

## Sleep quality and workaholism in stricto sensu graduate professors

Qualidade do sono e workaholism em docentes de pós-graduação stricto sensu

Calidad del sueño y *workaholism* en docentes de posgrado stricto sensuMariana Guimarães Cardoso<sup>1</sup>  <https://orcid.org/0000-0002-6447-469X>Arthur Eumann Mesas<sup>1</sup>  <https://orcid.org/0000-0002-0088-8607>Alexandrina Aparecida Maciel Cardelli<sup>1</sup>  <https://orcid.org/0000-0002-0222-8821>Maria José Quina Galdino<sup>2</sup>  <https://orcid.org/0000-0001-6709-3502>Maynara Fernanda Carvalho Barreto<sup>1</sup>  <https://orcid.org/0000-0002-3562-8477>Patricia Aroni<sup>1</sup>  <https://orcid.org/0000-0001-5092-2714>Maria do Carmo Fernandez Lourenço Haddad<sup>1</sup>  <https://orcid.org/0000-0001-7564-8563>

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## Descritores

Saúde do trabalhador; Sono; Educação de pós-graduação; Condições de trabalho; Docentes

## Descriptores

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## Abstract

**Objective:** to investigate the association between sleep quality and workaholism in *stricto sensu* graduate professors.

**Methods:** a cross-sectional study developed with professors from all major areas of knowledge at a public university located in the South Region of Brazil. Data collection took place from May to August 2018, using an electronic form containing a questionnaire for sociodemographic and occupational characterization, the Dutch Work Addiction Scale and the Pittsburgh Sleep Quality Index. The 790 *stricto sensu* graduate professors of the institution were invited, of whom 196 consented to participate in the research. Data were analyzed descriptively and by univariate and multiple binary logistic regression, adopting a significance level of 95%.

**Results:** poor sleep quality was associated with overwork (OR<sup>adj</sup>: 2,056; p=0.026) and workaholism (OR<sup>adj</sup>: 2,056; p=0.040). Subjective sleep quality, sleep latency, sleep duration, sleep disorders and daytime sleepiness were significantly associated with over and compulsive work, as well as workaholism.

**Conclusion:** high work demands characteristic of the professors' work process at *stricto sensu* level may have an impact on the low sleep quality, since workaholic professors presented twice the chance of presenting poor sleep quality.

**Descriptors:** Worker's health; Sleep; Professors; Graduate Education; Work conditions.

## Resumo

**Objetivo:** investigar a associação entre a qualidade do sono e o *workaholism* em docentes de pós-graduação *stricto sensu*.

**Métodos:** estudo transversal desenvolvido com docentes de todas as grandes áreas de conhecimento de uma universidade pública localizada na Região Sul do Brasil. A coleta de dados ocorreu no período de maio a agosto de 2018, por meio de formulário eletrônico contendo um questionário de caracterização sociodemográfica e ocupacional, a *Dutch Work Addiction Scale* e o *Pittsburgh Sleep Quality Index*. Foram convidados os 790 docentes de pós-graduação *stricto sensu* da referida instituição, dos quais 196 consentiram a participação na pesquisa. Os dados foram analisados descritivamente e por regressão logística binária univariada e múltipla, adotando-se nível de significância de 95%.

**Resultados:** a qualidade do sono ruim esteve associada ao trabalho excessivo (OR<sup>aj</sup>:2,056; p=0,026) e ao *workaholism* (OR<sup>aj</sup>:2,056; p=0,040). Qualidade subjetiva do sono, latência do sono, duração do sono, distúrbios do sono e sonolência diurna associaram-se significativamente ao trabalho excessivo e compulsivo, bem como ao *workaholism*.

**Conclusão:** as altas demandas de trabalho características do processo de trabalho dos docentes em nível *stricto sensu* podem repercutir na baixa qualidade do sono, visto que os docentes *workaholics* apresentaram duas vezes a chance de apresentarem má qualidade do sono.

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Conflicts of interest: nothing to declare.

