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Eating Behavior and Mental Health in Professors During Covid-19 Pandemic

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Abstract

Social restriction during COVID-19 has resulted in lifestyle changes affecting mental health. Psychological factors influence eating behavior, and teachers tend to be more susceptible to mental disorders. This study aimed to identify the association between eating behavior and levels of anxiety, depression, and stress in professors. It was an epidemiological, descriptive-exploratory, cross-sectional study with 515 Brazilian professors. The data collection instrument was development on the Google® Forms platform, through which questionnaires were applied on sociodemographic, economic and health and work conditions, physical activity, eating behavior, psychological disorder, and personality. Participants with depression symptoms presented binge eating (OR: 2.49; 95% CI: 1.04-5.93), sleep problems (OR: 5.65; 95% CI: 2.71-14.73), and neurotic profile (OR: 12.42; 95% CI: 4.14-37.49). Patients with anxiety symptoms, they showed an increase in eating (OR: 2.63; 95% CI: 1.41-4.90), binge eating (OR: 4.97; 95% CI: 2.22-11.13), sleep problems (OR: 5.81; 95% CI: 2.38-14.20), and neurotic profile (OR: 3.24; 95% CI: 1.65-6.38). Participants with stress symptoms expressed increased eating (OR: 2.78; 95% CI: 1.49-5.21), binge eating (OR: 4.03; 95% CI: 1.85 -8.74), sleep problems (OR: 6.81; 95% CI: 2.63-17.64), and neurotic profile (OR: 2.73; 95% CI: 1.41-5.29). Evidence shows an interconnection between professional occupation, psychological factors, and eating behavior. Finally, it was possible to observe that professors were psychologically vulnerable during the pandemic.

Keywords: COVID-19; Mental Health; Professor; Eating Behavior

Introduction

During epidemics of infectious diseases, such as the COVID-19 pandemic, mental health issues are often insufficiently addressed [1]. Social restrictions, essential for controlling viral spread, have led to significant lifestyle changes, including reduced social interactions and leisure activities, contributing to the onset of psychosomatic disorders [2].

A population study on the COVID-19 pandemic's impact on mental health revealed moderate to severe symptoms of anxiety (28.8%), depression (16.5%), and stress (8.1%) among individuals under social restriction. Similar studies have consistently reported elevated levels of anxiety, stress, and depression during this pandemic [1-5].

Behavior changes, particularly in eating habits, are expected post-pandemic [6]. Psychological factors like depression and anxiety significantly influence eating behavior, often triggering binge eating episodes [7]. Research links periodic binge eating disorders to stress exposure [8].

The COVID-19 pandemic has also profoundly impacted professional and educational spheres. The abrupt shift to emergency educational practices has exacerbated mental health issues, particularly stress, among university professors. These professionals face continuous demands for qualifications, research development, teaching, and community outreach, which contribute to occupational stress. This heightened stress can lead to or exacerbate anxiety and stress, subsequently increasing the likelihood of binge eating episodes [9,10].

Given the significant health implications and potential impact on the quality of life of university professors, further research on this topic is imperative. Despite extensive scientific literature on COVID-19 and mental health, there is a paucity of studies addressing the triad of mental health, binge eating, and the pandemic, particularly concerning university professors. Thus, the objective of this study is to investigate the association between eating behavior and levels of depression, anxiety, and stress in university professors during the COVID-19 pandemic.

Methodology

It is an epidemiological, descriptive-exploratory, cross-sectional study involving a sample of research professors of both sexes, professionally active, from various higher education intuitions in Brazil.

The research was submitted to the Research Ethics Committee Involving Human Subjects. The study included professors from public and private universities who accepted the invitation, signed the Informed Consent Form, and completed the questionnaires in full. Faculty members who did not respond to the invitation or did not complete the questionnaires in full were excluded. Participants who did not fit as professors and the duplicated answers were excluded. Data collection took place from October 2020 to January 2021. Professors were invited to participate in the survey by email, and the informed consent and the link to the questionnaires were sent together.

