**ARTICLE**

# PAIN IN TIMES OF COVID-19: ADJUSTMENT DISORDER IN BRAZILIAN HIGHER EDUCATION PROFESSORS[1]

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**ABSTRACT:** This paper presents the results of longitudinal research to identify professors' adaptation and stress and anxiety levels during the COVID-19 pandemic. We conducted cross-sectional, exploratory, quantitative, and qualitative fieldwork. We used three instruments (the International Adjustment Disorder Questionnaire to identify the adjustment disorder, the State-Trait Anxiety Inventory to measure the anxiety state, and the Teacher Stress Inventory to measure professors' stress) and socio-biographical questions. We analyzed the data through descriptive statistics and logistic regression. We also included an open question for professors to express their feelings openly. We analyzed these testimonies through word clouds, and six were transformed into a video: https://youtu.be/N6q7iz09WWk. To obtain the data, we followed 129 professors for one year during the pandemic. We found that approximately 3 out of 4 professors in the sample experienced adjustment disorder during the data collection period, and 1 out of 2 professors had a high level of state anxiety. The following factors were associated with the probability of not being adapted to the pandemic: being a woman, being married, and having a negative perception of their daily lives after so many restrictions and risks. However, other factors could contribute to professors' adjustment: years of teaching, a positive perception of their physical health, and the non-use of substances such as alcohol, cigarettes, medication, and others. Therefore, we identified the psychosocial vulnerability of professors during the pandemic. Consequently, we highlight the need to develop public and private policies to unequivocally contribute to these individuals' adjustment, especially considering the negative repercussions this situation can have over the years.

**Keywords:** Adjustment disorder, Stress, Anxiety, Pandemic, Professors, Higher Education

# A DOR NOS TEMPOS DA COVID-19: TRANSTORNO DE ADAPTAÇÃO NOS PROFESSORES DO ENSINO SUPERIOR BRASILEIRO

**RESUMO:** Neste trabalho, são apresentados resultados de uma pesquisa longitudinal, orientada pelo objetivo de identificar como ocorreu a adaptação dos professores e seus níveis de estresse e ansiedade durante a pandemia da COVID-19. Assim, realizou-se um estudo transversal, exploratório, de campo, com abordagem quantitativa e qualitativa, em que foram utilizados três instrumentos: IADQ, para identificar o Transtorno de Adaptação; IDATE, para medir o nível de Ansiedade-Estado; e o TSI, medindo o estresse docente, além de questões sociobiográficas. Os dados coletados foram analisados por meio de estatística descritiva e regressão logística. Foi incluída, ainda, uma questão aberta, permitindo que os professores se expressassem livremente sobre seus sentimentos. Esses depoimentos foram analisados por nuvem de palavras, sendo que seis desses depoimentos resultaram na composição de um vídeo: https://youtu.be/N6q7iz09WWk. Assim, 129 professores foram acompanhados por um ano, durante a pandemia, de modo a se obter os dados, e tornando possível perceber que, aproximadamente, três em cada quatro professores da amostra passaram pelo transtorno de ajustamento durante o período de coleta, e um em cada dois apresentaram nível de ansiedade-estado alto. Nesse sentido, verificaram-se os seguintes fatores associados à probabilidade de não estarem adaptados à pandemia: ser mulher, estar casado, e a forma negativa com que percebem o cotidiano após tantas restrições e riscos. Entretanto, foram verificados fatores que puderam contribuir com o ajustamento dos professores, como: tempo de docência, percepção positiva sobre o estado de saúde física, e não utilização de substâncias, como álcool, cigarro, medicamentos e outras. Desse modo, verificou-se a vulnerabilidade psicossocial dos professores durante o período de pandemia, tornando inequívoca a necessidade de desenvolvimento de políticas públicas e privadas que contribuam com o ajustamento dessas pessoas, principalmente pensando na repercussão negativa que essa situação pode ter, inclusive, ao longo dos anos.

