Factors associated with perceived stress among professors at a federal public university

Fatores associados à percepção de estresse em docentes universitários em uma instituição pública federal

Michelle Barbosa Soares[1] (iD), Simone Caldas Tavares Mafra[2] (iD), Evandro Rodrigues de Faria[3] (iD)

ABSTRACT | Background: Within the world of work, stress has negative socioeconomic impacts for employers, employees and the government, including the cost of medical treatments, leaves of absence, disability retirement and loss of individual productivity. **Objective:** To identify the main factors that contribute to increase the level of stress of professors at Federal University of Viçosa (UFV), Brazil. **Methods:** A questionnaire including Perceived Stress Scale (PSS)-14 and items to investigate personal and occupational characteristics was administered to a sample composed of 222 UFV professors. The study involved quantitative research techniques, descriptive statistics including the t-test to compare means, correlation and multiple linear regression analysis. **Results:** Strength of association was highest for variables weekend work (R=0.45), physical activity (R=-0.40), administrative and teaching activities (R=0.29), scientific production (R=0.18), temporary administrative position (R=0.15) and graduate level teaching (R=0.14). **Conclusion:** University professors accumulate many tasks, including teaching, research, outreach and administrative activities. Their regular working hours seem not to be enough, but they are compelled to take work home and do not have time for leisure, physical activity and family life, with consequent increase of their level of stress and risk for illness. We suggest formulating public policies to organize the teaching career with consideration of the incidence of stress.
Keywords | occupational health; occupational stress; faculty.

RESUMO | Introdução: No âmbito ocupacional, o estresse é responsável por impacto socioeconômico para empregadores, empregados e Estado, incluindo nessas despesas tratamentos médicos, licenças de trabalho, aposentadorias por invalidez e quedas na produtividade. **Objetivo:** A pesquisa objetivou investigar os principais fatores que aumentam os níveis de estresse dos docentes da Universidade Federal de Viçosa (UFV). **Método:** Foi aplicado questionário contendo perguntas relacionadas ao Perceived Stress Scale (PSS)-14 e outras relativas a características pessoais e do ambiente de trabalho para uma amostra de 222 docentes da UFV. Como ferramentas de análise, foram aplicadas técnicas de pesquisa quantitativa, como estatística descritiva, teste t para comparação de médias, análise de correlação e regressão linear múltipla. **Resultados:** As variáveis com maiores medidas de associação são a execução de atividades durante o fim de semana (R=0,45), a prática de atividade física (R=-0,40), as atividades administrativas e de ensino (R=0,29), a produção científica (R=0,18), a ocupação de cargos comissionados (R=0,15) e a atuação na pós-graduação (R=0,14). **Conclusões:** Os docentes acumulam muitas atividades, como ensino, pesquisa, extensão e administração, e o tempo dedicado ao trabalho nunca é suficiente, fazendo com que ele leve atividades para casa e não dedique tempo necessário ao lazer, às atividades físicas e ao convívio familiar, o que aumenta seus níveis de estresse e o risco de doenças. Nesse sentido, sugere-se que sejam criadas políticas públicas que organizem a carreira docente e que se preocupem com a incidência de estresse.
Palavras-chave | saúde do trabalhador; estresse ocupacional; docentes.

[1]Department of Physical Therapy, Universidade Federal de São Carlos – São Carlos (SP), Brazil.
[2]Department of Domestic Economy, Universidade Federal de Viçosa – Viçosa (MG), Brazil.
[3]Department of Administration, Universidade Federal de Viçosa – Viçosa (MG), Brazil.

INTRODUCTION

Stress is currently a part of the everyday life of a large part of global population. Indeed, the number of affected individuals considerably increased in the past two decades, to the point it is now considered as a public health problem[1]. Within the world of work, stress has negative socioeconomic impacts for employers, employees and the government, including the cost of medical treatments, leaves of absence, disability retirement, and certainly also loss of individual productivity[2,3]. Given its considerable impact on health, the interest in occupational stress is growing among researchers[4].

