

NEGATIVE SELF-RATED STRESS IN WORKING UNIVERSITY STUDENTS FROM BAHIA

ESTRÉS NEGATIVO AUTOINFORMADO EN ESTUDIANTES UNIVERSITARIOS
TRABAJADORES DE BAHIA

ESTRESSE NEGATIVO AUTORREFERIDO EM UNIVERSITÁRIOS TRABALHADORES DA
BAHIA

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Abstract

The research has shown that stress status is related to the exacerbation of several psychosomatic illnesses. To estimate the prevalence and associated factors with self-reported stress in working university students in the state of Bahia. Participated 267 working university students, that negative self-rated stress in relation behaviors related health, sociodemographic characteristics, and link with University. Prevalence ratios (PR) were used as a measure of association. Negative self-rated stress was 38.6%. Negative stress was associated with lowers prevalence in working university students of advanced age (PR:

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0.642; 95%CI: 0.430-0.959) and with a partner (PR: 0.580; 95%CI: 0.410-0.820). On the other hand, higher sitting time (PR: 1.512; 95%CI: 1.042-2.194) and being body mass excess (PR: 1.706; 95%CI: 1.275-2.282) are associated with higher prevalence of negative self-assessment of stress among working university students. It is concluded that working university students who reported marital ties and higher age were prone to negative stress, whereas those with a high sedentary time and working university students were above negative body weight were more associated with negative stress.

Keywords: Students; Health; Workers; Universities; Cross-sectional studies.

Resumen

Las investigaciones han demostrado que altos niveles de estrés negativo resultan en mayores riesgos para la salud de la población y están relacionados con la exacerbación de una serie de enfermedades psicosomáticas. Estimar la prevalencia y los factores asociados al estrés negativo autor referido en trabajadores universitarios del estado de Bahía. Participaron 267 estudiantes universitarios. Los participantes autoevaluaron el estrés negativo en la vida, que se analizó en relación con comportamientos relacionados con la salud, características sociodemográficas y vínculos universitarios. Se utilizaron razones de prevalencia (RP) como medida de asociación. La prevalencia de estrés negativo fue de 38,6%. El estrés negativo se asoció con menor prevalencia en universitarios de mayor edad (RP: 0,642; IC95%: 0,430-0,959) y en pareja (RP: 0,580; IC95%: 0,410-0,820). Por otro lado, estar mucho tiempo sentado (RP: 1,512; IC 95%: 1,042-2,194) y tener sobrepeso (RP: 1,706; IC 95%: 1,275-2,282) se asociaron con una mayor prevalencia de estrés auto percibido negativo entre los trabajadores universitarios. Se concluye que los universitarios trabajadores que reportaron vínculos conyugales y edad alta fueron menos propensos al estrés negativo, mientras que los que tenían un alto tiempo sedentario y sobrepeso se asociaron más con el estrés negativo auto referido.

Palabras clave: Estudiantes; Salud; Trabajadores; Universidades; Estudios transversales.

Resumo

As pesquisas têm demonstrado que níveis elevados de estresse negativo repercutem em maiores riscos à saúde da população e está relacionado à exacerbção de uma série de doenças psicossomáticas. Diante disso, o objetivo deste estudo foi estimar a prevalência e os fatores associados ao estresse negativo autorreferido em universitários trabalhadores do estado da Bahia. Participaram 267 universitários trabalhadores. Os participantes autoavaliaram o estresse negativo na vida, que foi analisado em relação aos comportamentos relacionados à saúde, características sociodemográficas e de vínculo com a universidade. Empregou-se as razões de prevalências (RP) como medida de associação. A prevalência de estresse negativo foi de 38,6%. O estresse negativo foi associado com menores prevalências em universitários trabalhadores de idade avançada (RP: 0,642; IC95%: 0,430-0,959) e com companheiro (RP: 0,580; IC95%: 0,410-0,820). Por outro lado, o elevado tempo sentado (RP: 1,512; IC95%: 1,042-2,194) e o excesso de peso (RP: 1,706; IC95%: 1,275-2,282) associaram-se com maiores prevalências de autoavaliação negativa do estresse entre os universitários trabalhadores. Conclui-se que os estudantes universitários trabalhadores que informaram vínculo conjugal e idade elevada foram menos propensos ao estresse negativo, já aqueles que apresentaram elevado tempo sedentário e estavam acima do peso corporal foram mais associados ao estresse negativo autorreferido.

Palavras-chave: Estudantes; Saúde; Trabalhadores; Universidades; Estudos transversais.

Introduction

Stress can be defined as a state of imbalance, developed in the face of challenging situations that lead the body to use its psychobiological resources to deal with events that require mobilizing action (LIPP, 2017). According to Selye (1965), it is possible to classify stress generically as healthy or beneficial stress, also called *eustress* and pathological or negative stress, called *distress*. In the first case, excess energy is transformed into pleasure, vitality and joy to face challenges seen as interesting and, in the second, there is the experience of defeat, anguish, anger, insecurity, fear and other emotions that denote displeasure in general.