The Sociodemographic, Economic, Working Conditions and Health data questionnaire, developed by the researchers, addresses identification issues, economic situation, education, and information about professional aspects such as knowledge area, workload, and working time in the institution. Concerning health conditions, the questionnaire portrays preexisting diseases, diagnosed psychic disorders, psychological follow-up, or psychiatric and sleep.

The International Physical Activity Questionnaire – IPAQ, short version, was used to evaluate the physical activity. Is an instrument that allows estimating the weekly time spent in physical activities of moderate and vigorous intensity in different daily contexts. For the physical activity levels classification, the IPAQ was used first [11]. Subsequently, there was a grouping into Active and Non-Active. For Active, it grouped participants classified by the IPAQ into very active and active. As for the Non-active, those classified as irregularly active as A and B, and sedentary.

To assess food intake, the researchers developed two tools, containing questions about weight change, food intake, and

drink intake. In addition, the Binge Eating Scale was used, a widely used instrument cited as useful in tracking possible cases of binge eating. The instrument consists of a scale from 0 (absent severity) to 3 (maximum severity). The final score is the result of the sum of the points for each item, and the results are classified according to the score, in BED severity, moderate and absence of binge eating [7].

The mental health condition was measured throughout the Depression, Anxiety, and Stress Scale - DASS-21. The sum of the 21 items detemines the depression, anxiety, and stress levels, with classification for depression, anxiety and stress as normal, mild, moderate, severe, extremely severe [12].

Finally, the Big Five Inventory was also used (BFI-25), an instrument formed by 25 adjectives, divided into five subscales: extraversion, conscientiousness, neuroticism, agreeableness, and openness, which ones are rated on a five-point Likert scale, ranging from 1 (one point) totally disagree to 5 (five points), totally agree, for each adjective. Finally, the sum is done for each subscale, thus reflecting the level of each of the five major personality factors [13].

The database was built on Microsoft Excel, version 2016, and the statistical analysis was realized on Statistical Package for the Social Sciences (SPSS)® software, version 25.0. Absolute frequencies (n) and relatives (%) were used for descriptive analyses. The bivariate associations between each independent variable and outcomes (depression, anxiety, and stress) were verified by the Pearson Chi-square test with Yates continuity correction (two categories) and linear tendency (more of two categories), raw logistic regression models and adjustments were constructed to analyze the principles of each outcome variable. Initially, the variables that presented p<0,20 in the analyzes (Tables 1 and 2) were taken to the regression models, and their raw values of odds ratio (OR) and 95% confidence interval (CI95%) were presented (Model 1). Afterward, the adjusted models (models 2 and 3) were constructed considering the input blocked at levels of the independent variables. The first level was composed of sociodemographic variables (sex, age, marital status, family income, and presence of children), and the second level was composed of previous psychological problems, professional accompaniment, personality variables, level of physical activity, and sleep problems. Thus, models 2 and 3 were adjusted following the variables that remained significant (p<0,05) in levels 1 and 2, respectively, allowing the identification of associations between eating habits and mental health indicators independent of potential confounding factors.

Results

The research considered 519 professors in 48 higher education intuitions; of these, 04 were excluded, 01 for duplicity, 01 because the individual is retired, and 02 because they are self-employed.

The general characteristics of the sample are most participants were females (63.5%) aged 40 and 45 years old (46.8%) from the South (51%) and North east (42.7%) of the country, from the Health Science area (32%), working as professors for 5 to 14 years (39.9%), with a weekly workload greater than 40 hours (89.7%).

The associations between the adjustment variables and the outcomes are shown in Table 1. The table shows that most participants were female, aged between 40 and 45 years old, married, and with family income between BRL 8,001.00 to BRL 16,000.00 (USD 1,550.00 to USD 3,106.00, as of February 2022 conversion). The participants showed psychological issues prior to the pandemic period, who had already reported professional follow-up; those with a neuroticism profile and sleep problems had higher prevalence for the three outcomes analyzed. In addition, the highest prevalence of depression was observed among the youngest, not married, with lower income, without or not living with children, lower profile of extrovertist and conscientiousness, and physically not active. As for anxiety, the highest prevalence was observed among women with lower income and belonging to a large area of knowledge of Applied Human and Social sciences. Younger and physically non-active participants, on the other hand, presented a higher prevalence of stress.