## Resumen

**Objetivo:** Investigar la relación entre la calidad del sueño y *workaholism* en docentes de posgrado *stricto sensu*.

**Métodos:** Estudio transversal que se llevó a cabo con docentes de todas las grandes áreas de conocimiento de una universidad pública ubicada en la región Sur de Brasil. La recolección de datos se realizó en el período de mayo a agosto de 2018, mediante formulario electrónico que contenía un cuestionario de caracterización sociodemográfica y ocupacional, la *Dutch Work Addiction Scale* y el *Pittsburgh Sleep Quality Index*. Se invitó a los 790 docentes de posgrado *stricto sensu* de la institución mencionada, de los cuales 196 aceptaron participar en la investigación. Los datos fueron analizados descriptivamente y por regresión logística binaria univariada y múltiple, con un nivel de significación de 95 %.

**Resultados:** La mala calidad de sueño se relacionó con el trabajo excesivo (OR<sup>aj</sup>:2,056; p=0,026) y con el *workaholism* (OR<sup>aj</sup>:2,056; p=0,040). La calidad subjetiva del sueño, la latencia del sueño, la duración del sueño, los trastornos de sueño y la somnolencia diurna se relacionan significativamente con el trabajo excesivo y compulsivo, así como con el *workaholism*.

**Conclusión:** Las altas demandas de trabajo, características del proceso laboral de los docentes de nivel *stricto sensu*, pueden repercutir en la baja calidad del sueño, ya que los docentes *workaholics* presentan el doble de probabilidad de tener un sueño de mala calidad.

## Introduction

Workaholism was first mentioned in 1971 by Oates and is defined as an irresistible or uncontrollable need to work incessantly. This term has become evident due to the changes that characterize modern professional life, in which work processes are linked to the strenuous use of information and communication technologies (ICT).<sup>(1)</sup>

Due to the distractions caused by ICT, whether for social, leisure or work purposes, sleep hours are compromised. Due to several factors, there is a loss of about 25% of sleep time when compared to 100 years ago.<sup>(2)</sup> This fact causes negative impacts for the individual, as the loss of the restorative function of sleep compromises the restoration of the physical and psychological conditions of the organism, worn out during the waking state.<sup>(3)</sup>

Teaching work is influenced by contemporary transformations and higher education has become a lever for the country's economic development and knowledge has come to be seen through the scientific production of these workers.<sup>(4,5)</sup> In this context, the teaching work process started to demand immediate, resolute and attentive professionals with constant updates. The scientific environment comes to exist in a temporality of permanent acceleration in search of productivity and competence, in which the control devices that focus on functional and pragmatic connections of the professor's work process at *stricto sensu* level, such as assessment systems, are emphasized, and integrated curriculum platforms.<sup>(6)</sup>

This whole setting provides a workday that extends beyond the professional environment, greatly

increasing the risk of overwork and unhealthy labor investment,<sup>(7)</sup> characteristic aspects of workaholism, understood in this study by the dimensions of over and compulsive work.<sup>(8)</sup>

Workaholism is believed to affect sleep quality, as the pace of work is one of the factors that most affects the architecture of sleep stages.<sup>(9)</sup> In this sense, long working hours and high weekly workload are associated with impaired sleep quality.<sup>(10,11)</sup>

Sleep is a naturally recurring and reversible bio-behavioral state, characterized by relative immobility, perceptual disengagement and moderate consciousness,<sup>(9)</sup> which is one of the main responsible for the restoration of human energy and mental resources. Thus, sleeping well gives people the ability and readiness to meet current and new work demands. On the other hand, among professors, the absence of recovery from sleep and leisure increases work stress and exhaustion.<sup>(12)</sup>

Due to the relevance of this theme for the professor's well-being and in view of the scarcity of publications in the context of the phenomenon workaholism on the impact on workers' health, especially of *stricto sensu* graduate professors, it is expected that the data presented in this study support future research on the physical and mental quality of life of the individuals behind the dissemination of science knowledge, thinking not only about scientific productivity, but also about the professional's health.

Considering the aspects of the workaholism phenomenon presented and the labor characteristics of teaching work, this study aims to investigate the association between workaholism and sleep quality in *stricto sensu* graduate professors.

## Methods

This is a cross-sectional study carried out at a public university located in the southern region of Brazil. This educational institution has 52 undergraduate courses (bachelor's and undergraduate degrees) and 261 Graduate Program (GP) courses, of which 186 are *lato sensu* (residences and specializations) and 75 are *stricto sensu* (masters and doctorates), distributed in nine study centers, covering several areas of knowledge.

