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Burnout syndrome in Spanish university lecturers: prevalence and relationship with lifestyle habits and physical and mental health indicators

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Abstract

Background Teaching requires intense engagement. Adaptive changes and work demands have an effect on the health of university lecturers, which carries a risk of burnout. The present study aimed to determine the prevalence of burnout syndrome among Spanish university lecturers and to analyse its relationship with lifestyle habits and physical and mental health indicators.

Methods The study was carried out on a sample of 1560 university lecturers (47.39 ± 11.29 years) from thirteen universities belonging to the Spanish Network of Health Promoting Universities. Burnout, health-related quality of life, stress, anxiety and depression, vocal fatigue, physical activity, sedentary habits, eating behaviour and sleep quality were all assessed.

Results Among Spanish university lecturers, emotional exhaustion rates of 20.83% were reported, alongside depersonalisation rates of 5.26% and low self-fulfilment rates of 49.74%. Regression analysis revealed that emotional exhaustion is negatively associated with physical, mental and environmental wellbeing, as well as being positively associated with stress, depression, vocal fatigue and uncontrolled eating. On the other hand, depersonalisation was negatively associated with social relationships and positively associated with stress, depression and vocal fatigue. Finally, the self-fulfilment aspect was positively associated with social relationships, mental wellbeing and voice improvement with rest, whilst also being negatively associated with vocal fatigue.

Conclusions Present findings reveal the association of multiple factors with burnout risk among university lecturers. These findings can serve as a basis on which to design interventions aimed at promoting health and wellbeing from within university institutions or policies concerned with university lecturers' health.

Keywords Health, University teachers, Burnout, Lifestyle, Mental disorders

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Background

There is currently a growing concern about the state of health of university lecturers. Certain occupational, personal and social factors have been shown to have a direct impact on their health. Teaching is considered to be a profession that is associated with various physical and psychological health issues, which can directly affect the wellbeing of the professionals who practice it [1, 2]. As such, adaptive changes and demands on university lecturers seem to have a negative effect on physical, mental, emotional, environmental and social health [3, 4]. Moreover, the academic load to which they are subjected often exceeds their physical and mental capacities [5], which could have an impact on the educational quality of teaching [6].

The teaching profession is a multidisciplinary and demanding job that requires intense engagement and responsibility in its various defining functions. Together with increasing demands of the occupation itself and the scarcity of existing resources, academic and social recognition and valuation of the practitioner is of particular relevance [7–9]. These circumstances and the workload to which this profession is subjected generate a series of psychological and mental demands that can cause alterations in all aspects of health [4]. In recent years, the concept of teacher wellbeing has gained increasing relevance in educational research, particularly in the field of higher education [10, 11]. Wellbeing is understood as a multidimensional construct encompassing physical, psychological, emotional, social, and occupational aspects, and is closely linked to professional satisfaction, work-life balance, and perceived institutional support [12, 13]. For university lecturers, maintaining a positive state of wellbeing is especially complex due to the convergence of multiple demands, including teaching, research, academic management, and pressure to achieve scientific productivity [14–16]. Various studies have shown that a decline in wellbeing not only negatively affects teachers' health, but may also compromise educational quality and institutional engagement [17].

One of the main manifestations of this decline in teacher wellbeing is burnout syndrome, which has been widely examined in the field of education [4, 18]. Burnout is a syndrome characterized by emotional exhaustion and depersonalization, which results from chronic and sustained occupational stress due to mental overload and chronic stressors in the professional environment [19]. This is reflected in a state of physical, emotional and mental exhaustion caused by long-term exposure to emotionally demanding work situations, which has not gone unnoticed in recent decades [8]. Several studies agree that this syndrome is more common in professions that work directly with the public, with teaching being one of the most susceptible [4, 20, 21]. Thus, its high

prevalence is identified in the education sector, especially in higher education, with an estimated 40% of teaching staff reported to suffer [4, 22, 23].

Several studies have identified specific factors related to the identification and manifestation of burnout that are associated with a greater likelihood of initiating and perpetuating exposure to the syndrome [22, 24]. Thus, Leiter and Maslach [19] highlighted the relevance of sociodemographic variables in addressing it, identifying gender and age as significant predictors [18]. Accordingly, current studies reflect an increase in burnout among women, primarily highlighting the emotional exhaustion aspect [4, 25], with an inverse relationship also existing with age. However, some research indicates that longer professional experience increases burnout prevalence, with this being particularly relevant in men [24, 26].

As for lifestyle habits, scientific literature identifies a positive relationship between physical activity and the presence of burnout syndrome among university lecturers, with daily and sustained physical activity standing out as a protective and preventive factor [27–29]. Similarly, while there are few experimental studies on teachers that link eating habits to burnout, most research indicates that healthy nutrition can contribute directly to the prevention and treatment of burnout [30]. Furthermore, other studies with non-university teachers have found that lower subjective sleep quality is directly related to burnout, with resilience being a moderating factor in this association [31].