Table 1: Association of adjustment variables with mental health indicators in professors during COVID-19 pandemic (n = 500)

	Depression		Anxiety		Stress	
Variable	**n**	**%**	**n**	**%**	**n**	**%**
Sex						
Male (n = 181)	22	12.2	**16**	**8.8**	18	9.9
Female (n = 318)	38	11.9	**52**	**16.2**	45	14.4
Age						
25 to 39 (n = 176)	**27**	**15.3**	27	15.2	**28**	**16.0**
40 to 54 (n = 233)	**27**	**11.6**	33	14.0	**29**	**12.7**
55 or more (n = 90)	**6**	**6.7**	8	9.1	**6**	**6.6**
Regions of country						
South and Southeast (n = 255)	31	12.2	36	13.8	32	12.8
North, North East and Certer-west (n =235)	29	12.3	30	12.9	31	13.2
Area of knowledge						
Health, Biological and Agrarian (n = 237)	23	9.7	**26**	**10.8**	30	12.8
Exact, of Earth and Engineering (n = 73)	10	13.7	**6**	**8.1**	6	8.1
Letters, Human and Applied Social (n = 187)	27	14.4	**36**	**19.4**	27	14.8
Time in higher education						
0-4 years (n = 94)	17	18.1	16	17.0	13	14.0
5-14 years (n = 199)	21	10.6	29	14.2	31	15.8
15-24 years (n = 154)	20	13.0	20	13.2	18	11.9
25 years or more (n = 53)	2	3.8	3	5.7	1	1.8
Workload						
0-39h (n = 48)	6	12.5	7	13.5	6	12.0
40h or more (n = 452)	54	11.9	61	13.5	57	12.8
Marital status						
Married (n = 338)	**31**	**9.2**	46	13.5	45	13.4
Others (n = 162)	**29**	**17.9**	22	13.6	18	11.3
Family income						
Up to BRL8,000.00 (n = 96)	**18**	**18.8**	**21**	**21.6**	15	16.0
BRL8,001.00 to BRL16,000.00 (n = 235)	**32**	**13.6**	**28**	**12.0**	29	12.4
More than BRL16,000.00 (n = 157)	**5**	**5.1**	**18**	**11.2**	19	12.1
Children						
Yes, and live together (n = 240)	**21**	**8.8**	30	12.5	29	12.3
No, or do not live together (n = 260)	**39**	**15.0**	38	14.4	34	13.1

Previous psychological problems						
No (n = 321)	**24**	**7.5**	**25**	**7.7**	**26**	**8.2**
Yes (n = 179)	**36**	**20.1**	**43**	**24.0**	**37**	**20.8**
Professional follow-up (physiological or psychiatric)						
No (n = 356)	**33**	**9.3**	**32**	**8.9**	**31**	**8.8**
Yes (n = 140)	**27**	**19.3**	**36**	**25.5**	**32**	**22.9**
Extraversion						
No (n = 231)	**35**	**15.2**	33	14.3	31	13.4
Yes (n = 251)	**22**	**8.8**	31	12.2	29	11.8
Socialization						
No (n = 249)	34	13.7	37	14.7	33	13.3
Yes (n = 248)	25	10.1	30	12.1	29	11.9
Conscientiousness						
No (n = 272)	**46**	**16.9**	43	15.7	41	15.1
Yes (n = 220)	**13**	**5.9**	24	10.9	21	9.7
Neuroticism						
No (n = 255)	**4**	**1.6**	**14**	**5.4**	**14**	**5.5**
Yes (n = 234)	**54**	**23.1**	**51**	**21.9**	**47**	**20.3**
Openness						
No (n = 263)	33	12.5	38	14.2	34	13.1
Yes (n = 229)	26	11.4	29	12.7	28	12.3
Physical activity						
Active (n = 251)	**23**	**9.2**	32	12.5	**23**	**9.4**
Insufficiently active (n = 249)	**37**	**14.9**	36	14.5	**40**	**16.0**
Sleep problem						
No (n = 207)	**7**	**3.4**	**7**	**3.3**	**6**	**2.9**
Yes (n = 293)	**53**	**18.1**	**61**	**20.7**	**57**	**19.6**

Note. Values indicate p < 0,05, second Pearson's chi-squared test.