The population of this study consisted of all 790 professors linked to at least one of the *stricto sensu* graduate programs of that institution. The eligibility criteria were to be linked to a *stricto sensu* graduate program of the university under study and not to be away from activities due to work licenses.

Data collection took place from May 16 to August 30, 2018 using an electronic form. Contact with professors was established through the e-mail registered on the GP institutional website. Invitations were made to all 790 professors every 15 days, limited to five submissions, answering the questionnaire 196 (24.8%), which met the study's eligibility criteria.

Sociodemographic variables (gender, age, and marital status), lifestyle (physical activity, smoking, and leisure opportunities) and occupational variables (education, employment relationship and work regime, years of activity in higher education and graduate, number of links in GP, concept of Coordination for the Improvement of Higher Education Personnel (CAPES - *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior*) of GP, productivity scholarship, hours dedicated to graduate studies, work activities in addition to workload, number of master's/doctoral students, number of articles published or accepted in the last year, relationship with GP professors and supervisors, pace of intensity in relation to work, if you have already thought about leaving the GP, concerns and/or difficulties in relation to work) were measured using a semi-structured questionnaire, elaborated by the authors.

To assess workaholism, the reduced version of the Dutch Work Addiction Scale (DUWAS) was

used, prepared by Schaufeli, Taris and Bakker<sup>(8)</sup> and validated in Brazil by Carlotto and Del Líbano<sup>(13)</sup> in Brazilian professionals. It is a tool consisting of 10 items assessed using a Likert scale, ranging from 1 (never) to 4 (always). The scale assesses two independent dimensions that do not produce a composite score: compulsive work (items 1, 2, 4, 6 and 8) and overwork (items 3, 5, 7, 9 and 10), however the simultaneous presence of high compulsive and overwork indicate workaholism. Due to the absence of studies with Brazilian professors, DUWAS reliability was calculated in this study by the Cronbach's alpha coefficient, with compulsive work having  $\alpha=0.795$  and overwork  $\alpha=0.782$ .

Sleep quality was verified by Pittsburgh Sleep Quality Index (PSQI), a tool developed by Buysse et al.,<sup>(14)</sup> translated and validated for Brazil by Bertolazi.<sup>(15)</sup> The tool measures the perception of sleep quality for the previous month using 19 questions divided into seven components: subjective sleep quality (item 6), sleep latency (items 2 and 5a), duration sleep (item 4); usual sleep efficiency (items 1, 3 and 4); sleep disorders (items 5b to 5j); sleeping medication use (item 7) and daytime sleepiness (items 8 and 9). Answers are provided on a Likert type scale with four points (0-3). The sum of the components gives a total score ranging from 0 to 21 points. Considering that studies with higher education professors were not found, the PSQI reliability in this study was calculated using the Cronbach's alpha coefficient,  $\alpha=0.774$ .

Data were analyzed in the Statistical Package of Social Sciences (SPSS), version 20.0 by descriptive and inferential statistics. The dependent variables of this study were the general sleep quality score, which was divided into poor (>5 points) and good ( $\leq 5$  points), according to the theoretical-methodological framework adopted,<sup>(14)</sup> and the components of the PSQI. The independent variables were the dimensions of DUWAS, over and compulsive work, dichotomized considering the median as the cutoff point. High levels in both dimensions indicated workaholism.<sup>(16)</sup>

The association of dependent and independent variables was verified by univariate logistic regression. Subsequently, by multiple logistic regression,

this association was adjusted for gender and age<sup>(17,18)</sup> and for aspects related to the teaching work process that adjusted the  $\beta$ 1 values by at least 10%. The *Odds Ratio* with a 95% confidence interval was selected as a measure of association, and  $\alpha < 0.05$  was considered statistically significant.

The study followed Resolution 466/2012 of the Brazilian National Health Board, being submitted and approved by the Research Ethics Committee (REC) under Opinion 2,347,839. Before accessing the data collection questionnaire, all professors consented to participate by the Informed Consent Form (ICT), whose access to reading was online.