On the other hand, there are few studies that analyze the emotional burden on teachers [3]. Research focused on this issue points out that wellbeing and job satisfaction are directly related to issues linked to satisfaction with the expectations and support received from the institution where their work is carried out, in this case universities [32, 33]. Thus, it seems that the quality of the work environment has a direct impact on teachers' emotional management and may be associated with the development and feeling of physical and mental exhaustion, apathy and disengagement [3]. Burnout syndrome studies in the education setting have mainly focused on primary and secondary education, with few studies on university lecturers [8]. Given the multiple facets of burnout, research is needed into the factors associated with it in the university setting, as it may be relevant to the promotion of health in university lecturers. Thus, the present study aimed to determine the prevalence of burnout in a sample of 1560 university lecturers and its association with various physical and mental health indicators, lifestyle habits, work performance and sociodemographic factors. Emotional exhaustion, depersonalization, self-fulfillment, quality of life, stress, anxiety, depression, vocal fatigue, physical activity, sedentary time, eating behavior and sleep quality were all assessed.

Given the study objectives and literature discussed above, the following hypotheses were proposed:

H1: Burnout syndrome will be associated with mental disorders and quality of life among Spanish university lecturers.

H2: Lifestyle habits, such as physical activity, sleep quality, and eating behaviors, will be related to the dimensions of burnout syndrome among Spanish university lecturers.

H3: Vocal fatigue symptoms are linked to the dimensions of burnout syndrome among Spanish university lecturers.

Methods

Study design and participants

A descriptive-correlational and cross-sectional study was carried out through an online survey. The sample was selected using convenience sampling, with the study population consisting of university lecturers from the “Red Española de Universidades Promotoras de Salud” (Spanish Network of Health Promoting Universities). A total of 13,343 university lecturers from thirteen universities belonging to this network were invited to participate in the survey. Inclusion criteria for the study were: (a) being a university lecturer employed at a university within the “Red Española de Universidades Promotoras de Salud”; (b) having an assigned teaching workload, (c) not being on leave, extended absence, or partial retirement, (d) belonging to official teaching categories recognized by the Spanish Ministry of Science, Innovation, and Universities, and (e) voluntarily agreeing to participate in the study by signing an informed consent form. As for exclusion criteria, participants who did not adequately complete the questionnaire, leaving key items unanswered, were excluded from the sample. A total of 1,796 completed questionnaires were received. In line with exclusion criteria, incomplete or improperly completed questionnaires were removed, resulting in a final sample of 1,560 university lecturers from thirteen Spanish universities, with a final response rate of 11.69%. The final sample was composed of 779 men (49.9%) and 781 women (50.1%), aged between 23 and 74 years ($M = 47.39$, $SD = 11.29$).

Procedure

The ethical principles set out in the Declaration of Helsinki were respected at all times, and the study was previously approved by the Research Ethics Committee of the University of La Rioja. The questionnaire was distributed to university lecturers via their institutional academic email accounts. Each university sent the invitation through its official communication channels, and in most cases, this was supported by quality assurance departments or health promotion units.

Although no financial or academic incentives were offered, the invitation message emphasized the potential value of the study for identifying areas for improvement in lecturer wellbeing, which may have served as a symbolic or motivational incentive. Participants were also informed that the results would be analyzed within the framework of the Spanish Network of Health Promoting Universities, with the aim of fostering knowledge transfer and raising awareness of the real situation of university lecturers, as a basis for future institutional strategies aimed at improving their wellbeing. This applied and collaborative purpose may also have contributed to the level of engagement and participation.

Participants were given 90 days to complete the questionnaire, during which two reminders were sent. The length of the instrument was communicated in advance, and participants were able to complete it progressively, with the option to save their responses and return to it later. Although response rates were not collected separately by university, the overall response rate (11.69%) is considered acceptable for an online, voluntary, anonymous survey of this length.

Data collection took place between November 2023 and January 2024.

Variables

The Maslach Burnout Inventory Educators Survey (MBIES), designed by Maslach and Jackson and adapted for Spanish educators [34], was used to assess Burnout Syndrome. The instrument was administered under the corresponding license. This instrument assesses job burnout in the teaching profession through 22 items rated along a seven-point Likert scale: from 0 (never) to 6 (every day). The instrument consists of three independent subscales (emotional exhaustion, depersonalization and self-fulfillment). Total scores are obtained by summing subscale scores. High scores on the first two subscales and low scores on the third define burnout syndrome. Cronbach alpha coefficients obtained in the present study were 0.919 for Emotional Exhaustion, 0.740 for Depersonalization, and 0.906 for Self-Fulfillment. According to accepted thresholds for Cronbach alpha, internal consistency was excellent for Emotional Exhaustion, acceptable for Depersonalization and excellent for Self-Fulfillment.

Health-related quality of life was assessed using the World Health Organization Quality of Life Scale (WHOQOL) in its abbreviated version WHOQOL-BREF developed by the World Health Organization [35]. The questionnaire assesses perceptions of one's own health status, psychosocial status and other aspects of quality of life during the two weeks prior to questionnaire completion. The scale comprises 26 items that are rated along a five-point Likert scale. Items, in turn, are grouped into four dimensions: physical health (7 items), psychological

health (6 items), social relatedness (3 items) and environmental health (8 items). In addition, two items were added to the beginning of the questionnaire to assess general perceptions of participant quality of life and health. Scores for each domain are used to calculate raw scores for that domain. Following the guidelines provided by the WHO, summed raw scores are converted to scores ranging from 0 to 100, with higher scores indicating higher quality of life. The Cronbach alpha obtained in the present study was 0.754 for physical well-being, 0.834 for mental well-being, 0.744 for social well-being and 0.807 for environmental health. According to accepted thresholds for Cronbach alpha, internal consistency was acceptable for physical well-being, good for mental well-being, acceptable for social well-being and good for environmental health.