Table 2: Association of depression in professors during the COVID-19 pandemic

	Depression		
Variable	**Model 1**	**Model 2**	**Model 3**
Age			
25 to 39	1	1	---
40 to 54	0.72 (0.41-1.28)	0.85 (0.45-1.59)	---

55 or more	**0.39 (0.16-0.99)**	0.50 (0.19-1.30)	---
Marital status			
Married	1	1	---
Others	**2.16 (1.25-3.73)**	1.66 (0.90-3.06)	---
Family income			
Up to BRL8,000.00	1	1	1
BRL8,001.00 to BRL16,000.00	0.68 (0.36-1.29)	0.76 (0.40-1.46)	1.11 (0.51-2.41)
More than BRL16,000.00	**0.23 (0.10-0.56)**	**0.33 (0.13-0.84)**	**0.29 (0.10-0.81)**
Children			
Yes, and live together	1	1	---
No, or do not live together	**1.84 (1.05-3.23)**	1.34 (0.70-2.57)	---
Previous psychological problem			
No	1	1	1
Yes	**3.12 (1.79-5.42)**	**3.22 (1.82-5.73)**	**3.02 (1.16-7.89)**
Professional follow-up			
No	1	1	1
Yes	**2.34 (1.35-4.06)**	**2.47 (1.40-4.37)**	0.46 (0.17-1.23)
Extroversion			
No	1	1	1
Yes	**0.54 (0.31-0.95)**	**0.52 (0.29-0.94)**	0.71 (0.36-1.40)
Conscientiousness			
No	1	1	1
Yes	**0.30 (0.16-1.59)**	**0.31 (0.16-0.60)**	**0.29 (0.14-0.62)**
Neuroticism			
No	1	1	1
Yes	**18.83 (6.70-52.92)**	**17.47 (6.19-49.39)**	**12.46 (4.14-37.49)**
Physical activity			
Active	1	1	1
Insufficiently active	1.73 (1.00-3.01)	**1.80 (1.01-3.20)**	0.96 (0.49-1.89)
Sleep problem			
No	1	1	1

Yes	**6.31 (2.81-14.19)**	**5.76 (2.54-13.06)**	**5.65 (2.17-14.73)**
Food reduction			
No	1	1	1
Yes	**2.02 (1.12-3.67)**	**2.05 (1.12-3.78)**	1.85(0.92-3.74)
Increase in food			
No	1	1	1
Yes	**2.15 (1.23-3.76)**	**2.20 (1.23-3.94)**	1.76 (0.91-3.44)
Binge eating			
No	1	1	1
Yes	**5.74 (2.67-12.36)**	**5.78 (2.62-12.74)**	**2.49 (1.04-5.93)**

Note. The values are presented in *odds ratio* (OR) and confidence interval f 95% (IC95%); Model 1: crude; Model 2: adjusted by family income; Model 3: model 2 + neuroticism, conscientiousness, and sleep problem. Values in black indicate $p < 0,05$.

The regression models associated with depression, anxiety, and stress are presented, respectively, in Tables 2, 3 and 4. About depression (Table 2), its reduction and increased food and binge eating were perceptive even associated with adjustment for family income (model 2). However, while the first two lost statistical significance after the insertion of personality variables and sleep problems (model 3), binge eating maintained statistical significance. The participants with binge eating were 159% more likely to have depression during the pandemic than those without binge eating. Besides, it represents a probability of 465% of sleep problems and 1,146% of neuroticism profile. Also, participants with income higher than BRL16.000,00 and with conscientiousness profile presented a protection factor to depression.