Data from the study *National Health Interview Survey* (NHIS) of 1997 to 2014 showed in the adult population higher chances of mortality and lower life expectancy for those who reported high levels of psychological distress (LEE; SINGH, 2021). The high levels of negative stress in life correspond to greater risks to the health of the population, being associated with the exacerbation of a series of morbidities such as coronary heart disease (WIRTZ; VON KANEL, 2017), high blood pressure (RIAZ et al., 2021; LIU et al., 2017), inflammatory diseases (MARSLAND et al., 2017), atherosclerosis (YAO et al., 2019) and autoimmune diseases (PORCELLI et al., 2016). In addition, negative stress can contribute to the development of mental health problems, by influencing the appearance of symptoms of depression (YANG et al., 2023), as well as anxiety after the occurrence of stressful and post-traumatic events (MOFATTEH, 2021).

The biological response to stress is coordinated by the hypothalamic-pituitary-adrenal axis and the sympathetic nervous system, and chronic activation of the sympathetic nervous system by prolonged psychological stress is known to cause inflammation and reduce immune vigilance, potentially increasing the risk of disease (ILCHMANN-DIOUNOU; MENARD 2020; KOOPMAN et al., 2017; PADRO; SANDERS, 2014). Concomitantly, certain health-related habits may be associated with higher levels of perceived stress, such as lower involvement in leisure-time physical activities (PIRAJÁ et al., 2013), as well as health risk factors such as obesity (VICENNATI et al., 2009; GEORGE et al., 2010).

Among groups, workers may be susceptible to stress related to work (BURMAN; GOSWAMI, 2018), in addition, another segment that tends to present greater vulnerability to stress are university students, due, for example, to the process of transition to university and the consequent change in lifestyle (GRAVES et al., 2021; BEITER et al., 2015; MOFATTEH, 2021; PIRAJA et al., 2013). This population expanded over the past few years in Brazil and the number of university students from federal institutions in Bahia stands out when compared to other states in the northeast region (BRASIL, 2019).

Thus, when considering the double journey, working and studying, the present study can contribute to the socialization of information of university workers exposed to a negative perceived stress level, as well as contribute to the knowledge of this theme in order to optimize the implementation of institutional policies aimed at minimizing psychological distress and the occurrence of crises. Thus, this study aims to estimate the prevalence and factors associated with self-assessment of negative stress in life in university workers in the state of Bahia.

Methods

This article is derived from the cross-sectional study called “lifestyle and quality of life of students of the Federal Universities of the state of Bahia: analysis of repeated surveys”. The study was approved by the Research Ethics Committees of four colleges in the state of Bahia, under the protocol numbers: 2,767,041; 2,795,177; 2,915,077; 3,033,773.

The population comprised the university students of presencial undergraduate courses of the campuses of the federal universities (UFs) that are located in the state of Bahia. The following institutions participated in the research: Federal University of Recôncavo da Bahia (UFRB), Federal University of Bahia (UFBA), Federal University of Western Bahia (UFOB), University of international integration of Afro-Brazilian Lusophony (UNILAB), Federal University of Vale do São Francisco (UNIVASF) and Federal University of southern Bahia (UFSB).

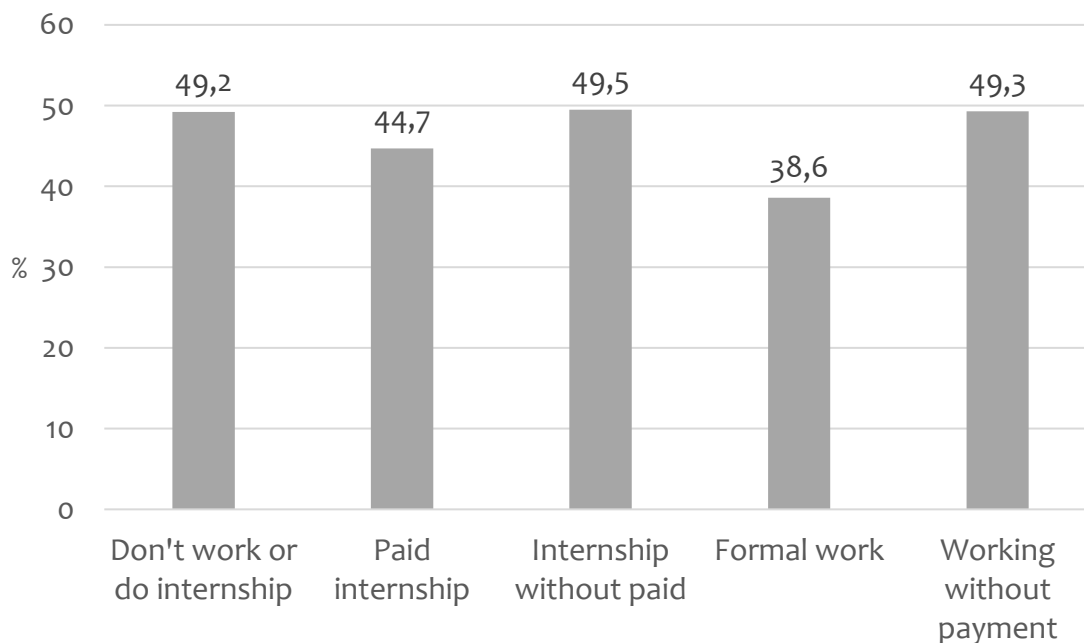
Students with active enrollment in the first semester of 2019 at all universities (and the first semester of the same year at UFSB) were included. As exclusion criteria, we considered university students in distance learning courses, those under 18 years of age and those who did not inform the institution they belonged to. This exclusion procedure was performed after the data were tabulated, as questions were included in the research instrument to control these variables. In addition, the information regarding the exclusion criteria was contained in the informed consent form (ICF).