Mental disorders were assessed using the Depression, Anxiety and Stress Scale (DASS-21) developed by Lovibond and Lovibond [36] and validated in a Spanish population by Fonseca-Pedrero [37]. This questionnaire analyses negative emotional states experienced in the week prior to completion through 21 items rated from 0 (has not happened to me) to 3 (has happened to me a lot, or most of the time). The instrument also consists of three 7-item subscales assessing depression, anxiety and stress. Subscale scores are calculated by summing items corresponding to each subscale. The sum of the scores obtained in each subscale is multiplied by two to enable comparability of DASS-21 and DASS-42 outcomes. This means that subscale scores range between 0 and 42. Higher values are associated with higher rates of stress, anxiety and depression. The Cronbach alphas obtained in the present study were 0.894 for stress, 0.791 for anxiety, and 0.907 for depression. According to accepted thresholds for Cronbach alpha, internal consistency was excellent for stress, acceptable for anxiety and excellent for depression.

The Vocal Fatigue Index (VFI) developed by Nanjundeswaran [38] and validated in Spanish university lecturers by Contreras-Regatero [39] was used to assess vocal fatigue. This questionnaire consists of 19 items related to possible symptoms associated with vocal fatigue due to voice use. Items are grouped into three factors: “vocal fatigue and avoidance of voice use” (Factor 1; 11 items), “physical discomfort (Factor 2; 5 items) and “improvement of symptoms with rest” (Factor 3; 3 items). Items are rated according to five response options: never (0), hardly ever (1), sometimes (2), almost always (3) and always (4). Scores are obtained by adding the scores of the items in each dimension. High values in factors 1 and 2 are indicators of increased severity of vocal fatigue, while high values in factor 3 are indicators of improvement of vocal fatigue symptoms. The Cronbach alpha obtained in the present study was 0.942 for vocal fatigue

and avoidance of voice use, 0.921 for physical discomfort, and 0.942 for improvement of symptoms with rest. According to accepted thresholds for Cronbach alpha, internal consistency was excellent for vocal fatigue and avoidance of voice use, excellent for physical discomfort, and excellent for improvement of symptoms with rest.

Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI) developed by Buysse [40] and validated and adapted for use with Spanish samples by Royuela and Macías [41] ($\alpha=0.81$). The instrument assesses sleep quality and its clinical disturbances during the last month through nineteen items grouped into seven different sleep components: sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, use of sleep medication and daytime dysfunction. Each component is scored between zero and three in accordance with the calculation procedure defined by the instrument author. The sum of the seven components produces a total PSQI score, which ranges from 0 to 21. Higher scores indicate poorer sleep quality. The Cronbach alpha obtained in the present study was 0.701, which is considered acceptable according to the accepted thresholds for Cronbach alpha.

In order to assess eating habits, the Tree Factor Eating Questionnaire-R18 (Tfeq-Sp), a shortened version of the original TFEQ conceived by Stunkard and Messick [42] and adapted and validated for use with Spanish populations by Jáuregui-Lobera [43] was used. This questionnaire measures three dimensions of eating behavior: (a) cognitive restraint (6 items; conscious restriction of food intake); (b) uncontrolled eating (9 items; tendency to eat more than usual as a consequence of a loss of hunger control); and (c) emotional eating (3 items; eating in response to different negative emotions). The questionnaire consists of 18 items that are rated along a four-point response scale (definitely true, mostly true, mostly false, definitely false). Scores are obtained by summing the items for each dimension, with higher values representing more restricted, uncontrolled and emotional eating. The Cronbach alpha obtained in the present study was 0.775 for cognitive restraint, 0.858 for uncontrolled eating, and 0.837 for emotional eating. According to accepted thresholds for Cronbach's alpha, internal consistency was acceptable for cognitive restraint, good for uncontrolled eating, and good for emotional eating.

In order to estimate physical activity, the International Physical Activity Questionnaire Short Form (IPAQ-SF), validated in 12 countries, including Spain by Craig [44] was used. The IPAQ-SF estimates the intensity, frequency and duration of PA engaged in over the seven days prior to questionnaire completion. This information was obtained through seven questions related to the number of days on which physical activity was engaged (intense, moderate and walking) and the daily time spent engaged

in physical activity. The total weekly amount of PA was calculated according to metabolic equivalent of the task (MET) minutes/week, previously defined in IPAQ instructions for questionnaire data analysis and processing (IPAQ, 2005). The measures obtained from the questionnaire were, firstly, total physical activity expressed in MET-minutes.

Time spent engaged in sedentary behaviors was estimated using the short version of the Sedentary Behavior Questionnaire (SBQ-S) designed by Rosenberg [45] and adapted and validated in a Spanish sample by Munguia-Izquierdo [46] (intraclass correlation coefficients between 0.83 and 0.86). This questionnaire consists of eleven items assessing the time spent engaged in sedentary behavior during the week and at the weekend (watching TV, listening to music, etc.). There are nine response options (“none”, “15 minutes or less”, “30 minutes”, “one hour”, “two hours”, “three hours”, “four hours”, “five hours”, “six hours or more”). Weekly sedentary time is calculated by summing all items and can be broken down into weekday and weekend sedentary time.