**Palavras-Chaves:** Transtorno de Adaptação, Estresse, Ansiedade, Pandemia, Professores, Ensino Superior.

## DOLOR EN LOS TIEMPOS DEL COVID-19: TRASTORNO DE ADAPTACIÓN EN LOS PROFESORES DE LA EDUCACIÓN SUPERIOR BRASILEÑA

**RESUMEN:** Este artículo presenta los resultados de una investigación longitudinal que tuvo como objetivo identificar la adaptación de los docentes y sus niveles de estrés y ansiedad durante la pandemia del COVID-19. Así, 129 profesores fueron asistidos durante un año durante la pandemia para obtener los datos. Fue posible notar que aproximadamente 3 de cada 4 maestros en la muestra experimentaron un trastorno de adaptación durante el período de recolección de datos y 1 de cada 2 maestros tuvo un alto nivel de ansiedad estado. En este sentido, se encontraron los siguientes factores asociados a la probabilidad de no estar adaptados a la pandemia: ser mujer, estar casada y la forma negativa que perciben su vida cotidiana tras tantas restricciones y riesgos. Sin embargo, otros factores podrían contribuir al ajuste de los docentes: el tiempo de docencia, la percepción positiva sobre el estado de salud física y no usar sustancias como alcohol, cigarrillos, medicamentos y otros. Por lo tanto, se verificó la vulnerabilidad psicosocial de los profesores durante el período de pandemia, lo que hace inequívoca la necesidad de desarrollar políticas públicas y privadas que contribuyan al ajuste de estas personas, especialmente considerando las repercusiones negativas que esta situación puede tener, incluso, a lo largo de los años.

**Palabras clave:** Trastorno de Adaptación, Estrés, Ansiedad, Pandemia, Profesores, Educación Superior

## INTRODUCTION

The effects of COVID-19, caused by the SARS-CoV-2 coronavirus, and the pandemic since 2020 have required the adoption of various measures, including social distancing, which has been identified as the principal mechanism for minimizing the spread of the disease. This situation forced higher education institution (HEI) lecturers who primarily taught face-to-face courses to reevaluate and reformulate their working models abruptly, without time for planning, training, or preparation. Consequently, many professors needed to develop skills and abilities to deliver online classes. This required a reevaluation and re-creation of their teaching methods and the preparation of all supporting teaching materials. Moreover, considering that the role of a professor extends beyond mere instruction (Lima & Lima-Filho, 2009), all other duties, including administrative, management, and student service tasks, which were only occasionally mediated by communication and information technologies before, have now been carried out entirely by these means, notwithstanding the limitations faced by both professors and students.

All these new developments, introduced abruptly and unexpectedly, meant that professors had to adapt using only their pre-existing resources in response to the rapidly emerging demands, leading to a stressor that, in addition to being unprecedented, is very persistent since it was uncertain when the recommendations for social distancing would be reassessed. In this context, and based on a psychodynamic analysis, the domestic and work environments have become intertwined and confused, creating a context filled with new, diverse, and persistent stressors without even the opportunity to adopt appropriate tools to alleviate this psychological burden, undoubtedly resulting in suffering and illness.

Society attempts to provide mechanisms to support, assist, and rehabilitate those directly or indirectly affected by fires, floods, earthquakes, and tsunamis. Indeed, during such events, especially for those directly impacted, mental suffering appears to be more legitimate. Therefore, it is predictable that those immediately involved, such as survivors and close relatives of the deceased, would experience extreme suffering, known as post-traumatic stress. Conversely, during pandemics, it is common for health professionals, scientists, and public managers to focus predominantly on the pathogen and the biological risks it poses, attempting to understand the pathophysiological mechanisms involved and propose measures for prevention, containment, and treatment of the disease (Ornell et al., 2020). In these circumstances, the implications for mental health and resultant disorders, both individually and collectively, tend to be underestimated and overlooked, resulting in gaps in coping strategies and an increased burden of associated diseases (Morganstein et al., 2017; Ornell et al., 2020), and likely triggering emotional responses characterized by extreme fear and uncertainty (Shigemura et al., 2020).