In Table 3, the alteration and the increase in food and binge eating were associated with anxiety even after adjusting for sex and family income (model 2). However, after the insertion of the previous psychological problems, neuroticism and sleep problems (model 3), the increase in food and the binge eating remained associated with anxiety. The participants who reported increased food during the pandemic were more than twice as likely to have anxiety, while participants with binge eating were almost five times more likely to have anxiety than their pairs. Besides, the participants with 481% sleep problems, 113% previous psychological problems and 224% neuroticism profile were also more likely to be associated with anxiety.

Table 3: Association of anxiety in professors during COVID-19 pandemic

	Anxiety		
Variable	**Model 1**	**Model 2**	**Model 3**
Sex			
Male	1	1	1
Female	**1.99 (1.10-3.61)**	**1.93 (1.06-3.51)**	1.26 (0.64-2.47)
Family income			
Up to BRL 8,000.00	1	1	1

BRL 8,001.00 to BRL 16,000.00	**0.49 (0.27-0.92)**	**0.49 (0.26-0.91)**	0.73 (0.36-1.49)
More than BRL 16,000.00	**0.46 (0.23-0.91)**	**0.47 (0.23-0.93)**	0.77 (0.36-1.69)
Previous psychological problem			
No	1	1	1
Yes	**3.78 (2.22-6.44)**	**3.42 (1.98-5.92)**	**2.13 (1.17-43.87)**
Professional follow-up			
No	1	1	---
Yes	**3.49 (2.07-5.90)**	**3.17 (1.85-5.42)**	---
Conscientiousness			
No	1	1	1
Yes	0.65 (0.38-1.12)	**0.57 (0.33-0.99)**	0.73 (0.40-1.33)
Neuroticism			
No	1	1	1
Yes	**4.92 (2.64-9.17)**	**5.13 (2.70-9.77)**	**3.24 (1.65-6.38)**
Sleep problem			
No	1	1	1
Yes	**7.56 (3.38-16.90)**	**6.64 (2.93-15.03)**	**5.81 (2.38-14.20)**
Increase in food			
No	1	1	1
Yes	**3.71 (2.10-6.58)**	**3.20 (1.79-5.72)**	**2.63 (1.41-4.90)**
Change in food			
No	1	1	1
Yes	**2.82 (1.50-5.29)**	**2.43 (1.27-4.64)**	1.95 (0.98-3.85)
General food			
Adequate	1	1	1
Inadequate	1.55 (0.91-2.64)	1.59 (0.93-2.74)	1.35 (0.75-2.43)
Binge eating			
No	1	1	1
Yes	**8.86 (4.29-18.30)**	**8.36 (3.95-17.68)**	**4.97 (2.22-11.13)**

Note. The values are presented in *odds ratio* (OR) and confidence interval of 95% (IC95%); Model 1: crude; Model 2: adjusted by family income; Model 3: model 2 + previous psychological problem, neuroticism, and sleep problem. The value of professional follow-up in model 3 is not presented due to an interaction with previous psychological problems. Values in black indicate $p < 0,05$.