The academic milieu is considered a source of stress for university professors as a function of psychosocial and organizational factors of work, such as poor working conditions, undervaluation of the professional image, low salaries, high exposure to hazards, shortage of human and material resources and physical exhaustion derived from increased pace and intensity of work[5,6]. These conditions contribute to the biopsychological exhaustion of professors, which makes them more prone to lose motivation and develop apathy, anguish, phobias and health problems such as arterial hypertension and coronary artery disease, mental disorders, stress and cancer, among others[7-10]. The relationship between stress and disease is, however, not simple and direct, but is influenced by coping strategies and individual and collective psychological and organizational factors which make teaching a source of pleasure[1].

The Brazilian federal universities seem to represent a paradigmatic example of a stressful work environment. This situation is the outcome of changes in higher education policies, currently oriented by the so-called "Anglo-Saxon" model by virtue of which universities are no longer seen as social institutions, but as neo-professionalized, heteronomous, operational, business-minded and competitive social organizations[10]. Such dramatic deterioration of the working conditions of professors led to changes in their activity and social function[11]. As a result, teaching is now seen one of the most stressful occupations[12,13].

In Brazil, teaching is influenced by countless factors which contribute to enhance job dissatisfaction. In addition to proper teaching, professors are also required to perform several other tasks, such as writing reports and reviews, seek grants and improve their and their department's visibility[14].

Also, the time professors need to accomplish their tasks was affected. According to Leite[15], while several tasks were facilitated by the introduction of new technologies, university professors are now required to spend more time in professional activities in the workplace, and also outside it, such as planning, among others.

The aforementioned considerations indicate that the organization of teaching work has peculiar characteristics described in the literature as causes of stress. To contribute to the studies on the teaching career, we sought to answer the following question: what factors related to the teaching career influence the level of stress of professors?

Therefore, the aim of the present study was to investigate factors related to the teaching career that influence the level of stress of professors. Such study is justified by the need to organize a profession characterized by excessive pressure to accomplish tasks and maintain and increase excellence in teaching, research and outreach — and eventually also perform additional administrative tasks — with consequent emotional, physical and social exhaustion and stress.

METHODS

STUDY DESIGN

The focus of the present original cross-sectional, observational and analytic study was on analyzing factors that determine the level of stress of professors at Universidade Federal de Viçosa (UFV), Brazil.

Sample

The inclusion criteria were: tenured professors with a 40-hour weekly work regime and having worked at the institution for one year at least — since professors hired more recently were not exposed to all the factors analyzed in the present study. The exclusion criteria were: substitute, visiting or non-tenured professors, high school teachers, weekly working time of less than 40 hours and having worked less than one year at the institution.

Participants were selected by means of simple random sampling, since we intended to analyze the characteristics of the full population of professors. The study was conducted at UFV Viçosa campus in December and January 2016. All the participants responded all the questions.

There was a total of 966 professors allocated to the Viçosa campus, distributed as follows: 221 to the Agrarian Sciences Center, 247 to the Biological Sciences Center, 279 to the Exact Sciences Center and 219 to the Human Sciences Center. The calculated sample size for a total of 902 eligible subjects, with 5% of error and e=0.5 (since the odds of selection ought to be the same for all the subjects) was 229 participants. Therefore, 229 professors were selected by means of the lottery method to respond an electronic questionnaire. Seven forms were wrongly filled and were excluded from analysis. As a result, the final sample comprised 222 participants.

Data collection techniques

Data collection began by a presentation and explanation of the study to the participants, followed by the delivery of an informed consent form. The study fully complied with the ethical principles described in the National Health Council Resolution no. 466/2012. The study was approved by UFV committee of ethics in research involving human beings, Certificate of Presentation for Ethical Appraisal (CAAE) no. 45243915.1.0000.5153, ruling no. 1,116,358.

Data collection was performed by means of an *ad hoc* socioeconomic questionnaire and the Perceived Stress Scale (PSS).

CATEGORIES AND VARIABLES FOR ANALYSIS

The t-test for independent samples was used to establish whether there was significant difference in mean stress level among professors with different characteristics.

The influence of predictor variables on the variation of the stress level among the participants was investigated by means of Pearson's correlation and multiple linear regression analysis based on the ordinary least squares (OLS) method and using software *Statistical Package for the Social Science* (SPSS, version 20.0). The variables considered were:

Stress level (PSS): set as outcome variable. It represented the participants' stress level as measured by PSS-14. PSS was developed by Cohen et al.[16], and according to

Machado et al.[17] it is the most widely used instrument to analyze perceived stress, having been validated in more than 20 countries. PSS assesses how unpredictable and uncontrollable respondents find their lives have been in the past month. In addition to providing a subjective assessment of stress, this scale is remarkable for its brevity, which favors its administration together with other techniques.