This fear of the invisible amplifies anxiety levels universally (Asmundson & Taylor, 2020), both in healthy individuals and those with pre-existing mental health conditions (Shigemura et al., 2020), irrespective of whether they have been directly affected by COVID-19 (Ornell et al., 2020). Additionally, sensationalist headlines and images contribute to anxiety and fear, and the absence of reliable information (i.e., fake news) breeds rumors and misinformation (Asmundson & Taylor, 2020). Moreover, fear and distorted risk perceptions drive negative social behaviors (Barros-Delben et al., 2020; Taylor et al., 2021). These experiences can develop into a range of public mental health concerns and, individually, various distress reactions (e.g., insomnia, anger, extreme fear of illness even in those not exposed), health risk behaviors (e.g., increased use of alcohol and tobacco, social isolation), mental health disorders (e.g., post-traumatic stress disorder [PTSD], anxiety disorders, depression, somatization), and decreased perceived health (Shigemura et al., 2020).

These circumstances raise several questions: Have professors of HEIs shown signs of adjustment disorder caused by the coping measures against COVID-19? And how do the levels of stress and anxiety influence this situation they experience? In light of these questions, this study aimed to identify the adaptation processes and levels of stress and anxiety among professors during the COVID-19 pandemic.

This interest arises because all adaptive capacities are limited and profoundly mediated by variables such as age (Folkman et al., 1987; Graham et al., 2006), gender (Cohen & Wills, 1985; Matud, 2004; Handa & Chung, 2019; Scandurra et al., 2019; Goularte et al., 2021), social support (McCubbin & Patterson, 1981; Alnazly et al., 2021; Agyapong et al., 2021), income (Williams et al., 1997; Santiago et al., 2011), and the subjective interpretation of past experiences (Scandurra et al., 2019). Therefore, the prolonged persistence of a stressor, such as social isolation, tends to compromise professors' quality of life and facilitate the emergence of adjustment disorder, characterized by suffering associated with depression and anxiety, which can persist for up to 12 months after the cessation of the stressor (O'Donnell et al., 2019).

Indeed, during epidemics, the number of individuals whose mental health is affected tends to exceed the number of those affected by the infection (Ornell et al., 2020). Previous adversities have demonstrated that mental health implications can be longer-lasting and more prevalent than the epidemic itself and that the psychosocial and economic impacts can be incalculable, especially when their resonance in various contexts is considered (Rogers et al., 2020).

Therefore, given that the well-being of education professionals is significantly crucial not only for maintaining the quality of instruction but also for the continuity of research activities and the survival of extension initiatives, studies aimed at understanding the impact of social isolation on the mental health of professors are particularly relevant. Such research can enable the identification of appropriate responses, initiatives, and tools (coping strategies) to address any psychological disorders they may experience.

Moreover, identifying populations at greater risk of mental distress and unhealthy coping behaviors can inform policies to combat health inequalities, including enhancing access to resources for clinical diagnosis and treatment. In this manner, it is possible to promote treatments that ensure good mental health conditions, including mitigating anxiety, depression, substance use disorder, and suicidal ideation, thereby reducing the consequences of mental health problems related to the pandemic caused by COVID-19.

## LITERATURE REVIEW

Analyzing stress from a holistic perspective reveals it as the outcome of interactions between the individual, the environment, and the surrounding circumstances (Contaifer et al., 2003). When stress becomes prolonged and exceeds an individual's adaptive capacity, it generally compromises the immune system, reducing resistance and increasing vulnerability to infections and contagious illnesses (Lipp, 2007). Consequently, while the body is weakened, latent diseases may be activated. Following this logic, stress is understood as the state of the organism's post-adaptation effort, potentially causing alterations in response-ability impacting mental and emotional behavior, physical well-being, and interpersonal relationships (França & Rodrigues, 2011).

Expanding on the concept of stress, it is characterized as tension, a deviation from an individual's natural relaxation level triggered by a challenging situation of threat or challenge and can be classified as eustress or distress (Nickel, 2004). Eustress emerges when individuals respond positively to demands, enhancing productivity and creativity in their adaptive responses, according to Nickel (2004). Conversely, distress arises from a negative response, leading to an inefficient adaptive process that may result in exhaustion. This underscores individuals' need, especially professors, to develop coping strategies to mitigate stress-related affliction (Nascimento et al., 2021). Nonetheless, introducing new stressors makes adapting and learning more critical. In such instances, adjustment disorder might occur, the definition of which was notably updated in the 11th edition of the International Classification of Diseases (ICD-11) published in 2018 by the World Health Organization (WHO) (Shevlin et al., 2020). In the ICD-11, adjustment disorder is categorized as a stress response syndrome, alongside disorders such as PTSD, complex PTSD, and prolonged grief disorder. Diagnosis of adjustment disorder in the ICD-11 necessitates identifying one or more stressors, specifying symptoms through worry—excessive preoccupation, distressing thoughts, and rumination related to the stressor—and failure to adapt, indicating significant impairment in crucial life areas (social, familial, or occupational). The characteristics

of adjustment disorder should not meet the criteria for another mental and behavioral disorder (WHO, 2018).