Statistical analysis

Quantitative variables are represented according to means and standard deviations, while qualitative variables are represented according to frequencies. Normality and homoscedasticity of the data were studied with the Kolmogorov-Smirnov test and Levene’s test, respectively. Mean comparisons were performed using the ANOVA test for normally distributed variables and the Kruskal-Wallis H test for those with non-normal distribution. Pearson’s chi-square test was used to analyze the association between qualitative variables.

Multiple linear regression modelling using the backward elimination method was developed to identify variables associated with burnout syndrome and its emotional exhaustion, depersonalization and self-fulfillment dimensions. The variables included in the model were: physical wellbeing, mental wellbeing, environmental

wellbeing and social relationships, stress, anxiety and depression, vocal fatigue, physical voice discomfort and improvement of voice symptoms with rest, physical activity, sedentary time, sleep quality, restricted eating, uncontrolled eating, emotional eating.

Multicollinearity analysis was conducted as part of the multiple linear regression model. For this purpose, the variance inflation factor (VIF) and tolerance were calculated, which did not show values indicative of severe collinearity, as no VIF exceeded the critical threshold of 5. Additionally, associations between independent variables were analyzed using Pearson correlations, which also did not indicate collinearity issues, as none of the correlation coefficients exceeded the threshold of $r > 0.600$. These results indicate that no significant multicollinearity problems were identified among the variables included in the model.

According to Cohen, effect sizes are interpreted as follows: small ($r = 0.10$), medium ($r = 0.30$) and large ($r = 0.50$). For multiple linear regression, R^2 was interpreted following Cohen’s guidelines, classifying effect size as small ($R^2 = 0.02$), medium ($R^2 = 0.13$) and large ($R^2 = 0.26$) [47, 48]. Statistical analysis was carried out using IBM-SPSS® version 25 for Windows. Statistical significance was set at $p < 0.05$.

Results

Table 1 presents sociodemographic data. The sample consisted of 1,560 university lecturers, with an average age of 47.39 years ($SD = \pm 11.29$). Gender distribution was almost equal, with 50.1% identifying as female ($n = 781$) and 49.9% as male ($n = 779$). Participants had an average of 16.35 years of teaching experience ($SD = \pm 11.93$). With regards to academic rank, the largest group consisted of permanent university lecturers (32.43%, $n = 506$), followed by associated and substitutes lecturers (24.62%, $n = 384$). Full professors accounted for 12.06% ($n = 188$), contracted lecturers represented 12.11% ($n = 189$), assistant lecturers 7.95% ($n = 124$), whilst predoctoral and postdoctoral teaching staff 10.83% ($n = 169$).

As shown in Table 2, statistically significant differences were observed across all dimensions of quality of life, stress, anxiety, depression and vocal fatigue, with p -values < 0.001 in most cases. University lecturers with a high level of emotional exhaustion and depersonalization were found to have lower ratings of quality of life in all dimensions, as well as higher levels of stress, anxiety, depression, fatigue and physical voice discomfort. For instance, those with high emotional exhaustion scored significantly lower on mental wellbeing ($M = 51.10$, $SD = 17.80$) compared to their low/medium counterparts ($M = 71.64$, $SD = 14.40$; $p < 0.001$). On the other hand, university lecturers with low self-fulfillment reported lower values for voice recovery and all dimensions of quality of life, as

Table 1 Sociodemographic sample data

		N	%	M
Age		1560		47.39 ± 11.29
Sex	Female	781	50.1	
	Male	779	49.9	
Years of experience		1560		16.35 ± 11.93
Academic rank	Professor	188	12.06%	
	Permanent lecturer	506	32.43%	
	Contracted lecturer	189	12.11%	
	Assistant lecturer	124	7.95%	
	Associated and substitute lecturers	384	24.62%	
	Predocctoral and postdoctoral teaching staff	169	10.83%	

Table 2 Quality of life, stress, anxiety, depression and vocal fatigue as a function of burnout syndrome

	Emotional exhaustion			Depersonalization			Self-fulfilment		
	Low/Medium N = 1235	High N = 325	P	Low/Medium N = 1478	High N = 82	P	Low N = 776	Medium/ High N = 784	P
Physical wellbeing	75.49 ± 13.72	59.19 ± 15.26	< 0.001	72.48 ± 15.34	65.11 ± 17.33	< 0.001	68.10 ± 14.84	76.05 ± 15.02	< 0.001
Mental wellbeing	71.64 ± 14.40	51.10 ± 17.80	< 0.001	68.06 ± 16.95	54.72 ± 18.92	< 0.001	61.84 ± 16.84	72.83 ± 15.99	< 0.001
Environmental wellbeing	72.16 ± 13.85	58.99 ± 15.77	< 0.001	69.90 ± 14.96	60.75 ± 17.53	< 0.001	65.75 ± 14.56	73.04 ± 15.03	< 0.001
Social relations	66.06 ± 19.23	51.05 ± 21.27	< 0.001	63.69 ± 20.30	49.29 ± 21.12	< 0.001	57.74 ± 19.63	68.07 ± 20.24	< 0.001
Stress	7.52 ± 7.11	19.15 ± 9.47	< 0.001	9.58 ± 8.77	16.46 ± 10.56	< 0.001	11.21 ± 8.96	8.69 ± 8.87	< 0.001
Anxiety	3.27 ± 4.25	9.89 ± 8.37	< 0.001	4.48 ± 5.79	7.83 ± 8.58	< 0.001	5.29 ± 6.22	4.02 ± 5.73	< 0.001
Depression	3.81 ± 5.49	13.45 ± 10.55	< 0.001	5.44 ± 7.44	12.58 ± 11.90	< 0.001	7.00 ± 8.30	4.64 ± 7.29	< 0.001
Vocal fatigue	8.24 ± 7.92	14.58 ± 10.56	< 0.001	9.35 ± 8.89	13.27 ± 8.61	< 0.001	10.82 ± 9.07	8.31 ± 8.58	< 0.001
Physical voice discomfort	2.41 ± 3.38	4.58 ± 4.82	< 0.001	2.79 ± 3.79	4.16 ± 4.24	0.001	3.13 ± 3.84	2.59 ± 3.80	< 0.001
Improvement voice symptoms with rest	4.86 ± 3.96	5.19 ± 3.69	0.161	4.91 ± 3.92	5.33 ± 3.65	0.253	4.67 ± 3.70	5.19 ± 4.09	0.018