Table 4: Association of stress in professors during COVID-19 pandemic

	Stress		
Variable	**Model 1**	**Model 2**	**Model 3**

Sex			
Male	1	1	---
Female	1.52 (0.85-2.72)	1.47 (0.82-2.64)	---
Age			
25 to 39	1	1	1
40 to 54	0.77 (0.43-1.34)	0.77 (0.43-1.35)	0.89(0.49-1.64)
55 or more	**0.37 (0.15-0.93)**	**0.38 (0.15-0.97)**	0.69 (0.26-1.83)
Previous psychological problem			
No	1	1	1
Yes	**2.94 (1.71-5.04)**	**2.84 (1.65-4.91)**	1.74 (0.97-3.12)
Professional follow-up			
No	1	1	---
Yes	**3.06 (1.78-5.24)**	**2.96 (1.72-5.11)**	---
Conscientiousness			
No	1	1	---
Yes	0.60 (0.34-1.05)	0.60 (0.34-1.05)	---
Neuroticism			
No	1	1	1
Yes	**4.33 (2.13-8.12)**	**4.10 (2.18-7.72)**	**2.73 (1.41-5.29)**
Physical activity			
Active	1	1	1
Insufficiently active	**1.84 (1.06-3.18)**	**1.83 (1.06-3.17)**	1.32 (0.73-2.39)
Sleep problem			
No	1	1	1
Yes	**8.04 (3.39-19.04)**	**7.54 (3.17-17.95)**	**6.81 (2.63-17.64)**
Increase in food			
No	1	1	1
Yes	**3.55 (1.96-6.38)**	**3.33 (1.84-6.04)**	**2.78 (1.49-5.21)**
Change in food			
No	1	1	1
Yes	1.91 (1.00-3.64)	1.83 (0.95-3.50)	1.38 (0.69-2.73)
Binge food			
No	1	1	1
Yes	**7.18 (3.46-14.91)**	**6.56 (3.13-13.73)**	**4.03 (1.85-8.74)**

Note. The values are presented in *odds ratio* (OR) and confidence interval of 95% (IC95%); Model 1: crude; Model 2: adjusted by family income; Model 3: model 2 + previous psychological problem, neuroticism, and sleep problem. The value of professional follow-up in model 3 is not presented due to an interaction with previous psychological problems. Values in black indicate $p < 0,05$.

Regarding stress, table 4, the increase in food and binge eating were the food variable associated with the crude model (Model 1). Even after statistical control for age (Model 2), sleep problems and neurotism (Model 3) maintained statistical significance. The participants that reported an increase in food during the pandemic were nearly three times more likely to have stress, while the participants with binge eating were four times more likely to have stress compared to their pairs. Similarly, 581% of sleep problems and 173% of neuroticism profiles were more likely to be associated with stress.

Discussion

The objective of the present study was to verify the association between eating behavior and depression, anxiety, and stress. The findings indicate that the professors started to have increased consumption of food, increased sleep problems, and reduced physical activity, contributing to binge eating, which showed a positive association with depression, anxiety, and stress. The study confirms the initial hypothesis that mental health is linked to binge eating, and these have worsened during the COVID-19 pandemic, which other studies have deferred.

Although social isolation was necessary against the COVID-19 pandemic, it is believed to have generated numerous adverse psychological effects. Thus, throughout the COVID-19 pandemic, studies about the impact of social isolation on mental health have been carried out. These studies have shown a sudden increase in stress, anxiety, and depression levels in populations across the globe. Besides that, it is noteworthy that certain professionals are more vulnerable to developing these injuries due to their occupational activities, as is the case of professional educators [2,14,15].

Among the findings, it is noteworthy that individuals with a profile of neuroticism, sleep problems, and binge eating exhibited a higher prevalence of all three outcomes. Additionally, increased food consumption was more significant in cases of anxiety and stress. Eating behavior may be related to emotional aspects, as carbohydrate consumption is possibly linked to mental health, particularly anxiety disorders, due to the degree of neuroinflammation in the hippocampus. Similar data were found in studies conducted in Spain and China with professionals from different levels of the educational system, reaffirming the susceptibility of this population to these conditions [15-17].

Studies carried out in other countries during the pandemic, using the same instrument, showed a prevalence of depression, anxiety, and stress symptoms, corroborating the findings [18]. The literature exposes a high prevalence of depression, anxiety, and stress in university professors, and these psychosomatic symptoms have worsened during the COVID-19 pandemic [19-22].

Furthermore, a study with professors aimed to identify the adaptation of such individuals and their levels of stress and anxiety during the COVID-19 pandemic verified that half of them presented high levels of anxiety [23]. The anxiety can be related to a professional routine that includes activities beyond the workload performed in the workplace, an example is the professor's routine [24].

Studies realized in Brazil, with adult individuals, showed that 40% were affected by feelings of sadness and/or depression and 50% reported frequent anxiety and nervousness. Nonetheless, sleep problems were aggravated in 50%, and 40% of individuals reported the emergence of sleep problems, and other studies corroborate these data [25].