PSS comprises 14 questions; the response score ranges from 0 to 4 (0=never, 1=almost never, 1=sometimes, 3=fairly often, 4=very often). The items with positive connotation (#4, 5, 6, 7, 9, 10 and 13) have reverse score, as follows: 0=4, 1=3, 2=2, 3=1 and 4=0. All the other items have negative connotation and are summed directly. The total score, obtained by adding the scores on all individual items, ranges from 0 to 56.

- Marital status: dummy qualitative variable categorized as 0=single and 1=married;
- Length in the job: total number of years teaching;
- Sex: dummy qualitative variable categorized as 0=male and 1=female;
- Physical activity: weekly frequency, measured as the mean number of days/week subjects engaged in physical activity;
- Scientific production: perceived productivity by comparison to other professors in the same field;
- Teaching hours: total weekly hours of classroom activities (undergraduate + graduate level teaching);
- Weekend work: frequency of work-related activities on weekends;
- Administrative activities: frequency of administrative activities;
- Graduate level teaching: dummy qualitative variable categorized as 0=no and 1=yes;
- Temporary administrative position: dummy qualitative variable categorized as 0=yes and 1=no;
- Outreach activities: total weekly hours devoted to outreach activities.

RESULTS

Table 1 describes the participants' socioeconomic and demographic characteristics. Males (55.4%) and professors with a PhD (79.7%) predominated. In regard to their

professional activity, most participants were involved in graduate level teaching (59.4%), taught more than 11 hours/week of undergraduate level courses (56.8%),

Table 1. Sample characterization and occupational information, Viçosa, 2016 (n=222).

Variable	Absolute frequency	Relative frequency
Sex		
Male	129	55.4
Female	93	44.6
Graduate level teaching		
Yes	132	59.5
No	90	40.5
Undergraduate level teaching hours		
Up to 6	9	4.1
7 to 10	84	37.8
11 to 14	92	41.4
More than 15	34	15.3
Academic degree		
Specialization	0	0.0
Master's	45	20.3
PhD	177	79.7
Administrative activities		
Yes	141	63.5
No	81	36.5
Outreach activities		
Yes	134	60.4
No	88	39.6
Scientific production		
Low	152	68.5
High	70	31.5
Temporary administrative position		
Yes	40	18.0
No	182	82.0

performed administrative tasks (63.51%), developed outreach projects (60.4%), had low scientific production (68.4%) and did not hold any temporary administrative position (82.0%).

We sought to establish whether the participants exhibited diseases likely derived from work overload. The results are described in Table 2. Only 18.92% of the participants did not report any health problem. The most prevalent ones were backache (38.7%), voice disorders (26.1%), frequent headaches (22.1%), hypertension (18.5%) and depression (10.4%).

We also sought to establish groups in which stress was most frequent and whether there was difference in stress level between males and females, professors with or without children and with master's or doctoral degrees, as we did not include these variables in the regression model. As Table 3 shows, the level of stress was higher among the professors with children (p=0.05) and a doctoral degree p=0.01). Difference was not found as a function of sex.

As a part of the attempt to explain the variation in stress level among UFV professors we fitted a linear regression model with the variables described in section Methods. Pearson's simple correlation test was used to investigate linear correlations between the analyzed variables and stress level. The results are described in Table 4. The variables with

Table 2. Main health problems among professors at Federal University of Viçosa, Viçosa, 2016 (n=222).

Health problems	Absolute frequency	Relative frequency
Backache	86	38.7
Voice disorders	58	26.1
Frequent headaches	49	22.1
None	42	18.9
Hypertension	41	18.5
Depression	23	10.4
Gastritis/ulcer	19	8.6
Respiratory diseases	17	7.7
Panic disorder	14	6.3
Diabetes	5	2.3
Heart disease	4	1.8

strongest correlation were: weekend work (R=0.45), physical activity (R=-0.40), administrative and teaching activities (R=0.29), scientific production (R=0.18), having a temporary administrative position (R=0.15) and graduate level teaching (R=0.14).

From eight variables analyzed, only participation in outreach programs did not exhibit significant correlation with stress at a significance level of 5%, for which reason it was removed from the model.