The sample was estimated considering a prevalence of 50%, due to the lack of knowledge of the health outcomes, a confidence level of 95%, and an acceptable error of three percentage points for a target population of 35.805 university students. From the calculated sample, another 40% was added for possible losses and another 15% for association studies, making an estimated sample of 1.668 university students. A total of 1.552 university students participated in the study, however, a total of 21 students reported being under 18 years of age, 20 were from distance courses and one was a special student and four university students who did not report which institution they belonged to were excluded. The sample reached was 1.506 university students (response rate of 90.29%).

For this study, university students who reported working and having income were selected through the receipt of salary. This population was prioritized as it was observed prevalence of negative self-assessment of stress, statistically similar (χ^2 : 9.449; p : 0.051) among the categories related to socioeconomic profile (figure 1). Thus, the sample was 267 university workers.

The form of participation in the research was by convenience. Therefore, the procedures for establishing sample weights in non-probabilistic samples were used to adjust for the target population (ELLIOTT; VALLIANT, 2017; VALLIANT, 2020), considering the information from the census conducted in federal institutions in Brazil (OBSERVATORY OF THE NATIONAL FORUM OF PRO-RECTORS OF STUDENT AFFAIRS-FONAPRACE, 2019).

Figure 1 - Prevalence of negative self-assessment of stress in university students according to socioeconomic characteristics. Prevalence comparisons via Chi-square test. 2019.



Source: from author.

Data collection took place from February to September 2019, considering the pattern of divergent school periods in the FUS. The questionnaire of this research was applied *online*, having been sent through individualized electronic correspondence via the collegiate of the courses or sectors by sending a message to the academic community. There was also invitations in classrooms on different days and times, before or after classes, in order to allow the participation of the questionnaire through portable computers.

Prior to self-completion of the online questionnaire, which was drawn up on the Google Forms platform (<https://www.google.com/docs/about/>), the university students of the UFs accessed the ICF on the first electronic page and if they agreed to participate, informing name and *e-mail* to receive the ICF, they would have access to the questionnaire. If they if they didn't want to participate, they were directed to complete the form, not having access to the research instrument. After filling in the information it was transferred to the Excel software.

The instrument comprised 68 questions, consisting of questions from the questionnaire "Indicators of Health and quality of life of academics (ISAQ-A)", valid in Brazil for use in university students the (average face validity index and content of 92%) (SOUSA et al., 2013), the eating habits section of the "VIGITEL " questionnaire, validated in Brazilian adults (Kappa between 0.57 and 0.80 indicating good reproducibility) (MONTEIRO et al., 2008; NEVES et al., 2010; MENDES et al., 2011), or *International Physical Activity Questionnaire (IPAQ)*, short version (with level of reproducibility through correlation Spearman's 0.95) (MATSUDO et al., 2001), sociodemographic and university-related issues were also included.

The dependent variable of this study was the self-assessment of stress, measured via the question: How do you classify the level of stress in your life? The five response options were categorized into positive stress self-assessment (never stressed; rarely stressed) and negative stress self-assessment (sometimes stressed, living reasonably well; almost always stressed; and always stressed, having difficulty coping with daily life), the latter category being the outcome of this study. This measure has an agreement level via Kappa test of 0.55 (SOUSA et al., 2013).

The independent variables used were sociodemographic characteristics, link with the University and health risk factors. The sociodemographic variables were gender (male and female), age group in full years categorized into 18-24 years, 25-34 years, and 35 years or older, marital status (with and without your partner), and social class (A, B, C, D, and E), in accordance with the criteria of the Brazilian Association of Business Research (2017), the variables associated with university were: period of study (day and night), and time in the university (1 year; 2 years; 3 years; 4 years or more); and the risk factors to health: the consumption of fresh fruit (for up to 4 days per week and for 5 or more days/week) the consumption of salad (for up to 4 days per week and for 5 or more days a week), the consumption of red meat, with the fat of one or more days a week (yes or no), chicken fat is visible in one or two days a week (yes or no), moderate to vigorous physical activity per week, fixed assets: 150 minutes or more under-active: up to 149 minutes), and time-sitting on the weekend, by means of a weighted average for a day, a week and a day from the end of the

week, which is classified into up to 5.9 hours, and 6 hours or longer, and the body mass index (BMI) is calculated on the basis of the measures referred to in the body mass in kilograms and height is in meters and, by means of the equation, the body mass divided by height squared, which is classified into without a lot of weight (BMI: up to 24,9 kg/m²) and overweight (BMI: 25 kg / m²).