Adjustment disorder is an inappropriate emotional and/or behavioral reaction to a recognizable psychosocial stressor, impacting individuals who struggle to adjust following a stressful event disproportionately to the event's severity or intensity (O'Donnell et al., 2019). Symptoms include stress-related reactions that cause suffering, diverging from socially or culturally expected responses to the stressor, and leading to discomfort. When this effect persists, suffering and hindrance to daily activities become more frequent (Lipp, 2007; Neves, 2007).

Adjustment disorder is described as a dichotomy in psychological and organic functions triggered by a requirement to employ psychophysiological resources against events necessitating defensive action. It occurs when an individual faces a threat to their homeostasis or internal balance and hence mobilizes current resources or aims to develop new ones. Yet, the ongoing nature of the stressor, or its novelty, when current resources are insufficient due to personal vulnerability, lack of coping strategies, or the severity or intensity of the stressor, the individual's physical or mental health can be significantly affected (Lipp, 2007; Alnazly *et al.,* 2021; Goularte et al., 2021; Varma et al*.,* 2021).

Given that the COVID-19 pandemic has placed professors in challenging situations without the necessary resources (knowledge, skills, experiences, or references) for adjustment, the hypothesis concerning this scenario posits:

*H1: Self-reported stress by professors positively and significantly correlates with adjustment disorder experienced during social distancing.*

In addition, although lockdown may be the best course of action in a crisis such as that caused by COVID-19, in order to save lives during the pandemic, social distancing can result in complex mental health challenges. These challenges can extend far beyond concern about the global crisis itself to concern about attitudes, limitations, and adaptation that individuals will have to undergo, as well as the timing and form of reaction from public managers (Brooks et al., 2020; Talevi et al., 2020; Taylor, 2021). The myriad effects can include fear, phobia, anxiety, anger, depression, and stress-related disorders (Talevi et al., 2020).

Thus, factors such as the duration of social distancing, fear of infection, concern about the household's financial condition, receiving timely information, sadness avoidance behaviors, guilt, confusion, anger, and the stigma related to the pandemic can trigger physical and psychological disorders, such as headline stress disorder (Goularte et al., 2021; Talevi et al., 2020; Taylor, 2019, 2021). In these moments, individuals can exhibit a high emotional response, such as stress and anxiety, which can cause physical symptoms, including palpitations and insomnia, and can progress to physical and mental disorders (Brailovskaia & Margraf, 2020; Talevi et al., 2020).

In summary, the relationship between mental health and the pandemic represents a complex and multifaceted issue, likely more marked and persistent than the effects of the infection itself (Taylor, 2019; Lima, 2020; Talevi et al., 2020; Alnazly et al., 2021; Varma et al., 2021). Current literature reports that the pandemic, as well as the measures to contain and prevent it, affect the mental health of those who experience them suggesting that the population may exhibit high levels of psychopathological symptoms (Taylor, 2019; Brooks et al., 2020).

All this social instability results in the emergence or worsening of mental distress, especially anxiety, which tends to increase significantly after the announcement of a lockdown (Taylor, 2019). In particular, individuals who are female, younger, or with little experience, who live alone or with children, who use substances (licit and illicit drugs, alcohol, cigarettes, and others), who maintain a pessimistic view of the situation, as well as those who are more financially affected, appear to be at greater risk of developing mental distress (Brooks et al., 2020; Talevi et al., 2020; Lima, 2020; Varma et al., 2021) — circumstances that have contributed to their inability to adapt to the situation. The aforementioned instability can also result in difficulty sleeping and carrying out domestic activities or concentrating at work, as well as problems with withdrawing from alcohol or other substances or even leading the individual to indulge in the use of these same substances (Talevi et al., 2020). Based on these conjectures, the second research hypothesis is presented:

