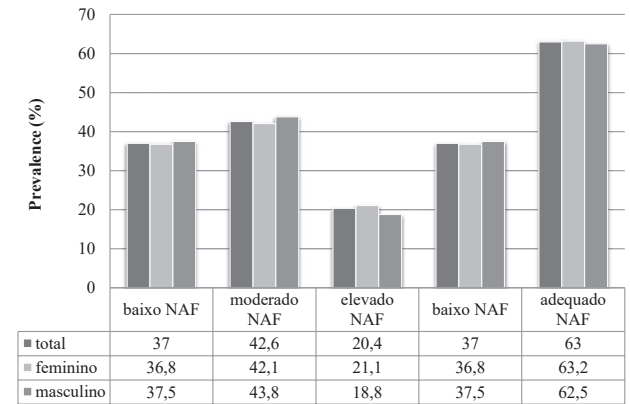
Legend: EP (overweight). Chi-square and Fisher exact tests for sex; p value < 0.05 (statistical significance)

Source: research data.

The high prevalence of excess weight corroborates VIGITEL(2022)⁴ data, which showed more than 57% excess weight in the Brazilian adult population. The excess weight was alarming among male employees, present in most of the assessed individuals (87.5%). Although with a lower prevalence, national data also point to a higher occurrence of overweight among men in comparison with women (59.9% versus 55%)⁴. Our results reinforce the need for strategies aimed at minimizing excess weight in order to prevent possible health problems.

Low level of physical activity was observed in 37% (n=20) (CI: 24,3; 51,3%) e adequado em 63% (n=34) (IC: 48,7; 75,7%) of administrative staff, with no statistical difference by gender (p=0.96) and nutritional status (p=0.89) (Figures 2 and 3).

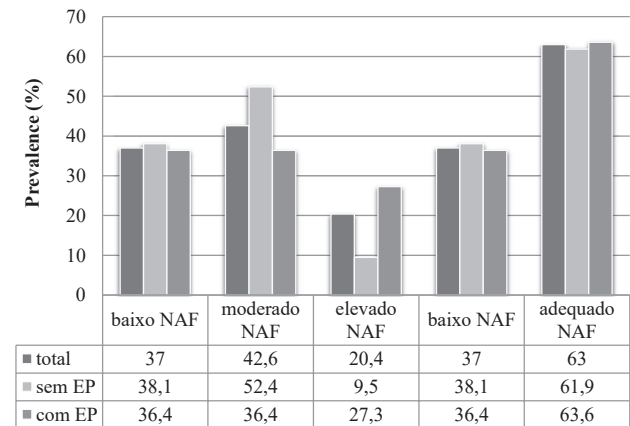
Figure 2 - Frequency by sex of administrative staff by level of physical activity in sample – Anhanguera, Niterói, 2023



Legend: NAF (level of physical activity). Chi-square and Fisher exact tests for sex; p value < 0.05 (statistical significance)

Source: research data.

Figure 3 - Frequency by nutritional status of administrative staff by level of physical activity in the sample – Anhanguera, Niterói, 2023



Legend: EP (excess weight), NAF (physical activity level). Chi-square and Fisher exact tests for nutritional status; p value < 0.05 (statistical significance)

Source: research data.

The data corroborate with a recent study by Rocha et al.¹⁵ in university professors from the same institution evaluated here. The authors identified 31.7% of the low level of physical activity. In evaluations exclusively in administrative staff of universities in Minas Gerais and in Distrito Federal, even higher prevalences were identified, being 79.7% and 85.2%, respectively^{12,16}. In all the above studies, IPAQ was the instrument used in the research, emphasizing the applicability of the instrument. Together, the results suggest the risk of interurrence to health related to the less active physical behavior.

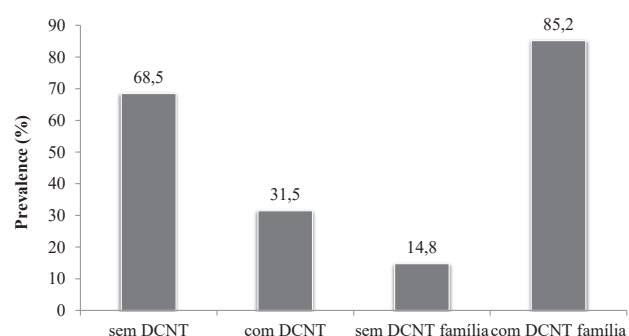
The prevalence of low level of physical activity was similar due to nutritional status, that is, among individuals with and without excess weight. Despite the frequent association of excess weight and low level of physical activity², this condition is also frequent among eutrophic individuals. There was also no difference in the level of physical activity by sex. Thus, the importance of encouraging the practice of

physical activity for all is highlighted, in order to achieve the various health benefits^{8,19}. In 2021 the Brazilian Ministry of Health published the first physical Activity Guide for the Brazilian population²⁰ aiming at the awareness and reduction of physically inactive behavior for different biological groups (children, adults, elderly). However, their knowledge of the general population is still discreet and their disclosure needs increase.