The analyses were performed in the software Statistical Package for the Social Sciences (SPSS), version 25.0. Descriptive analysis of absolute and relative frequencies, mean and standard deviation (SD) was used. Prevalence comparisons between exploratory variables and outcome were performed via Chi-square test and Chi-Square for linear trend. Association estimates were performed using prevalence ratios (PR) 95% confidence intervals (95% CI), by means of Poisson regression in the adjusted analyses. The adjustment was performed for all variables simultaneously, and the variables were removed, one at a time, per selection method *backward*, from the largest p-value to the value of $p > 0.20$ via *Wald* test. The power of the sample was presented of the estimates of the association effects observed between each category of the exploratory variables and the outcome, these analyzes being carried out via *gpower 3.5.1* software. The significance level adopted was 5%.

Results

The mean age of working university students was 32.71 years (SD: 10.10). The description of socio-demographic characteristics, attributes related to the link with the University and health risk factors are presented in Table 1. There was a greater participation of female university workers, without a partner, from social class C, who studied at night, who reported consumption of fruits and vegetables up to four days a week, who did not consume red meat and chicken with fat. It was observed that 72.6% of working university students were physically active, 66.5% remained six hours or more per day sitting and 45.1% were overweight.

Table 1 - Description of the sample of university workers from federal institutions (n=267). Bahia. 2019.

Variables	n	%
Gender		
Male	120	45.7
Female	147	54.3
Marital status		
No companion	152	56.3
With companion	114	43.7
Social class		
A	9	3.3
B	88	34.3
C	124	53.8
D and E	16	8.6
Study period		
Day	127	45.4
Night	140	54.6
University time		
1 year	44	17.4
2 years	42	17.8
3 years	37	15.0
4 years and over	138	49.7
Fruit consumption		
5 or more/week	86	33.7
Up to 4 days / week	180	66.3
Consumption of salads		
5 or more/week	89	32.8
Up to 4 days / week	178	67.2
Consumption of red meat with fat		
No	204	78.3
Yes	63	21.7
Consumption of chicken with visible fat		
No	213	80.2
Yes	54	19.8
Physical activity		
150 min / week or more	182	72.6
Up to 149min / week	77	27.4
Sitting time		
Up to 5.9 hours / day	79	33.5
6 or more hours / day	182	66.5
Body mass index		
No excess	142	54.9
With excess	115	45.1

%; Proportion; n: sample.

Source: from author.

The prevalence of negative stress was 38.6%. Of the total number of working women participating in the study, 46.7% self-assessed stress in life, this value being higher than their male peers. In addition, there were higher prevalence of negative stress in university students of the lowest age group, without a partner, with fruit consumption up to four days / week, who reported remaining in the sitting position for six hours or more per day and who were classified as overweight (Table 2).

Table 2- Bivariate association between exploratory variables and negative self-assessment of stress in university workers (n=267). Bahia. 2019.

Variables	(n) %	p
Gender		0.004
Male	(32) 28.8	
Female	(63) 46.7	
Age group		0.004
18 to 24 years	(31) 53.4	
25 to 34 years	(37) 37.8	
35 to 67 years	(26) 29.2	
Marital status		0.007
No companion	(63) 46.3	
With companion	(32) 29.4	
Social class		0.990
A	(4) 57.1	
B	(27) 36.0	
C	(51) 44.3	
D and E	(6) 33.3	
Study period		0.409
Day	(46) 41.4	
Night	(49) 36.3	
University time		0.827
1 year	(15) 35.7	
2 years	(17) 38.6	
3 years	(14) 37.8	
4 years and over	(44) 38.3	
Fruit consumption		0.025
5 or more/week	(23) 28.7	
Up to 4 days / week	(72) 43.6	
Consumption of salads		0.361
5 or more/week	(27) 34.6	
Up to 4 days / week	(68) 40.7	
Consumption of red meat with fat		0.311
No	(70) 36.8	
Yes	(24) 44.4	
Consumption of chicken with visible fat		0.920
No	(76) 38.8	
Yes	(19) 38.0	
Physical activity		0.064
150 min / week or more	(62) 35.4	
Up to 149min / week	(32) 48.5	
Sitting time		0.011
Up to 5.9 hours / day	(22) 26.8	
6 or more hours / day	(70) 43.5	
Body mass index		0.046
No excess	(40) 31.7	
With excess	(48) 44.4	

#: Prevalence; n: sample.