The regression model was fitted by means of the stepwise method. Maroco[18] observes that the advantage of procedures for variable selection is that based on exact criteria they point to the variables with strongest relationship with the dependent variable and thus are better when fitting the definitive model.

We removed variable temporary administrative position from the model due to its multicollinearity with other variables. As a result, the variables included in the multiple linear regression model were: weekend work, physical activity, administrative activities, scientific production, graduate level teaching and teaching hours (Table 5). The joint strength of association of the model thus fitted was 41% (R=0.65; R^2=0.41).

Finally, Table 5 also shows the value of the beta coefficient for the variables included in the multiple regression model. It should be observed that the t-test allows rejecting the hypothesis that the coefficient value is zero at a significance level of 5%.

All statistical assumptions for regression were tested and confirmed the model validity.

DISCUSSION

The results of the present study show that most of the participants were male, married and with children. Thus, they

Table 3. Comparison of mean stress scores according to the analyzed variables, Viçosa, 2016 (n=222).

Variables	Variables	Mean stress score	Standard deviation	Significance
Sex	Female	25.7	8.7	0.955
	Male	25.6	8.7	
Has children	No	24.5	8.7	0.05
	Yes	26.7	8.7	
Academic degree	Master's	23.0	6.9	0.01
	PhD	26.4	8.9	

Table 4. Pearson's correlation between predictor variables and stress, Viçosa, 2016 (n=222).

Variables	R value	p value	95% confidence interval
Weekend work	0.45	0.01	(0.33–0.55)
Physical activity	-0.40	0.01	(-0.51--0.29)
Administrative activities	0.29	0.01	(0.17–0.41)
Scientific production	0.18	0.01	(0.05–029)
Graduate level teaching	0.14	0.04	(0.06–0.27)
Teaching hours	0.29	0.01	(0.16–0.40)
Temporary administrative position	0.15	0.03	(0.01–0.29)
Outreach activities	0.03	0.61	(-0.10–0.16)

agree with findings reported by Moraes and Moreira[19] and Aguiar[20] relative to number of children and marital status, respectively. Differently, 50.1% of the sample analyzed by Camargo et al.[21] corresponded to females.

In addition to personal, we also analyzed occupational characteristics of the participants. About 60% of the sample taught graduate level courses, 60.36% developed outreach projects, more than half taught more than 10 hours/week and 63.51% performed administrative activities — although without any specific paid position (additional pay, board position). Most participants held a doctoral degree, which finding agrees with that reported in the study by Souza et al.[22], in which 58.7% of the participant held a PhD.

The participants reported to take work home, and thus their actual weekly working time was over 40 hours. About 60% of the participants reported to take work home on all or almost all weekends, while only 4.05% stated they did no work on weekends. These findings are suggestive of high levels of stress, since the participants spend working a part of their time for physical activity, leisure and family life, with consequent increase of physical and mental tiredness, as well as of the risk of illness. These results evidence the work overload to which university professors are exposed, since most perform several other tasks in addition to teaching, which contributes to increase their level of stress[23].

The participants reported diseases likely to result from work overload, while only 18.92% did not report any health problem. In their study of the state of health, voice and working conditions of university professors, Servilha and Pereira[24] detected cases of hypertension, voice disorders and back problems, as also us in the present study.

These findings might be accounted for by the fact that stress might cause serious problems of variable nature. Stress weakens the body defense system, activates mechanisms that trigger inflammation or alternatively deactivates the mechanisms that inhibit inflammation. An impaired body defense might result in high blood pressure, respiratory disorders and joint pain, which become more serious when under stressful conditions[25,26].

The mean score on PSS-14 was 25.89. For the purpose of comparison, we surveyed studies which also had resource to PSS-14 to measure levels of stress among other categories of workers and groups. The mean score obtained by the participants in our study was higher than that reported for most of the analyzed occupations. The single exception was represented by master's and doctoral candidates, who also belong with the academic milieu and are exposed to the same pressures for productivity and meeting deadlines as professors, therefore also they have high potential to develop high levels of stress. It is worth noticing that the mean score obtained by the university professors was higher than that of physicians (20.38)[27], nurses (21.73)[27] and military police officers (22.48)[28] all which categories are subjected to high levels of pressure.

We did not find difference in stress level as a function of sex. This finding agrees with that reported by Gonçalves et al.[29], but disagree from the results of the studies by Kafrouni[30] and Souza et al.[22] who found higher levels of stress among females.