The low level of physical activity can be explained, in part, by the use of technology and too much time in the sitting position in bureaucratic occupational activities, as in the population studied. In addition, during leisure time, it is frequent to maintain sedentary behavior, characterized by excessive time spent on computers, cell phones, among others.

In the total sample, 31.5% (n=17) reported having personal NCDs and 85.2% (n= 46) NCDs in the family (Figure 4).

Figure 4 - Frequency for chronic non-communicable diseases in a sample of administrative collaborators - Anhanguera, Niterói, 2023



Legend: NCDS(non-communicable chronic diseases)

Source: research data.

The prevalence of NCDS, especially in the relatives of the collaborators, was relevant in our results. Diabetes and systemic arterial hypertension were the most frequently reported diseases, both among the collaborators themselves and among their relatives. The results are compatible with the literature that points out these diseases as those that most affect health and increase the risk of mortality in modern society in Brazil and in the world^{3,4}. Among the main causes of these interurrences are low quality in food and low level of physical activity, both characteristic of behavior in modern society.

The data presented here came from a cross-sectional investigation in a sample of administrative staff at a specific institution and should not be extrapolated to different groups and localities. A limitation of the present study was the use of a questionnaire to identify the level of physical activity, not representing a gold standard method. However, IPAQ, an instrument used, is validated in the literature and widely used in epidemiological studies²³. The advantage of the method is its practicality, which facilitates the identification of individuals as well as the level of physical activity both at work and at leisure.

However, the results observed, including the relevant prevalence of low physical activity, the predominance of overweight and the family history of diabetes and systemic arterial hypertension, point to possible health risks in the sample studied. Considering physical inactivity as a modifiable risk factor, it is necessary to increase the physically active behavior among the collaborators evaluated, in order to prevent and/or treat excess weight and NCDS, so frequent in modern society.

Thus, the importance of developing actions that promote the regular practice of physical activity among administrative collaborators, including institutional programs for this purpose, is highlighted. After all, health promotion programs in companies are favorable to the quality of life and motivation of employees, with a positive impact on productivity, generating benefits for the institution itself.

These actions should aim to increase physical activity both inside and outside the working environment in order to minimize the risk of excess weight and other interurrences associated with the low level of physical activity. New studies on the level of physical activity in companies, including higher education institutions, are indicated in order to better characterize workers and create subsidies for health-promoting strategies.

4 Conclusion

A high prevalence of excess weight was observed, especially among male employees, in addition to a low level of physical activity in a significant part of the sample. The importance of the awareness of administrative staff about the increase in the physically active lifestyle both at work and at leisure, in the prevention of excess weight and NCDs, is highlighted. It is suggested, therefore, that institutional programs be created that encourage the regular practice of physical activity inside and outside the working environment.

Funding

This study was funded by the National Foundation for the Development of Private higher Education (FUNADESP).

References

- Després, JP. Physical activity, sedentary behaviours, and cardiovascular health: when will cardiorespiratory fitness become a vital sign? *Can J Cardiol.* 2016; 32(4): 505-13 doi: 0.1016/j.cjca.2015.12.006
- Silveira EA, Mendonca CR, Delpino FM, Souza GVE, Rosa LPS, Oliveira C et al. Sedentary behavior, physical inactivity, abdominal obesity and obesity in adults and older adults: A systematic review and meta analysis. *Clin Nutr ESPEN* 2022;50:63-73 doi: 1 0.1016/j.clnesp.2022.06.001
- Vos T, Lim, SS, Abbafat, C, Abbas KM, Abbasi M, Abbasifard M, et al. Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet* 2020;396(10258):1204-22. doi: 10.1016/S0140-6736(20)30925-9