## Results

The study sample consisted of 196 *stricto sensu* graduate professors, 24.8% of the target population. Most were female (60.7%), married (76%), whose age ranged between 32 and 75 years. With regard to lifestyle, 37.2% were considered physically active, 7.7% were smokers and 88.8% reported few leisure opportunities.

Regarding training, according to the areas of knowledge of the Brazilian National Council for Scientific and Technological Development (CNPq - *Conselho Nacional de Desenvolvimento Científico e Tecnológico*), 33.7% (66) were in Health Sciences, 11.7% (23) in Human Sciences, 11.2% (22) in Biological Sciences, 10.7% (21) in Applied Social Sciences, 10.2% (21) in Exact and Earth Sciences, 9.2% (18) in Agricultural Sciences, 7.7% (15) in Linguistics, Languages and Arts and 5.6% (11) in Engineering. Regarding the link and the work regime at the university, 89.3% (175) had exclusive full-time dedication, 4.6% (9) full-time, 4.1% (8) part-time and 2.0% (4) worked as a senior professor. The average years of teaching in higher education was 19 years ( $\pm 9.1$ ), varying between 02 and 45 years.

Among the sociodemographic variables, life habits and the teaching work process, only the negative influence of the pace and intensity of work ( $p=0.010$ ) was associated with poor sleep quality (Table 1).

The prevalence of poor sleep quality was 65.8% (129), high overwork, 54.1% (106), high compulsive work, 51.5% (101) and workaholism, 13.1% (26). Poor sleep quality was associated with high overwork and workaholism, even after adjustments (Table 2).

In Table 3, it was found that over, compulsive work and workaholism contributed to the reduction of subjective sleep quality, sleep latency, sleep duration and increased sleep disorders and daytime sleepiness.

It should be noted that 21.9% of professors reported using some medication to sleep (prescribed or not by a doctor). The main medications cited by the participants belonged to the classes of anxiolytics, muscle relaxants, hypnotics, herbal/homeopathic, analgesics, antidepressants and the hormone melatonin.

## Discussion

Poor sleep quality was associated with overwork and workaholism, even after adjusting the number of GP that works, level of the professor link(s), pressure for good professional performance, pressure for scientific publication, be a stock exchange productivity, gender, and age. It is inferred that the teaching work process characterized by the mentioned adjustment variables and productivity requirements can induce professors to develop many concomitant projects or accelerate the pace of work.<sup>(20)</sup> Moreover, in view of this setting of productivity and increased competitiveness in the academic area, workers with greater demand can be seen as a model.<sup>(21)</sup>

Regarding the components of sleep quality, subjective sleep quality, sleep latency, sleep duration, sleep disorders and daytime sleepiness were associated with over, compulsive work and workaholism. The individual workaholic is compelled to exhaust his resources in labor activities. As sleep performs the biological function responsible for the restorative action of physical and mental tiredness, its absence can increase the activity of the sympathetic nervous system.<sup>(6,22)</sup>



**Table 1.** Association between sleep quality and sociodemographic variables, life habits and the work process of *stricto sensu* graduate professors