The results of the present study indicate that having children might increase stress, as the mean level was higher for the participants with children. This finding agrees with the results of the studies by Hyeda and Handar[31] and Silva

Table 5. Beta coefficient value for the variables included in the model, Viçosa, 2016 (n=222).

Variable	Beta coefficient	Standard error	Significance (t)
Physical activity	-0.22	-3.88	0.00
Weekend work	0.27	4.77	0.00
Administrative activities	0.20	3.69	0.00
Graduate level teaching	0.38	5.13	0.00
Teaching hours	0.13	2.25	0.03
Scientific production	0.37	5.00	0.00

et al.[32] in which the participants with children were found to be more prone to emotional exhaustion.

The level of stress was higher among the participants with a PhD compared to those with a master's degree, with a margin of error of mere 1.3%. The explanation might be that professors with just a master's degree are not allowed to teach graduate level courses, have limited access to research resources and a more restricted scope of activities compared to those with a PhD. As a result, they are less overloaded by research activities and student supervision.

On the multiple linear regression model, the strength of association of stress level with variables weekend work, frequency of physical activity, administrative activities, scientific production, graduate level teaching and teaching hours was 64.8%. The value of the coefficient of determination (R^2) was 0.419, which indicates that 41.9% of the variation of stress level was explained by the joint variation of the included variables.

Variable "frequency of weekend work" explained the largest proportion of outcome stress level (R=0.45). Working on weekends might interfere with the personal and family life of individuals, as they spend a part of their leisure time working, precisely at a time when their priority should be resting and socializing. According to Borsoi[33] — based on other studies[10,34,35] — when facing an intensification of tasks and work overload, university professors simply keep on working without setting any time limit, with consequent impact on the time they should allot to their individual needs.

Variable "physical activity" ranked second in explanatory power (R=-0.40) and exhibited inverse relationship with stress levels. In other words, the higher the frequency of physical activity, the lower the level of stress. However, by taking work home university professors reduce the time available for physical activity. Our findings corroborate the results reported by Souza et al.[22] and Camargo et al.[21] who also found negative correlation between physical activity and stress level.

Also variable "administrative activities" exhibited strong correlation with stress level (R=0.29). The reason is that this type of activities increase the workload of university professors, shorten the time they have for teaching, research and outreach and often demand skills beyond the scope of university professors, who thus need to spend extra time learning how to perform them,

with consequent increase of stress at work. Our results are similar to those reported by Ayres et al.[36] who found that professors who perform administrative tasks exhibit higher levels of stress.

Similarly, also variable "teaching hours" influenced the level of stress (R=0.29). The reason is that professors have increasingly less time for their tasks, and thus the longer the teaching hours, the shorter the time available for other tasks, with consequent increase of their workload and stress level.

"Scientific production" (R=0.18) is an aspect that demands much effort from investigators, often requires gathering large teams, which increases the number of students to be supervised, and compels professors to take work home. The pressure for productivity creates a vicious circle that keeps professors chained to it, increases their workload, impairs their personal and family life, causes physical and mental tiredness and increases their level of stress. According to Lima and Lima-Filho[37] the almost "frantic" efforts to increase production make university professors compete against another, the result being tiredness, stress and often frustration.

Also "graduate level teaching" had impact on stress level (R=0.14) as a function of the high demands for scientific productivity, supervision of master's and doctoral candidates and teaching new subjects, which increase the participants' workload. According to Borsoi[33] the demand to maintain a high level of "scientific production" to keep teaching graduate level courses exposes professors to high levels of stress.

Finally, we calculated the regression equation coefficients and all the values were statistically significant as per the t-test results. All the assumptions were measured and converged toward the validity of the analyzed model.

CONCLUSION

The aim of the present study was to investigate the main factors that increase the level of stress of UFV professors.

The results show that teaching is a source of stress and might be associated with occurrence of several health problems, particularly backache, depression, voice disorders and hypertension.

University professors accumulate many tasks, including teaching, research, outreach and administrative activities. Their regular working time is seemingly never enough, but they are compelled to take work home. Thus, they cannot allot the due time to leisure, physical activity and family life, with consequent increase of their level of stress and risk of illness.