4. VIGITEL Brasil 2021: vigilância de fatores de risco e proteção para doenças crônicas por inquérito telefônico. Brasília: MS; 2022.
5. Bottcher, LB. Atividade física como ação para promoção da saúde. *Rev Gestão Saúde* 2019; 98-11.
6. Bull FC, Al-Ansari SS, Biddle S, Borodulin K, Buman MP, Cardon G, et al. World Health Organization 2020 guidelines on physical activity and sedentary behaviour. *Br J Sports Med* 2020;54(24):1451-62 doi: 10.1136/bjsports-2020-102955
7. Isakson E. A sporting chance: physical activity as part of everyday life. *Lancet* 2021;398. doi: 10.1016/S0140-6736(21)01652-4
8. Ozemek C, Lavie CJ, Rognmo Ø. Global physical activity levels-Need for intervention. *Prog Cardiovasc Dis* 2019; 62(2):102-7 doi: 10.1016/j.pcad.2019.02.004
9. Silva AMR, Santos SVM, Lima CHF, Lima DJP, Robazzi MLCC. Fatores associados à prática de atividade física entre trabalhadores brasileiros. *Saúde Debate* 2018;42(119):952-64 doi: 10.1590/0103-1104201811913
10. Pereira GP, Silva CMGD. Prática de atividade física e qualidade de vida no trabalho do docente universitário: revisão bibliográfica. *Braz J Develop* 2020;6(10):74997-5013 doi: 10.34117/bjdv6n10-067
11. Alencar GP, Rabacow FM, Carvalho AMA. Fatores associados à prática insuficiente de atividade física em professores escolares brasileiros: um estudo de revisão integrativa. *Multitemas* 2021;103-24 doi: 10.20435/multi.v26i62.3005
12. Monteiro LZ, Lira BA, Souza P, Braga Junior FD. Barreiras percebidas para a prática de atividade física entre servidores do setor administrativo de uma faculdade do Distrito Federal. *Cienc Trab* 2018;20:97-102.
13. WHO, World Health Organization, 2014. Global status report on noncommunicable diseases. World Health. 176. [access 15 abr 2023]. Available from: <http://www.who.int>.
14. Matsudo S, Araújo T, Matsudo V, Andrade D, Andrade F, Oliveira LC, et al. Questionário internacional de atividade física: estudo de validade e reprodutividade no Brasil. *Rev Bras Ativi Fís Saúde* 2001;6(2):5-18.
15. Rocha W, Lima TCM, Teixeira FC. Physical activity level and eating habits of university professors in a private educational institution. *J. Health Sci* 2023;25(1):32-7 doi: 10.17921/2447-8938.2023v25n1p32-37
16. Lopes JMP, Macedo MTS, Silva WMC, Meirelles Filho AR, Rocha JSB. Nível de atividade física e fatores associados em colaboradores de um centro universitário. *Rev Bras Presc Fisiol Exerc* 2020;14(91):473-80.
17. Udo T, Grilo CM. Physical activity levels and correlates in nationally representative sample of US adults with healthy weight, obesity, and binge eating disorder. *J Eat Disord* 2020;53(1):85-95 doi: 10.1002/eat.23199
18. Campbell SD, Brosnan BJ, Chu AK, Skeaff CM, Rehrer NJ, Perry TL et al. Sedentary behavior and body weight and composition in adults: a systematic review and meta-analysis of prospective studies. *Sports Med* 2018;48:585-95 doi: 10.1007/s40279-017-0828-6
19. Alves J, Andrade KA, Pachú, CO. A influência da atividade física para pessoas com obesidade: uma revisão integrativa. *Res Soc Develop* 2022;11(1). doi.org/10.33448/rsd-v11i1.25036
20. Brasil. Ministério da Saúde. Secretaria de Atenção Primária à Saúde. Departamento de Promoção da Saúde. Guia de atividade física para a população brasileira. Brasília: MS; 2021.
21. Faria TMTR, Silva AGD, Claro RM, Malta DC. Tendências temporais e mudanças pós-pandemia de COVID-19 na prevalência de atividade física e comportamento sedentário em adultos brasileiros entre 2006 e 2021. *Rev Bras Epidemiol* 2023;26. doi: doi.org/10.1590/1980-549720230011
22. Silva FJA, Queiroz RS, Silva EP, Ramos FS, Amaral CF, Oliveira ALQ, et al. Fatores e comportamentos de risco para o desenvolvimento de doenças crônicas degenerativas. *Peer Rev* 2023;5(17):143-57 doi: 10.53660/742.prw2216b
23. Lima MF, Lopes PR, Silva RG et al. Questionários para avaliação do nível de atividade física habitual em adolescentes brasileiros: uma revisão sistemática. *Rev Bra. Cienc Esporte* 2019;41:233-40. doi: 10.1016/j.rbce.2018.03.019
24. Oliveira AP, Andrade DR. Influência da prática de atividade física nos Programas de Promoção da Saúde nas empresas privadas: uma revisão bibliográfica. *Mundo Saúde* 2013;37(2):192-200.