Variables	Sleep quality		P-value	Odds Ratio (95% confidence interval)
	Poor	Good		
Gender				
Male	52(67.5)	25(32.5)	0.684	1
Female	77(64.7)	42(35.3)		0.881(0.480-1.618)
Age (years)	48±9.1		0.624	0.992(0.960-1.025)
Marital status				
Single/separated/widowed	30(63.8)	17(36.2)	0.742	1
Married	99(66.4)	50(33.6)		1.122(0.565-2.226)
Physically Active*				
No	81(65.9)	42(34.1)	0.989	1
Yes	48(65.8)	25(34.2)		0.996(0.541-1.833)
Smoking				
No	118(65.2)	63(34.8)	0.525	1
Yes	11(73.3)	4(26.7)		1.468(0.449-4.800)
Leisure				
Many opportunities	12(54.5)	10(45.5)	0.241	1
Few opportunities	117(67.2)	57(32.8)		1.711(0.698-4.194)
Postdoctorate				
No	79(66.4)	40(33.6)	0.834	1
Yes	50(64.9)	27(35.1)		0.938(0.513-1.714)
Years of teaching at <i>stricto sensu</i> level	9.4±7.1		0.490	0.986(0.946-1.027)
Number of GP linked	1.3±0.5		0.051	0.591(0.348-1.003)
GP CAPES Concept				
3-4	93(64.6)	51(35.4)	0.545	1
5-7	36(69.2)	16(30.8)		1.234(0.625-2.437)
Professor link course (s)				
Master's Degree	42(75.0)	14(25.0)	0.089	1
Master and PhD	87(62.1)	53(37.9)		0.547(0.273-1.096)
Productivity Scholarship-Granted				
No	102(65.8)	53(34.2)	0.995	1
Yes	27(65.9)	14(34.1)		1.002(0.485-2.071)
Hours dedicated to graduate studies <i>stricto sensu</i>	13.6±10.2		0.433	0.989(0.961-1.017)
Hours dedicated to work outside the contractor	14.4±10.5		0.100	1.027(0.995-1.060)
Number of people oriented at <i>stricto sensu</i> level	4.6±2.8		0.734	0.982(0.885-1.090)
Number of articles published or accepted in the last year	4.8±4.5		0.064	0.940(0.880-1.004)
Interpersonal relationships with GP professors				
Excellent/good	112(64.4)	62(35.6)	0.235	1
Fair/poor	17(77.3)	5(22.7)		1.882(0.662-5.348)
Interpersonal relationship with their students				
Excellent/good	125(66.1)	64(33.9)	0.624	1
Fair/poor	4(57.1)	3(42.9)		0.683(0.148-3.143)
Pace and intensity of work				
Positive influence	50(56.2)	39(43.8)	0.010	1
Negative influence	79(73.8)	28(26.2)		2.201(1.207-4.014)
Intention to leave <i>stricto sensu</i> graduate school				
No	44(58.7)	31(41.3)	0.098	1
Yes	85(70.2)	36(29.8)		1.664(0.911-3.039)
Pressure for scientific publication				
No	75(62.5)	45(37.5)	0.416	1
Yes	54(71.1)	22(28.9)		1.300(0.691-2.446)

Source: Lima DF, Levy RB, Luiz OC. Recommendations for physical activity and health: consensus, controversies, and ambiguities. Rev Panam Salud Publica. 2014;36(3):164-70.<sup>(19)</sup>

\*the classification followed the World Health Organization recommendations, being considered active those who performed ≥150 minutes of light/moderate/intense physical activities, at least twice a week.<sup>(19)</sup>

**Table 2.** Association of sleep quality with workaholism in *stricto sensu* graduate professors

Variables	P value	Odds Ratio <sup>Brut</sup> (95% confidence interval)	P value	Odds Ratio <sup>Adjusted*</sup> (95% confidence interval)
Sleep quality				
Overwork	0.009	2.280(1.232-4.222)	0.026	2.056(1.092-3.874)
Compulsive work	0.052	1.813(0.994-3.307)	0.053	1.844(0.991-3.431)
Workaholism	0.022	2.194(1.117-4.309)	0.040	2.056(1.032-4.098)

\*adjusted by the number of Graduate Programs, level of the professor link (s), pressure for good professional performance, pressure for scientific publication, scholarship productivity, antidepressant use, gender, and age

**Table 3.** Association of sleep quality with workaholism in *stricto sensu* graduate professors

Variables	P value	crude Odds Ratio (95% confidence interval)
Subjective sleep quality		
Overwork	<0.001	3.609(1.942-6.706)
Compulsive work	<0.001	3.371(1.812-6.270)
Workaholism	<0.001	3.465(1.850-6.487)
Sleep latency		
Overwork	0.009	2.229(1.224-4.058)
Compulsive work	0.017	2.281(1.143-3.789)
Workaholism	0.041	1.900(1.926-3.518)
Sleep duration		
Overwork	0.011	2.689(1.251-5.779)
Compulsive work	<0.001	4.616(1.975-10.785)
Workaholism	<0.001	3.989(1.866-8.528)
Usual sleep efficiency		
Overwork	0.193	1.820(0.739-4.480)
Compulsive work	0.136	2.009(0.802-5.033)
Workaholism	0.198	1.803(0.735-4.426)
Sleep disorders		
Overwork	<0.001	3.655(1.875-7.124)
Compulsive work	0.002	2.814(1.459-5.427)
Workaholism	0.002	2.737(1.429-5.243)
Daytime sleepiness		
Overwork	<0.001	3.626(1.785-7.366)
Compulsive work	0.025	2.171(1.100-4.285)
Workaholism	0.017	2.281(1.158-4.494)
Sleeping medication use		
Overwork	0.143	1.665(0.842-3.292)
Compulsive work	0.457	1.294(0.657-2.549)
Workaholism	0.316	1.439(0.710-2.881)