Work on weekends, lack of physical activity, amount of administrative activities, scientific production, graduate level teaching and teaching hours were the main factors associated with the participants' level of stress. Therefore, university professors should organize themselves in a way they do not accumulate tasks after hours and do not cut the time needed for physical and leisure activities.

In this regard, public policies to organize the teaching career are needed and institutions should concern themselves with the incidence of stress and other disorders among this population of workers.

We suggest for future studies to include variables related with family life, quality of life and leisure activities, as in the present study we mainly focused on career-related variables, which have just reasonable explanatory power. We also suggest reproducing the present study at other institutions and with larger samples to increase the explanatory power of the tested model.

REFERENCES

1. Lima FV. Correlação entre variáveis preditoras de estresse e o nível de estresse [dissertation]. Brasília: Universidade Católica de Brasília; 2005.

2. Silva JP da, Damásio BF, Melo SA. O sentido de vida e o estresse do professorado: um estudo correlacional. Cad Psicol Soc Trab. 2009;12(1):111-22. https://doi.org/10.11606/issn.1981-0490.v12i1p111-122

3. Prado CEP. Estresse ocupacional: causas e consequências. Rev Bras Med Trab. 2016;14(3):285-9. https://doi.org/10.5327/Z1679-443520163515

4. Dias JCR, Silva WR, Maroco J, Campos JADB. Escala de estresse percebido aplicada a estudantes universitárias: estudo de validação. Psychol Community Health. 2015;4(1):1-13.

5. Nóvoa A. Os professores na virada do milênio: do excesso dos discursos à pobreza das práticas. Educ Pesqui. 1999;25(1):11-20. http://dx.doi.org/10.1590/S1517-97021999000100002

6. Esteve JM. O mal-estar docente: a sala de aula e a saúde dos professores. Bauru: Edusc; 1999.

7. da Silva Gomes de Oliveira E. O "mal-estar docente" como fenômeno da modernidade: os professores no país das maravilhas. Ciênc Cognição. 2006;7(1):27-41.

8. Borges dos Reis EJ, Araújo TM de, Martins Carvalho F, Barbalho L, Oliveira e Silva M. Docência e exaustão emocional. Educ Soc. 2006;27(94):229-53. http://dx.doi.org/10.1590/S0101-73302006000100011

9. Tavares ED, Alves FA, Garbin L, Silvestre MLC, Pacheco RD. Projeto de qualidade de vida: combate ao estresse do professor [monography]. Campinas: Universidade Estadual de Campinas; 2007.

10. Mancebo D, Maués O, Chaves VLJ. Crise e reforma do Estado e da Universidade Brasileira: implicações para o trabalho docente. Educar. 2006;(28):37-53.

11. Resende M do RS. Formação e autonomia do professor universitário: um estudo na Universidade Federal de Goiás [PhD dissertation]. São Paulo: Pontifícia Universidade Católica; 2005.

12. Lipp MEN. Stress do Professor (o). Campinas: Papirus; 2003.

13. Silva MEP da. Burnout: por que sofrem os professores? Estud Pesqui Psicol. 2006;6(1):89-98.

14. Mancebo D. Trabalho docente: subjetividade, sobreimplicação e prazer. Psicol Reflex e Crítica. 2007;20(1):74-80. http://dx.doi.org/10.1590/S0102-79722007000100010

15. Leite JL. As transformações no mundo do trabalho, reforma universitária e seus rebatimentos na saúde dos docentes universitários. Universidade Soc. 2011;(48):84-96.

16. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. J Health Soc Behav. 1983;24(4):385-96. http://dx.doi.org/10.2307/2136404

17. Machado W de L, Damásio BF, Borsa JC, Silva JP da. Dimensionality of the Perceived Stress Scale (PSS-10) for school teachers. Psicol Reflex Crítica. 2014;27(1):38-43. http://dx.doi.org/10.1590/S0102-79722014000100005

18. Maroco J. Análise estatística. 6th ed. Lisboa: Report Number; 2010. 990 p.

19. Moraes PWT, Moreira AM. Vínculos com a carreira e os fatores psicossociais do estresse no trabalho: um estudo com docentes universitários de Feira de Santana, Bahia. In: XIII Colóquio Internacional sobre Gestão Universitária nas Américas. Buenos Aires; 2013.