*H2: Professors' self-reported state anxiety contributes positively and significantly to the adjustment disorder suffered during social distancing.*

## METHODOLOGY

This study employed a cross-sectional, exploratory field design incorporating both quantitative and qualitative approaches to elucidate the research question. The survey utilized comprised four parts, in addition to the International Classification of Functioning, Disability, and Health. The first part collected sociodemographic variables, which also served as control variables. The second segment assessed the perceived stress among educators using the Teacher Stress Inventory (TSI) of Boyle et al. (1995), an instrument that has demonstrated excellent theoretical and empirical validity (Griffith et al., 1999; Silva et al., 2009; Klassen & Chiu, 2010; Nascimento, 2017) with a Cronbach's alpha exceeding 0.8. Consisting of 26 items, participants rated their perceived stress from 0 to 4 (i.e., no stress, mild stress, moderate stress, much stress, and extreme stress), indicating their level of stress concerning each stressor. The Portuguese version, adapted by Silva et al. (2009), reported a Cronbach's alpha of 0.87. Specific terminologies were adapted for cultural relevance to align with the Brazilian context.

The third component evaluated participants' state anxiety levels through the State-Trait Anxiety Inventory (STAI) by Spielberger and peers (Spielberger & Gorsuch, 1966; Spielberger et al., 1970), designed to investigate anxiety in adults without psychiatric disorders. This tool, measured on a 4-point Likert scale, assesses immediate (state) and general (trait) anxiety levels. The STAI was translated and validated for the Brazilian population by Biaggio et al. (1977). In both the State-Anxiety and Trait-Anxiety subscales, the scores vary from a minimum of 20 to a maximum of 80. Scores ranging from 20 to 29 indicate low-intensity anxiety, from 30 to 39 medium-low anxiety, from 40 to 49 medium-high anxiety, and from 50 to 80 high anxiety (Spielberger & Gorsuch, 1966; Spielberger et al., 1970; Ladeira & dos Santos, 2015).

The final part of the survey aimed to identify probable cases of adjustment disorder using the International Adjustment Disorder Questionnaire (IADQ) developed by Shevlin et al. (2020). This instrument consists of nine psychosocial stressor questions, in which the respondent indicated yes or no to inform if they had recently experienced one of these events and six questions in which they indicated the level of concern on a scale of 0 to 4 (not at all/a little/moderately/a lot/extremely). In addition to these questions, the respondents indicated how much (using the same 0 to 4 scale) they perceived that they suffered, considering the last month, from each of the three possible symptoms of adjustment disorder. The identification of probable cases of adjustment disorder considered the following factors: (i) identification of the presence of at least one psychosocial stressor (score ≥1); (ii) endorsement of at least one worry symptom and at least one failure to adapt symptom (mean score ≥2); (iii) appearance of adjustment disorder symptoms in the last month (Shevlin et al., 2020). To translate the instrument, we followed the same protocol adopted by the World Health Organization (https://www.who.int/substance_abuse/research_tools/translation/en/), which consisted of the translation and back-translation method, which, in summary, consists of translation by a native Brazilian Portuguese speaker; critique by a group of three bilingual experts; back-translation by a native English speaker; pre-test and cognitive interview; and production of the final version. The instrument has already been used in contexts such as Italy (consistency of 0.9) (Rossi et al., 2020) and the United Kingdom (consistency of 0.92) (Ben-Ezra et al., 2021). The study attained Cronbach's alpha values of 0.9367 for TSI, 0.9502 for State-STAI, and 0.8828 for IAQD.

The data was compiled from a sample of professors of Accounting courses (undergraduate or graduate, face-to-face or distance learning), who answered the questionnaire at three different times. The sample was drawn up by searching the Brazilian Ministry of Education (MEC) website to identify the HEIs offering, indicating exceptional reliability. Data were collected from Accounting professors in Brazil. Afterward, the respective institutional websites were searched, where the contact information (e-mail) of the professors of these courses was sought; if none were found, a direct e-mail was sent to the course coordinators, asking them to forward the survey across three phases, initially in 2017 to gauge baseline stress, and subsequently in 2020 and 2021 to explore changes in response to the professors via the link in the collection instrument. The first collection was carried out in 2017 to survey the level of

stress perceived at that time (CAAE no: 52534615.2.0000.5149) and descriptive variables, which were included in the first part of the COVID-19 pandemic. Secondly, data was collected for 2020 in June and July and again between September 2020 and March 2021. At the time of collection in 2020 and 2021, information was collected on the TSI, IADQ, and STAI (only the questions related to state anxiety) and other sociodemographic information that was not already distributed via institution websites or course coordinators.