Although studies report sleep disorders as a possible result of workaholism, it should be considered that both constructs were measured by different tools, making comparisons unfeasible.<sup>(6,23)</sup> However, it is possible to affirm that sleep disorders have potential effects on the capacity for occupational health, as shown by Norwegian research, in which individuals who work at non-conventional hours, that is, have a flexible circadian rhythm were more likely to develop workaholism.<sup>(24)</sup>

A study carried out in the State of Rio Grande do Norte found that one in three university professors was identified with excessive daytime sleepiness. It is inferred that this may reflect a fast pace of life to which these professionals are submitted, in which they must prepare and teach classes, prepare, apply and correct tests, produce articles, prepare research works, guide students, among other activities. This high demand for work may still be associated with sleep latency (the period of time necessary to carry out the transition from wakefulness to total sleep),

as the work done until late hours makes it impossible to sleep properly, interfering with the time allocated to rest of this professor, leading him/her to the habit of depriving himself/herself of hours of sleep that would be essential.<sup>(25)</sup>

These habits can have short and long-term consequences on the health and safety of workers, as they cause a decrease in cognitive functions, in reasoning and in judgment, making them more prone to errors,<sup>(26)</sup> and impairing the process teaching work that mostly involves cognitive aspects.

Research indicates that the compulsive dimension triggers feelings of anxiety that can interfere with sleep duration. Physical and emotional exhaustion, which are the main precursors of stress and the burnout syndrome, are highlighted as negative consequences and, consequently, deteriorate the worker's mental health.<sup>(22,27)</sup>

Sleep efficiency and medication use to sleep had no association with the over and compulsive dimensions of work or with workaholism. However, professors mentioned medication use to sleep, and it is known that there are some non-pharmacological measures to optimize sleep quality, that could be adopted for professors, such as relaxation techniques, massage, music therapy, as well as educational guidelines institutions regarding sleep hygiene before going to sleep.<sup>(28,29)</sup>

As a limitation of this study, the cross-sectional methodology is indicated, in which outcome and exposure are measured simultaneously. The self-reported questionnaire, whose responses may be influenced by the participants' interest, can be considered another limitation. However, this study contributes to the discussion of the theme regarding the influence of workaholism on sleep quality, advancing in presenting the association of sleep quality, especially in the assessment of its components in relation to each dimension of workaholism. For future studies, longitudinal methods with the measurement of objective clinical data are suggested, in order to fill the existing gaps regarding the long-term relationship between workaholism and sleep quality.

As practical implications, given the limited opportunities to influence workers' personal aspects,

an alternative for managers is to encourage a work environment in which personnel policies and practices are adopted that limit professors to work excessively at structural level or provide resources to balance work demands. It is still important that government agencies focus GP performance assessments on their social role, that is, on training qualified professionals for the advancement of science and technology and not on academic productivity.

## Conclusion

High work demands characteristic of the work process of *stricto sensu* graduate professors may be associated with poor sleep quality, as it was found that professors workaholics and with high overwork showed increased chances of poor quality of work sleep, even after adjustments. Regarding the sleep quality components, subjective sleep quality, sleep latency, sleep duration, sleep disorders and daytime sleepiness were associated with over, compulsive work and workaholism.

## Collaborations

Cardoso MG, Galdino MJQ and Haddad MCFL contributed to the design of the project, analysis and interpretation of data, writing of the article, critical review of the intellectual content and final approval of the version to be published. Tables AE, Cardelli AAM, Barreto MFC and Aroni P contributed to the interpretation of the data, relevant critical review of the intellectual content and final approval of the version to be published.

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