20. Aguiar AM da R. O estresse ocupacional do professor do ensino superior: a relação entre os sintomas de estresse e a atividade docente em duas instituições de ensino superior da cidade de Teresina-PI [dissertation]. Lisboa: Universidade Lusófona de Humanidades e Tecnologias Instituto de Ciências da Educação; 2010.

21. Camargo EM, Oliveira MP, Rodriguez-Añez CR, Hino AAF, Reis RS. Estresse percebido, comportamentos relacionados à saúde e condições de trabalho de professores universitários. Psicol Argum. 2017;31(75). http://dx.doi.org/10.7213/psicol.argum.31.075.DS01

22. Souza MC, Guimarães AC, Marinho A, Matias TS, Araújo C, Parciias SR, et al. Atividade física relacionada ao estresse no trabalho de professores universitários. Rev Bras Ciênc Mov. 2014;22(4):68-76.

23. Cassiolato RA. Síndrome de Burnout e identidade do professor universitário [PhD dissertation]. Campinas: Universidade Estadual de Campinas; 2010.

24. Servilha EAM, Pereira PM. Condições de trabalho, saúde e voz em professores universitários. Rev Ciênc Méd. 2008;17(1):21-31.

25. Barreto M da A. Ofício, Estresse e Resiliência: desafios do Professor Universitário [thesis]. Natal: Universidade Federal do Rio Grande do Norte; 2007.

26. do Nascimento Junior JRA, Capelari JB, Vieira LF. Impacto da prática de atividade física no estresse percebido e satisfação de vida de idosos. J Phys Educ. 2012;23(4):647-54. http://dx.doi.org/10.4025/reveducfis.v23i4.16934

27. Leonelli LB. Estresse percebido em profissionais da atenção primária à Saúde [PhD dissertation]. São Paulo: Universidade de Federal de São Paulo; 2013.

28. Paredes DS. Nível de Atividade Física e Nível de Estresse de Policiais Militares do 16o BPM de Santa Catarina [undergraduate essay]. Florianópolis: Universidade Federal de Santa Catarina; 2012.

29. Gonçalves TB, Leitão AKR, Botelho BS, Marques R, Hosoume VSN, Neder PRB. Prevalência de síndrome de burnout em professores médicos de uma universidade pública em Belém do Pará. Rev Bras Med Trab. 2011;9(2):85-9.

30. Kafrouni BL. A prática de atividade física e o estresse percebido em funcionários de uma instituição financeira [undergraduate essay]. Porto Alegre: Universidade Federal do Rio Grande do Sul; 2014.

31. Hyeda A, Handar Z. Avaliação da produtividade na síndrome de Burnout. Rev Bras Med Trab. 2011;9(2):78-84.

32. Silva DKC, Pacheco M de JT, Marques HS, Branco RCC, da Silva MACN, Nascimento M do DSB. Burnout no trabalho de médicos pediatras. Rev Bras Med Trab. 2017;15(1):2-11. http://dx.doi.org/10.5327/Z1679443520177032

33. Borsoi ICF. Trabalho e produtivismo: saúde e modo de vida de docentes de instituições públicas de Ensino Superior. Cad Psicol Soc Trab. 2012;15(1):81-100. https://doi.org/10.11606/issn.1981-0490.v15i1p81-100

34. Alvarez D. Cimento não é concreto, tamborim não é pandeiro, pensamento não é dinheiro! Para onde vai a produção acadêmica. Rio de Janeiro: Myrrha; 2004.

35. Bianchetti L, Machado AMN. Reféns da produtividade: sobre produção do conhecimento, saúde dos pesquisadores e intensificação do trabalho na pós-graduação. In: Reunião Anual da ANPEd. ANPEd; 2007.

36. Ayres KV, Brito S, Feitosa A. Stress ocupacional no ambiente acadêmico universitário: um estudo em professores universitários com cargos de chefia intermediária. In: Encontro Anual da Associação Nacional dos Programas de Pós-Graduação em Administração. 1999.

37. Lima M de FEM, Lima-Filho D de O. Condições de trabalho e saúde do/a professor/a universitário/a. Ciênc Cognição. 2009;14(3):62-82.

Correspondence address: Michelle Barbosa Soares – Rua Rosa Pacheco, 386 – Jardim Alice – CEP: 36520-000 – Visconde do Rio Branco (MG), Brazil – E-mail: msmichellesoares@yahoo.com.br