Source: from author.

Table 3 shows the adjusted analysis between exploratory characteristics and negative stress self-assessment in working university students. Lower prevalences of negative self-rated stress were observed in university workers with a higher age group (PR: 0.642; 95% CI: 0.430 – 0.959) and with a partner (PR: 0.580; 95% CI: 0.410-0.820). On the other hand, with higher prevalences of negative stress self-assessment, university students with high sitting time (PR: 1.512; 95% CI: 1.042-2.194) and overweight (PR: 1.706; 95% CI: 1.275-2.282) were found. It was observed that the estimated association effects showed variation in the power of 7.9% to 99.9%, in the different categories of exploratory characteristics.

Table 3- Adjusted analysis between exploratory variables and negative stress self-assessment in working university students (n=267). Prevalence ratios (PR) estimated via Poisson regression. Bahia. 2019.

Variables	PR (95% CI)	p	Sample power (%) to estimate the effects of association
Gender		0.061	
Male	1.000		
Female	1.338 (0.986-1.815)		81.8
Age group		0.030	
18 to 24 years	1.000		
25 to 34 years	0.756 (0.552-1.036)		68.4
35 to 67 years	0.642 (0.430-0.959)		94.5
Marital status		0.002	
No companion	1.000		
With companion	0.580 (0.410-0.820)		98.8
Social class		0.293	
A	1.000		
B	0.656 (0.341-1.264)		92.7
C	0.899 (0.471-1.715)		21.2
D and E	0.819 (0.375-1.786)		46.1
Study period		0.854	
Day	1.000		
Night	1.029 (0.757-1.399)		7.9
University time		0.407	
1 year	1.000		
2 years	0.851 (0.503-1.440)		35.1
3 years	1.128 (0.691-1.843)		26.3
4 years and over	1.092 (0.719-1.659)		18.1
Fruit consumption		0.439	
5 or more/week	1.000		
Up to 4 days / week	1.174 (0.782-1.761)		38.8
Consumption of salads		0.569	
5 or more/week	1.000		
Up to 4 days / week	0.908 (0.650-1.268)		19.0

Consumption of red meat with fat		0.560	
No	1.000		
Yes	1.097 (0.804-1.495)		19.1
Consumption of chicken with visible fat		0.664	
No	1.00		
Yes	0.916 (0.617-1.360)		17.2
Physical activity		0.826	
150 min / week or more	1.00		
Up to 149min / week	1.039 (0.741-1.455)		9.1
Sitting time		0.030	
Up to 5.9 hours / day	1.000		
6 or more hours / day	1.512 (1.042-2.194)		98.2
Body mass index		<0.001	
No excess	1.000		
With excess	1.706 (1.275-2.282)		99.9

% : Proportion; n: sample.

Source: from author.

Discussion

This study observed that for every 10 working university students, approximately four reported having a negative perceived stress. In addition, the occurrence of negative stress was protectively associated with those in advanced age and with a partner. On the other hand, those with greater exposure to sedentary behavior and with excess body weight were associated with negative self-assessment of stress in life.

The prevalence of working university students with self-reported negative stress in this study was 38.6%. In surveys with university students from the United States, that used another research instrument and that was not specific to university students with that worked, identified a prevalence of 26% of high stress (moderate, severe and extremely severe stress) (BEITER, 2015) and 95.6% (moderate and severe stress) (GRAVES et al., 2021). A study with Brazilian university students from a public institution in the state of Bahia, Brazil, through repeated surveys, who used the same instrument in this study, observed that negative stress levels remained stable over the years (2010: 72,4%; 2012: 70,4%; 2014: 74,1%; $p > 0.05$) (SOUSA et al., 2021). Although the differences between the measures and the type of classification among the studies, it is essential to characterize that stress has been present in the lives of university students, which reinforces the need for institutional actions aimed at preventing psychosocial problems.

It was noted that university workers with an older age (35 to 67 years) presented a lower occurrence of a negative perceived stress. In a study conducted in Norway, the prevalence of stress symptoms was observed in 33% of girls aged 18-19 years and 14% among boys of the same age (BAKKEN, 2019), which represents the initial age ranges of entry into higher education. In another study with university students from a public institution in Mozambique, linked to the psychology course, the results of the relationship between age and perceived stress corroborate the findings of this research with university students from Bahia, when they observed lower levels of stress for those of older age (MATSINHE et al., 2020). Possibly, university students of an older age group represent the most economically stable group, that is, who are developing some professional activity, and thus daily needs, such as food and housing, are not directly linked to future higher education training.

In addition to this characteristic, it was observed that working university students, with a partner, presented a lower occurrence of negative stress. In a study conducted with married and single women, no differences were observed in relation to stress (ALLEGRETTI, 2006). Regarding marital status, being in a relationship with another person may be related to higher income or professional stability, necessary for the maintenance of family needs and, thus, a lower perception of stress for the maintenance of daily life needs, unlike those without a partner, who may report lower incomes (TA et al., 2017). This argument becomes plausible, as most university students are classified as single and that stress due to loneliness, social commitments, income and anxiety are perceived prominently in this group when compared to married (TA et al., 2017).