Several statistical methods were employed to analyze the data in the data collection. Cronbach's alpha was utilized to evaluate the instrument's internal consistency, in addition to normality tests, association tests, paired t-tests, and paired non-parametric tests. Furthermore, logistic regression was performed to identify how stress, anxiety, and other descriptive variables could influence the likelihood of professors being poorly adjusted to the pandemic. Logistic model goodness-of-fit tests were also applied to determine the model that best fit the research data. To ensure the statistical robustness of the estimated parameters, Equation 1 was calculated using different approaches to panel data models. To determine the most accurate regression model, three tests were employed: Chow, Hausman, and Breusch-Pagan LM. The model's accuracy was evaluated through its sensitivity and specificity tests, as well as its ROC curve. The data was analyzed using Stata software, and the backward method was chosen for logistic estimation. This method involved removing variables that contributed the least to the model.

Concerning the logistic model, the dichotomous variable considered was classifying the respondents' condition as either maladaptation (1) or not (0), resulting in the probability $P$ from the IADQ. Thus, the model adopted can be represented as Equation 1:

$$P(Y = 1)_{i;t} = \frac{1}{1 + e^{-g(x)}} \qquad (1)$$

Where

$$g(x) = B_0 + TSI_{i;t} + IDATE_{i;t} + Controle_{i;t} \qquad (2)$$

where TSI is the stress score achieved by respondent $i$ at time t and at $t+1$; STAI is the state anxiety score achieved by respondent $i$ at time t and at $t+1$; Control is the respondent's control variable.

The estimations showed that the fixed-effects model did not provide a good fit for the data, as several variables did not vary within the collection period (e.g., gender and marital status). The Wald test was also conducted and indicated that the fixed effects estimation was not statistically significant ($p > 0.1$). In relation to the other two estimations, the Chow and Hausman tests indicated that the pooled model was the best fit for the data. This model was selected as it presented a minimum statistical significance of 10%.

In addition, an open-ended question was included at the end of the questionnaire so that participants could describe the feelings they were experiencing during the pandemic. Approximately 77% of respondents provided their testimonies.

Regarding these statements, a word cloud analysis was conducted for those classified as having adjustment disorder and those who did not. This procedure aimed to compare the feelings expressed by these two groups. To create the word cloud, conjunctions and prepositions, such as "*and*," "*the*," "*for*," "*then*," and "*in*," among others, which would not contribute to the analysis, were removed. Furthermore, only words mentioned at least five times were included. Finally, six testimonies were selected (four from those with the adjustment disorder and two from the control group) to be featured in a video. To maintain anonymity, actors were invited to portray the stories. The video was made available on a public platform: https://youtu.be/N6q7iz09WWk.

**Ethical Considerations**

This study was conducted in accordance with the ethical principles for research involving human beings, as established by the Federal University of Minas Gerais (UFMG) and was approved by the National Health Council (CAAE no. 32025520.7.0000.5149). Before data collection commenced, participants were provided with a free and informed consent form, which informed them of their

voluntary participation, the option to discontinue their participation and request withdrawal of their participation at any point, even after the data had been collected, and of any possible discomfort their participation might cause due to the personal nature of the questions in the instruments and potential triggers. The data were stored on a personal computer accessible only to the lead author.

In regard to the video produced for this research, specific authorization was obtained from the professors who participated in the study and whose stories were selected. The professors who represented these stories were asked to cede their rights to the use of their image and voice.