well as higher rates of stress, anxiety, depression, fatigue and voice discomfort. In particular, stress levels were significantly elevated in individuals with high emotional exhaustion ($M = 19.15$, $SD = 9.47$) compared to those with lower exhaustion ($M = 7.52$, $SD = 7.11$; $p < 0.001$).

Table 3 presents an analysis of physical activity, sedentary time, and eating behaviors in relation to dimensions of burnout. University teachers experiencing high levels of emotional exhaustion exhibited greater sedentary time, along with reduced energy expenditure and higher scores on sleep-related problems, uncontrolled eating and emotional eating. For instance, participants with high emotional exhaustion reported significantly more sleep-related problems ($M = 5.92$, $SD = 2.76$) compared to those with lower emotional exhaustion ($M = 4.38$, $SD = 2.43$; $p < 0.001$), which suggests that a physiological burden may be associated with burnout. Similarly, lecturers with elevated levels of depersonalization demonstrated more difficulties related to sleep, as well as increased levels of uncontrolled and emotional eating. In contrast, individuals with low self-fulfilment also exhibited higher scores for sleep-related problems, uncontrolled eating and emotional eating. This indicates that diminished personal accomplishment may be associated with negative health-related behaviors.

Correlations between study variables and dimensions related to burnout syndrome are presented in Table 4. Emotional exhaustion and depersonalization were negatively associated with all quality-of-life dimensions and positively associated with stress, anxiety, depression, sleep problems, sedentary time, and uncontrolled and emotional eating. Specifically, emotional exhaustion was negatively correlated with mental wellbeing ($r = -0.542$, $p < 0.01$) and positively correlated with stress ($r = 0.608$, $p < 0.01$), which indicates that greater emotional exhaustion is related with lower psychological wellbeing and higher perceived stress. Depersonalization was significantly correlated, albeit to a lesser extent,

with a number of variables, such as social relatedness ($r = -0.235$, $p < 0.01$). This suggests that lecturers reporting higher depersonalization tend to perceive their social relationships to be of lower quality, which may reflect reduced professional engagement or peer support. On the other hand, self-realization was positively associated with quality-of-life dimensions and improved voice symptoms with rest, whilst also being negatively associated with stress, anxiety, depression, voice fatigue, physical voice discomfort, sleep-related problems, and emotional and uncontrolled eating.

With regard to the magnitude of the effects reported in Table 4, effect sizes of the correlations between analyzed variables and dimensions of burnout syndrome ranged from small to large, depending on the dimension assessed. Emotional exhaustion was mainly associated with moderate to large effect sizes, particularly in relation to mental health variables. This highlights the strength of the statistical associations between this dimension and various indicators of wellbeing amongst university lecturers. Depersonalization produced smaller, albeit consistent, effect sizes, whilst self-fulfilment was moderately and positively correlated with mental wellbeing ($r = 0.378$, $p < 0.01$) and social relatedness ($r = 0.310$, $p < 0.01$).

Finally, Table 5 presents multiple linear regression outcomes for the three dimensions of burnout syndrome. In the model for emotional exhaustion ($R^2 = 0.514$), which explained 51.4% of variance (indicating a large effect size), positive associations were found with stress ($\beta = 0.332$), depression ($\beta = 0.104$), vocal fatigue ($\beta = 0.174$) and uncontrolled eating ($\beta = 0.047$), whilst negative associations were observed with physical wellbeing ($\beta = -0.118$), mental wellbeing ($\beta = -0.097$) and environmental wellbeing ($\beta = -0.104$). All predictors were statistically significant ($p < 0.01$). These findings suggest that higher emotional exhaustion is related to greater psychological and physical distress, along with less healthy lifestyle patterns in university teaching staff.