Among health-related behaviors, the sitting time was associated with higher levels of stress. There is evidence that sedentary behavior is associated with mental health problems, specifically depression (TEYCHENNE; BALL; SALMON, 2010) and anxiety (TEYCHENNE; COSTIGAN; PARKER, 2015). There are several theoretical reasons that justify the relationship between sedentary behavior and stress. The first hypothesis is that engaging in such behaviors may displace time that would otherwise be spent on other important activities, such as handling household or work-related responsibilities, or doing physical activity, which may increase feelings of stress

(TEYCHENNE; HINKLEY, 2016). In addition, sedentary behaviors linked to screen time, such as watching television and using a computer or other electronic devices (*smartphones* and *tablets*) may induce the subject to experience feelings of dependence (CHENG et al., 2018), sleep problems (FOSSUM et al., 2014) and *burnout* (TEYCHENNE; HINKLEY, 2016). factors that can raise stress levels.

Another point of relevance is characterized in the impact of excess weight on health levels, regarding the emergence of chronic non-communicable diseases and in this study, university workers with excess weight had a higher occurrence of self-reported negative stress. Obesity has been associated with stress, being also considered the cause of stress and other times considered the consequence of it (VICENNATI et al., 2009; GEORGE et al., 2010; NEWMAN; O'CONNOR; CONNER, 2007; O'CONNELL et al., 1973). One way or another, the relationship between weight gain seems to be well established, which favors an increase in BMI above normal, set at 24.9 kg / m² in adults and stress, and that the implications of the simultaneous occurrence of these two risk factors may favor other inflammatory processes and contribute to negative health outcomes such as cases of myocardial infarction.

Although the sample size of this study may represent a possible bias, it was observed that the effects with a 95% CI considered significant were due to the minimum sample size in each category of exploratory variables. The use of a questionnaire to measure levels of perceived stress and health-related behaviors may correspond to a bias, however, the measures employed have satisfactory levels of reproducibility (SOUSA et al., 2013; MONTEIRO et al., 2008; NEVES et al., 2010; MENDES et al., 2011; MATSUDO et al., 2001). The conduct of the survey by digital data collection limits the participation of university students without access to *internet* or means of participation, as per *notebooks*, *tablets*, computers or *smarthphones*, on the other hand, we sought to minimize this limitation with the active search in the dependencies of the institutions, as well as the institutions had laboratories and libraries with spaces for access the instrument of research. Linked to this bias, sample correction was resorted to by establishing weights in non-probabilistic samples in order to minimize possible errors in statistical inferences.

This study is relevant because it involved the federal universities that offer higher education in the state of Bahia, thus including a sample of university workers from the capital and the interior, thus having an important coverage at the state level for university students in the federal Network. In addition, this study was analyzed specifically for the group of university students who reported working after checking, so they are directly involved in more working hours, which allows us to better understand the potential determining attributes of stress in this public and thus favor institutions with the implementation of policies/actions aimed at minimizing the risk of crises throughout the academic period.

The study showed a high prevalence of self-reported negative stress and with a lower occurrence in university workers with a higher age group and with a partner, while among those with high sitting time and overweight there was a positive association with self-reported negative stress. Understanding the impact of stress on the lives of working university students can contribute to minimizing possible health risks. The implementation of actions aimed at adopting a healthy lifestyle can represent essential tools to be developed as institutional policies.

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References

ALLEGRETTI, J. **Nível de stress, fontes estressoras e estratégias de enfrentamento em mulheres**. 2006. 70 f. Dissertação (Mestrado em Psicologia) - Pontifícia Universidade Católica de Campinas, Campinas, 2006.

ASSOCIAÇÃO BRASILEIRA DE EMPRESA DE PESQUISA (ABEP). **Critério de Classificação Econômica no Brasil**. 2017. Disponível em: <http://www.abep.org/criterio-brasil>. Acesso em 19 de novembro de 2018.

BAKKEN, A. **Ungdata 2019 Nasjonale resultat**. NOVA Rapport 9/19. Oslo: NOVA, OsloMet; 2019. 124p.