It is known that sleep is an essential physiological process for the proper performance of the body. Thus, it can be affirmed that quality of life is associated with sleep quality. Sleep disturbance is frequently associated with depression because, in a depressive condition, serotonin disturbances are common to occur, an essential hormone to sleep. A study analyzing some aspects related to the professors' sleep found that more than 60% of the participants had a poor quality of sleep [26]. Studies evaluated the association between reduced sleep quality and anxiety symptoms; the better the quality of sleep was, the lower the anxiety levels found [27,28].

Eating behavior can be influenced by several factors, even psychological aspects such as anxiety and depression can affect food choice, amounts and frequency of consumption [29,30]. Food is associated with the emotions and feelings of individu-

als; therefore, in situations of anxiety, feelings can be confused with hunger, causing the individual to seek relief in food, causing changes in eating behavior [31,32]. The findings of this study allowed us to identify a higher food consumption associated with anxiety and stress. Verticchio and Verticchio (2020), when evaluating the feelings involved with social isolation and its relationship with changes in eating habits during the pandemic, observed a strong relationship between pandemic and greater consumption of hypercaloric foods. A positive association was also observed between increased food consumption and binge eating in the results. These findings corroborate the literature that point to a strong association between psychological factors and eating behavior [7,8].

A literature review during the COVID-19 pandemic noted changes in eating behavior comparing increased consumption of unhealthy foods, binge eating, and increased snacking between meals. The authors justified the attitudes as reflections of feelings resulting from social distancing, such as anxiety, to obtain relief from such feelings [29].

A positive association was identified between the personality and mental health variables in the results obtained. Neuroticism is associated with psychopathologies, whose personality traits characterize neurotic, emotionally unstable, nervous, highly sensitive, anxious, and susceptible to irritability. Therefore, the personality of neuroticism predisposes individuals to psychological disorders, such as anxiety and obsessive-compulsive disorder [33,34].

Consequently, the neuroticism variable demonstrated a significant positive association with depression, anxiety, and stress outcomes, corroborating other studies. As an example, studies show a strong association between neuroticism and the three dimensions of stress, anxiety, and depression. Neuroticism is supposed to predispose individuals to high anxiety levels, and depression is consistently related to higher traits of neuroticism [34-36].

Concerning the data associated with depression, significant results were found in the conscientiousness variable, in which this personality trait acts as a protective factor for depression. Studies report that happiness levels positively correlate with outgoing and conscientiousness personalities, being people more outgoing personality, stable and happy, thus associating a reduced risk of depression [36].

The results obtained are directed towards university teaching staff and the taking of psychological health problems in auxiliary management and targeting of health problems. It is essential to review educational policies at the higher level to guarantee the life of professionals, improve working and research conditions, and adjust workload and quality.

It is important for teachers in terms of services to provide adequate assistance, support and psychological support service. An implementation in important curricular training activities such as training and physical education, health training related to life and sleep activity training, training, coaching, training and technology, health training, quality training for recovery and minimizing harm caused by the COVID19 pandemic.

As far as you know, this is the first educated with university professors relating the COVID-19 pandemic, eating behavior, depression, anxiety and stress. There are few studies with this public, only two studies were researched, both carried out in the Jordanian population.

Among the limitations of this study, it can be pointed out that the data collection carried out over the internet covered the beginning of the first wave of cases in the country. There was no equal participation in the sample by region since underreporting has occurred due to self-reported questionnaires. Nevertheless, there was a significant sample number.

Given the above, the interconnection among professional occupation, psychological factors, and eating disorders, such as binge eating, is evident. Furthermore, the variables of sleep problems, neuroticism personality traits, and previous psychological problems were present in all outcomes.

Conclusions

There was an emergence or aggravation of mental disorders during the pandemic, including depression, anxiety, and stress, directly influencing food consumption. Finally, it is

possible to observe that professors are in psychosocial vulnerability during the pandemic. However, the authors recommend more studies with this population addressing the same aspects, besides structuring the public policies to treat the population during and after the pandemic.

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