Table 3 Energy expenditure, sedentary time and eating behavior as a function of burnout syndrome

	Emotional exhaustion			Depersonalization			Self-fulfillment			P
	Low/Medium	High	P	Low/Medium	High	P	Low	Medium/High	P	
	N = 1235	N = 325		N = 1478	N = 82		N = 776	N = 784		
METS	2717.28 ± 3040.91	2252.02 ± 2384.89	0.001	2594.67 ± 2921.72	3083.29 ± 2903.04	0.142	2456.10 ± 2486.66	2782.92 ± 3290.07	0.130	
Sedentary time	3532.62 ± 1043.43	3726.32 ± 1080.67	0.003	3560.14 ± 1041.81	3804.14 ± 1236.40	0.061	3587.90 ± 1051.81	3558.20 ± 1056.40	0.559	
Sleep quality	4.38 ± 2.43	5.92 ± 2.76	<0.001	4.68 ± 2.58	5.17 ± 2.44	0.038	4.89 ± 2.57	4.52 ± 2.57	0.002	
Cognitive restraint	15.65 ± 4.35	15.95 ± 4.36	0.276	15.67 ± 4.35	16.38 ± 4.43	0.190	15.56 ± 4.28	15.85 ± 4.42	0.198	
Uncontrolled eating	15.73 ± 4.50	18.31 ± 5.67	<0.001	16.18 ± 4.81	17.71 ± 5.75	0.027	16.84 ± 4.82	15.70 ± 4.87	<0.001	
Emotional eating	5.32 ± 2.21	6.71 ± 2.52	<0.001	5.57 ± 2.33	6.26 ± 2.51	0.013	5.84 ± 2.33	5.38 ± 2.33	<0.001	

For depersonalization ($R^2 = 0.118$), which accounted for 11.8% of variance (medium effect size), positive associations were found with stress ($\beta = 0.123$), depression ($\beta = 0.141$), and vocal fatigue ($\beta = 0.075$), whilst negative associations emerged with social relatedness ($\beta = -0.126$), all of which were statistically significant ($p < 0.01$). These findings indicate that higher levels of depersonalization tend to go hand in hand with increased emotional distress and weaker perceptions of social connectedness, which may reflect reduced professional engagement.

Finally, in the model for self-fulfillment ($R^2 = 0.147$), which explained 14.7% of variance (medium effect size), positive associations were identified with mental wellbeing ($\beta = 0.271$), social relatedness ($\beta = 0.106$) and improvement of voice symptoms with rest ($\beta = 0.111$), whereas negative associations emerged with vocal fatigue ($\beta = -0.068$). All coefficients were statistically significant ($p < 0.05$). These findings suggest that higher levels of psychological and interpersonal wellbeing, together with better vocal recovery, are associated with greater perceived self-fulfillment in university teaching staff.

Discussion

Present findings reveal an association between burnout syndrome and various lifestyle habits, and physical and mental health indicators. When considering the three dimensions of burnout syndrome, 49.74% of participating university lecturers reported low self-fulfillment, whilst 20.83% and 5.26% exhibited emotional exhaustion and depersonalization, respectively. Although only few studies exist that address the health status of university lecturers, the prevalences reported here are similar to those obtained in other studies in various countries such as Bolivia, Brazil, Spain and Portugal [8, 9], which highlight high rates of burnout syndrome in the educational context. The present study is based on previous research that reflects concern about the high number of burnout cases, specifically, in the university teaching profession, given the inherent high demands and work overload [3, 20, 49].

In terms of university lecturers' wellbeing, levels of the four quality of life dimensions (physical wellbeing, mental wellbeing, environmental wellbeing and social relatedness) were found to be lower in lecturers with high emotional exhaustion and depersonalization, and low self-fulfillment. In addition, regression outcomes revealed that physical, mental and environmental wellbeing is negatively associated with emotional exhaustion. On the other hand, social relatedness is negatively associated with depersonalization, whilst mental wellbeing and social relationships are positively linked with self-fulfillment. These findings coincide with those reported by other research and confirm the existence of a negative relationship between burnout and all dimensions of quality of life. This highlights the need to detect and prevent

Table 4 Correlation coefficients relating physical and mental health indicators and life habits with burnout syndrome

	Emotional exhaustion	Depersonalization	Self-fulfilment
Physical wellbeing	-0.513**	-0.212**	0.303**
Mental wellbeing	-0.542**	-0.257**	0.378**
Environmental wellbeing	-0.446**	-0.191**	0.287**
Social relations	-0.350**	-0.235**	0.310**
Stress	0.608**	0.281**	-0.181**
Anxiety	0.499**	0.200**	-0.139**
Depression	0.549**	0.281**	-0.229**
Vocal fatigue	0.393**	0.196**	-0.138**
Physical voice discomfort	0.334**	0.169**	-0.084**
Improve voice symptoms with rest	0.055*	0.033	0.105**
METS	-0.096**	0.030	0.041
Sedentary time	0.109**	0.063*	0.003
Sleep quality	0.287**	0.106**	-0.077**
Cognitive restraint	0.035	0.049	0.040
Uncontrolled eating	0.239**	0.151**	-0.162**
Emotional eating	0.292**	0.108**	-0.123**

* $p < 0.05$; ** $p < 0.01$ **Table 5** Regression outcomes pertaining to burnout syndrome