BEITER, R. et al. The prevalence and correlates of depression, anxiety, and stress in a sample of college students. **Journal of Affective Disorders**, v.173, p.90-6, 2015. <https://doi.org/10.1016/j.jad.2014.10.054>

BRASIL. Ministério da Educação. Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (Inep). Censo da Educação Superior 2018: notas estatísticas. Brasília: Ministério da Educação; 2019. Disponível em: https://download.inep.gov.br/educacao_superior/censo_superior/documentos/2019/censo_da_educacao_superior_2018-notas_estatisticas.pdf

BURMAN, R.; GOSWAMI, T.G. A systematic literature review of work stress. **International Journal of Management Studies**, v.3, n.9, p.112, 2018. [http://dx.doi.org/10.18843/ijms/v5i3\(9\)/15](http://dx.doi.org/10.18843/ijms/v5i3(9)/15)

CHENG, Y.S. et al. Internet addiction and its relationship with suicidal behaviors: a meta-analysis of multinational observational studies. **The Journal of clinical psychiatry**, v.79, n.4, p.17r11761, 2018. <https://doi.org/10.4088/JCP.17r11761>

ELLIOTT, M.R.; VALLIANT, R. Inference for nonprobability samples. **Statistical Science**, v.32, n.2, p.249-264, 2017. <https://doi.org/10.1214/16-sts598>

FOSSUM, I.N. et al. The association between use of electronic media in bed before going to sleep and insomnia symptoms, daytime sleepiness, morningness, and chronotype. **Behavioral Sleep Medicine**, v.12, n.5, p.343-57, 2014. <https://doi.org/10.1080/15402002.2013.819468>

GEORGE, S.A. et al. CRH-stimulated cortisol release and food intake in healthy, non-obese adults. **Psychoneuroendocrinology**, v.35, n.4, p.607-12, 2010. <https://doi.org/10.1016/j.psyneuen.2009.09.017>

GRAVES, B.S. et al. Gender differences in perceived stress and coping among college students. Dalby AR. **PLoS One**, v.16, n.8, p.e0255634, 2021. <https://doi.org/10.1371/journal.pone.0255634>

ILCHMANN-DIOUNOU, H.; MENARD, S. Psychological Stress, Intestinal Barrier Dysfunctions, and Autoimmune Disorders: An Overview. **Frontiers in Immunology**, v.11, p.1823, 2020. <https://doi.org/10.3389/fimmu.2020.01823>

KOOPMAN, F.A. et al. Balancing the autonomic nervous system to reduce inflammation in rheumatoid arthritis. **Journal of internal medicine**, v.282, n.1, p.64-75, 2017. <https://doi.org/10.1111/joim.12626>

LEE, H.; SINGH, G. K. Psychological distress, life expectancy, and all-cause mortality in the United States: results from the 1997–2014 NHIS-NDI record linkage study. **Annals of Epidemiology**, v.56, p.9-17, 2021. <https://doi.org/10.1016/j.annepidem.2021.01.002>

LIPP, M. O treino de controle do estresse em grupo: um modelo da TCC. In.: NEUFELD, C. B.; RANGÉ, B. (Org.). **Terapia cognitivo-comportamental em grupos: das evidências à prática**. Porto Alegre, RS: Artmed. 2017. p.301-318.

LIU, M.Y. et al. Association between psychosocial stress and hypertension: a systematic review and meta-analysis. **Neurological research**, v.39, n.6, p.573-580, 2017. <https://doi.org/10.1080/01616412.2017.1317904>

MARSLAND, A. L. et al. The effects of acute psychological stress on circulating and stimulated inflammatory markers: A systematic review and meta-analysis. **Brain, behavior, and immunity**, v.64, p.208-219, 2017. <https://doi.org/10.1016/j.bbi.2017.10.004>

MATSINHE, M. et al. Sintomas de stress em estudantes moçambicanos do curso de Psicologia. *Mudanças Psicol Saúde*, v. 28, n. 2, p. 1-9, 2020. <https://doi.org/10.15603/2176-1019/mud.v28n2p1-9>

MATSUDO, S. et al. Questionário internacional de atividade física (Ipaq): estudo de validade e reprodutibilidade no Brasil. **Revista Brasileira de Atividade Física & Saúde**, v.6, n.2, p.5-18, 2001. <https://doi.org/10.12820/rbafs.v.6n2p5-18>

MENDES, L.L. et al. Validade e reprodutibilidade de marcadores do consumo de alimentos e bebidas de um inquérito telefônico realizado na cidade de Belo Horizonte (MG), Brasil. **Revista Brasileira de Epidemiologia**, v.14, p.80-89, 2011. <https://doi.org/10.1590/S1415-790X2011000500009>

MONTEIRO, C.A. et al. Validade de indicadores do consumo de alimentos e bebidas obtidos por inquérito telefônico. **Revista de Saude Publica**, v.42, n.4, p.582-589, 2008. <https://doi.org/10.1590/S0034-89102008000400002>

MOFATTEH, M. Risk factors associated with stress, anxiety, and depression among university undergraduate students. **AIMS Public Health**, v.8, n.1, p.36-65, 2021. <https://doi.org/10.3934/publichealth.2021004>

NEVES, A.C.M. et al. Validação de indicadores do consumo de alimentos e bebidas obtidos por inquérito telefônico em Belém, Pará, Brasil. **Cadernos de Saude Publica**, v.26, n.12, p.2379-2388, 2010. <https://doi.org/10.1590/S0102-311X2010001200016>

NEWMAN, E.; O'CONNOR, D.B.; CONNER, M. Daily hassles and eating behaviour: The role of cortisol reactivity status. **Psychoneuroendocrinology**, v.32, n.2, p.125-132, 2007. <https://psycnet.apa.org/doi/10.1016/j.psychneuen.2006.11.006>

O'CONNELL, M. et al. Experimental obesity in man III. Adrenocortical function. **The Journal of Clinical Endocrinology & Metabolism**, v.36, p.323-329, 1973. <https://doi.org/10.1210/jcem-36-2-323>

OBSERVATÓRIO DO FÓRUM NACIONAL DE PRÓ-REITORES DE ASSUNTOS ESTUDANTIS (FONAPRACE). **V Pesquisa Nacional de Perfil Socioeconômico e Cultural dos (as) Graduandos (as) das IFES - 2018**. Brasília, DF: ANDIFES, 2019. Disponível em: <https://www.andifes.org.br/wp-content/uploads/2019/05/V-Pesquisa-Nacional-de-Perfil-Socioeconomico-e-Cultural-dos-as-Graduandos-as-das-IFES-2018.pdf>. Acesso em 20 de julho de 2023.

PADRO, C.J.; SANDERS, V.M. Neuroendocrine regulation of inflammation. **Seminars in immunology**, v.26, n.5, p.357-68, 2014. <https://doi.org/10.1016/j.smim.2014.01.003>

PIRAJÁ, G. et al. Autoavaliação positiva de estresse e prática de atividades físicas no lazer em estudantes universitários brasileiros. **Revista Brasileira de Atividade Física e Saúde**, v.18, n.6, p.70, 2013. <https://doi.org/10.12820/rbafs.v.18n6p740>

PORCELLI, B. et al. Association between stressful life events and autoimmune diseases: A systematic review and meta-analysis of retrospective case-control studies. **Autoimmunity reviews**, v.15, n.4, p.325-334, 2016. <https://doi.org/10.1016/j.autrev.2015.12.005>

RIAZ, M. et al. Factors associated with hypertension in Pakistan: A systematic review and meta-analysis. **PLOS ONE**, v.16, n.1, p.e0246085, 2021.

SELYE, H. **The stress of life**. New York: McGrawHill; 1965.

SOUSA, T.F. et al. Cardiovascular risk factors in students at a public college institution in Brazil. **Revista Ciências em Saúde**, v.11, n.4, p.78-85, 2021. <http://dx.doi.org/10.21876/rcshci.v11i4.1170>

SOUSA, T.F. et al. Validade e reprodutibilidade do questionário Indicadores de Saúde e Qualidade de Vida de Acadêmicos (Isaq-A). **Arquivos de Ciências do Esporte**, v.1, n.1, p.21-30, 2013. <https://seer.uftm.edu.br/revistaeletronica/index.php/aces/issue/view/38>

TA, V.P. et al. Stress of singlehood: marital status, domain-specific stress, and anxiety in a national U. S. Sample. **Journal of Social and Clinical Psychology**, v.36, n.6, p.461-85, 2017. <https://doi.org/10.1521/jscp.2017.36.6.461>

TEYCHENNE, M.; BALL, K.; SALMON, J. Sedentary behavior and depression among adults: a review. **International journal of behavioral medicine**, v.17, n.4, p.246-54, 2010. <https://doi.org/10.1007/s12529-010-9075-z>

TEYCHENNE, M.; COSTIGAN, S.A.; PARKER, K. The association between sedentary behaviour and risk of anxiety: a systematic review. **BMC Public Health**, v.15, n.1, p.513, 2015. <https://doi.org/10.1186/s12889-015-1843-x>

TEYCHENNE, M.; HINKLEY, T. Associations between screen-based sedentary behaviour and anxiety symptoms in mothers with young children. **PLoS One**, v.11, n.5, p.e0155696.96, 2016. <https://doi.org/10.1371/journal.pone.0155696>

VALLIANT, R. Comparing alternatives for estimation from nonprobability samples. **Journal of Survey Statistics and Methodology**, v.8, n.2, p.231-63, 2020. <https://doi.org/10.1093/jssam/smz003>

VICENNATI, V. et al. Stress-related development of obesity and cortisol in women. **Obesity**, v.17, n.9, p.1678-83, 2009. <https://doi.org/10.1038/oby.2009.76>

YANG, L. et al. Influencing factors of depressive symptoms among undergraduates: A systematic review and meta-analysis. **PloS One**, v.18, n.3, p.e0279050, 2023. <https://doi.org/10.1371/journal.pone.0279050>

YAO, B. et al. Chronic stress: a critical risk factor for atherosclerosis. **Journal of International Medical Research**, v.47, n.4, p.1429-1440, 2019. <https://doi.org/10.1177/0300060519826820>

WIRTZ, P. H.; VON KÄNEL, R. Psychological Stress, Inflammation, and Coronary Heart Disease. **Current Cardiology Reports**, v.19, n.11, p.111, 2017. <https://doi.org/10.1007/s11886-017-0919-x>