	B	SD	Standardized beta coefficients	t	p value	VIF	R ²
Emotional exhaustion							
Physical wellbeing	-0.086	0.019	-0.118	-4.622	<0.001	2.096	0.514
Mental wellbeing	-0.064	0.021	-0.097	-2.978	0.003	3.397	
Environmental wellbeing	-0.078	0.018	-0.104	-4.361	<0.001	1.832	
Stress	0.419	0.033	0.332	12.778	<0.001	2.167	
Depression	0.150	0.042	0.104	3.604	<0.001	2.69	
Vocal fatigue	0.221	0.024	0.174	9.185	<0.001	1.144	
Uncontrolled eating	0.110	0.043	0.047	2.542	0.011	1.116	
Depersonalization							
Social relatedness	-0.021	0.005	-0.126	-4.660	<0.001	1.282	0.118
Stress	0.047	0.013	0.123	3.657	<0.001	1.991	
Depression	0.062	0.016	0.141	3.991	<0.001	2.201	
Vocal fatigue	0.029	0.010	0.075	2.983	0.003	1.104	
Self-fulfilment							
Mental wellbeing	0.140	0.016	0.271	8.776	<0.001	1.737	0.147
Social relatedness	0.046	0.013	0.106	3.580	<0.001	1.615	
Vocal fatigue	-0.068	0.027	-0.068	-2.501	0.012	1.340	
Improve voice symptoms with rest	0.258	0.060	0.111	4.224	<0.001	1.260	

Note: Only variables with $p < 0.05$ are presented

burnout early [20, 50]. As such, authors such as Chen [3] and Fernández-Suárez [4] recognize that, in a changing and diverse educational context, increasing physical and emotional demands are imposed that require university lecturers to be trained to improve their emotional and social skills so as to improve their own quality of life.

With regards to stress, anxiety and depression, regression outcomes revealed positive associations between stress and depression and the dimensions of emotional exhaustion and depersonalization. Previous research confirms this link, highlighting work overload as one of the main factors related to this perception of “feeling

burnt out” [8, 50]. Studies such as those conducted by Sousa [49] and Fernández-Suárez [4], warn that the demands of university work, excessive time investments made by teachers in their activities and commitment and engagement to their academic institution may be related with professional stress and general health. Other studies link teacher-perceived stress to exhaustion, depersonalization and lower perceptions of personal achievement, highlighting those continuous demands for innovation and teacher training place the teaching profession as one of the professional sectors with the highest levels of associated stress [25].

As for vocal fatigue, regression outcomes reveal associations between vocal fatigue and emotional exhaustion and depersonalization. In addition, improvement of voice symptoms with rest was associated with self-fulfillment. These findings are consistent with those reported by previous studies which indicate that university teachers suffer from a higher prevalence of voice disorders and burnout due to continuous stress and emotional exhaustion [51]. Likewise, Valente [52] identify voice disorders as one of the main risk factors associated with burnout syndrome, with the continuous workload to which university teachers are subjected being a determining factor in this relationship. Along the same lines, emotional exhaustion syndrome, together with other psychological factors such as stress or depression, are related with increased tension and discomfort in the laryngeal muscles, which can cause vocal discomfort and symptoms [53, 54]. Most existing research only examines the link between emotional exhaustion and voice disorders, with little research on the depersonalization and self-fulfillment dimensions of burnout syndrome. However, existing literature points to a common conclusion linking the pressure teachers experience in their job functions to body posture and vocal projection [55].

Furthermore, in relation to physical activity, lower METs and longer sedentary time were associated with higher levels of emotional exhaustion. Sedentary time was also positively associated with depersonalization. These findings coincide with that found by other studies that identify regular physical activity as a protective factor against stress, arguing that exercise is a preventive measure that brings about a reduction in symptoms of emotional exhaustion and, consequently, reduced risk of burnout [3, 23]. Other research also suggests that low physical activity is associated with lower perceptions of self-fulfillment [29, 56]. Although literature focusing on university lecturers is scarce, it highlights that regular engagement in dynamic and aerobic activities acts as a protective factor against burnout syndrome by training the recovery response to be able to cope with the work routine [50, 57].

When it comes to sleep quality, correlation outcomes revealed that sleep problems are associated with higher levels of emotional exhaustion and depersonalization, as well as lower levels of self-fulfillment. Existing scientific literature defines a close link between sleep disorders and dimensions of emotional exhaustion and depersonalization [58, 59]. Studies such as those conducted by Yang [31], albeit conducted with urban pre-university teachers, found teachers who suffered with a high frequency of sleep disturbance and sleep deprivation to be vulnerable to emotional exhaustion. In addition, research shows that burnout is linked to lower quality of life and is associated

with sleep deprivation and poor sleep quality, as well as the feeling of insufficient rest [28, 50].

With regards to dietary habits, positive associations were found between emotional exhaustion and depersonalization with uncontrolled and emotional eating. Regression outcomes also revealed a relationship between uncontrolled eating and emotional exhaustion. On the other hand, self-fulfillment was negatively associated with uncontrolled and emotional eating. These findings are consistent with those found in other studies, such as that conducted by Palmés [60] with non-university teachers, establishing relationships between the three dimensions of burnout, especially emotional exhaustion and unhealthy eating behaviors. Current research highlights the influence of burnout syndrome on teacher health, with repercussions on teachers' abilities to achieve balanced nutrition and altering their metabolism. This may partly explain some of the present findings [28, 61].

One of the main strengths of the present study is the inclusion of a representative sample of 1,560 university lecturers from thirteen Spanish universities. This enabled detailed national-level analysis of the phenomenon to provide an overview of the prevalence of burnout syndrome among Spanish university lecturers, as well as its relationship with various lifestyle habits and indicators of physical and mental health. However, the use of non-probabilistic sampling methods, such as convenience sampling, introduces selection bias. Consequently, one of the main limitations of the study is the lack of generalizability of findings, as it cannot be guaranteed that the sample accurately represents the entire population of university lecturers in Spain.

Another significant limitation of the study is its cross-sectional design. Whilst this enables identification of associations between burnout syndrome and various lifestyle and health-related variables, it does not enable causal relationships to be established. In order to address this limitation, future longitudinal studies are recommended, as they would provide a deeper understanding of the relationships between variables and offer more comprehensive insights into burnout within the university context.

It is important to mention that data collection was carried out through self-report questionnaires, which may introduce subjectivity as participant responses are influenced by recall and social desirability bias. Data related to lifestyle habits, such as physical activity, sedentary behavior, and dietary patterns may, therefore, not accurately reflect reality. In the future, it would be beneficial to complement these self-report measures with additional clinical assessments for health indicators and to use more objective tools, such as physical activity tracking devices or dietary records.

Furthermore, the fact that the sample is composed exclusively of Spanish university teachers limits generalizability of findings to other cultural or educational contexts. For this reason, it is suggested that cross-cultural studies be conducted in the future to identify differences in behaviors, beliefs and practices. This would not only enrich understanding of the phenomenon, but would also help to avoid biases and inappropriate generalizations, facilitating comparison and application of findings in different contexts.

In addition, although regression models considered several predictors, the possibility of unmeasured confounding variables should be acknowledged. Factors such as work-life balance, caregiving responsibilities, institutional support and individual coping strategies may also influence the experience of burnout but were not explicitly considered in the present analysis. Including these variables in future research would contribute to a more nuanced and comprehensive understanding of the factors that shape burnout in the academic profession.

Finally, another important limitation of the study pertains to response rate. Although a substantial sample size was achieved, it is possible that bias resulting from the low response rate may have influenced conclusions. However, research such as that conducted by Fosnacht et al. [62] suggests that, even with low response rates of 5–10%, estimates can still be reliable, provided the sample size exceeds 500 participants.

In summary, limitations of the present study highlight the importance of carrying out longitudinal research to analyze the causal relationships between burnout and lifestyle-related factors. Future studies should also examine the role of psychosocial and organizational variables not included in the present analysis, which may also play a significant role in the development and persistence of academic burnout. Likewise, it would be valuable to conduct intervention studies that analyze the effectiveness of programs that seek to improve physical activity, sleep quality and eating habits in order to reduce the risk of burnout in university teachers. In addition, the use of mixed methodological approaches that include qualitative data could offer a deeper insight into the experiences of educators facing burnout.

Conclusions

Present findings indicate that 20.83% of university lecturers suffer from emotional exhaustion, 5.26% from depersonalization and 49.74% from low self-fulfillment. These dimensions relate to different indicators of physical, emotional and social health. Regression analysis revealed that emotional exhaustion is negatively associated with physical, mental and environmental wellbeing, whilst also being positively associated with stress, depression, vocal fatigue and uncontrolled eating. On the other

hand, depersonalization was negatively associated with social relationships and positively associated with stress, depression and vocal fatigue. Further, self-fulfillment was positively associated with social relatedness, mental wellbeing and voice improvement with rest, and negatively associated with vocal fatigue. Likewise, a negative correlation was found between METs and emotional exhaustion, whilst a positive correlation was found with longer sedentary time. In addition, sleep quality, uncontrolled eating and emotional eating were found to be positively related with emotional exhaustion and depersonalization but not with self-fulfillment, with the nature of such relationships instead being negative.

Given the multitude of associations between lifestyle habits, physical and psychosocial health indicators and burnout syndrome, prevention and health promotion strategies in university lecturers require an interdisciplinary and multidisciplinary approach. The high demands of work organization and development to which these professionals are subjected, together with high educational demands, are risk factors for educator health. Thus, it is important that universities become promoters of teacher health as a means of ensuring better wellbeing and job satisfaction within university lecturers who are selflessly committed to their professional role. Future research is required that examines the psychological demands placed on university lecturers and the impact of these on lifestyle and daily health-related habits. Furthermore, this problem needs to be recognized through the design of health promotion programs that foster healthy university work environments.

Abbreviations

MBI-ES	The Maslach Burnout Inventory Educators Survey
WHOQOL	World Health Organization Quality of Life Scale
DASS	Depression, Anxiety and Stress Scale
PSQI	Pittsburgh Sleep Quality Index
TFEQ	Tree Factor Eating Questionnaire
IPAQ-SF	International Physical Activity Questionnaire Short Form
MET	Metabolic Equivalent of the Task
SBQ-S	Sedentary Behavior Questionnaire
VIF	Variance Inflation Factor

Supplementary Information

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Supplementary Material 1

Supplementary Material 2

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Author contributions

MEC wrote the main text of the manuscript, and RJB, EGI, and JMJD oversaw the methodology, data review, and the manuscript.

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Data availability

The data that support the findings of this study are available from [Josep M^a Dalmáu Torres] but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of [third party name].

Declarations

Ethical approval

Written informed consent was requested from the university lecturers. Their collaboration in the present study was voluntary and all participants gave their written consent. The fundamental ethics of the Declaration of Helsinki were respected. In addition, the project was approved by the Clinical Research Ethics Committee of the University of La Rioja.

Informed consent

Informed consent to participate in the present study was requested from participants' before initializing questionnaire.

Competing interests

The authors declare no competing interests.

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