## RESULTS AND DISCUSSIONS

Based on responses from 129 professors, the demographic profile of the participants predominantly included men (53%) with a mean age of 47 years (SD = 8.8, median = 50 years), self-identified as white (75%), married or in a common-law marriage (70%), having at least one child (76%), with a PhD (53%), specializing in Accounting (49%). Half of the respondents reported the onset or increase in the use of substances such as alcohol, tobacco, or other chemicals during the pandemic (50.3%). Some respondents reported engaging in professional activities outside of teaching (34%), dedicating a mean of 24 hours per week (SD = 17.1, median = 40 hours) to these additional roles. They also shared that they had a mean of 17.9 years of teaching experience (SD = 7.8, median = 17 years) and an estimated family income of BRL 12,000.00 per month (SD = BRL 6100.00, median = BRL 10,500.00).

Upon examining the situation of maladaptation among professors, based on the findings of Shevlin et al. (2020) in the IADQ, we determined that 101 out of 129 professors (78%) were experiencing maladaptation, with no statistically significant difference observed between the number of maladapted professors across the first and second data collections during the pandemic ($p > 0.1$). This outcome highlights the vulnerability of these professors, especially when contrasted with other contexts, such as Italy (22.9%) (Rossi et al., 2021), Poland (49%) (Dragan et al., 2021), and the United Kingdom (15.9%) (Ben-Ezra et al., 2021), wherein the application of the IADQ demonstrated lower levels of maladjustment during the pandemic compared to what was found in Brazil. Additionally, the IADQ revealed that, on average, respondents showed sensitivity to 2.3 psychosocial stressors, exhibited 2.3 symptoms of worry (mean score of 8 points), and reported 2.3 symptoms of adjustment disorder (mean intensity of 7 points). This degree of maladjustment appears to be a reflection of the Brazilian context, supported by evidence indicating that the national context is correlated with high levels of mental distress (Goularte et al., 2021; Ipsos, 2021).

Regarding the respondents' stress levels, this study discovered a mean stress level of 56 (43% of the maximum score; SD = 15.4, median = 57) in the first survey during the pandemic and 56 (43% of the maximum score; SD = 14.7, median = 56) in the second survey during the pandemic, as measured by the TSI. No statistically significant difference was found between the two surveys ($p > 0.1$). In the pre-pandemic survey, the mean for TSI was 81 (63% of the scale; SD = 19.0, median = 81). A test of means indicated that the stress level before the pandemic was significantly higher than during the first and second surveys of the pandemic ($p < 0.001$), with no significant difference between the two pandemical surveys ($p > 0.1$). This trend is consistent with findings from studies by Alnazly et al. (2021) and Varma et al. (2021), which not only reported moderate levels of stress (approximately 50% of the scale) but also observed that levels of perceived stress either remained stable or decreased during the pandemic.

Data on state anxiety (STAI) revealed a mean of 49 points in the first survey (62% of the maximum score; SD = 11.7, median = 51), with 52% of the participants categorized as having a high level of state anxiety. The second survey recorded a mean of 50 points (62% of the maximum score; SD = 12.9, median = 50), with 50% of the participants classified as having a high level of state anxiety. These findings demonstrated no statistically significant difference between the two surveys concerning the level of state anxiety or the categorization as high state anxiety ($p > 0.1$).

Table 1 summarizes the results for the descriptive variables and the respondents' maladaptation, stress, and anxiety. The anxiety levels identified in this study suggest that the sample exhibits higher levels than those reported in other surveys conducted during a similar timeframe. For example, a study in Poland found that 43.9% of participants had high levels of anxiety (Dragan et al.,

2021). Other studies utilizing different instruments also indicated elevated anxiety levels during the pandemic, such as in Bangladesh, with 51% (Ahammed et al., 2021); in Canada, with 46.9% of the sample (Sapara et al., 2021); and among health professionals in Jordan, where approximately 60% exhibited high levels of anxiety (Alnazly et al., 2021).

**Table 1** - Number of maladapted professors and level of stress and anxiety per category of analysis and collection in Brazil, 2021

| Variables | Qty. | Poorly adapted (quantity) | | Stress level (mean) | | Anxiety level (mean) | |
|---|---|---|---|---|---|---|---|
| | | C1 | C2 | C1 | C2 | C1 | C2 |
| Women | 60 | 52 | 49 | 58 | 58 | 52 | 53 |
| Men | 69 | 43 | 52 | 55 | 54 | 47 | 47 |
| White | 97 | 69 | 76 | 55 | 57 | 50 | 51 |
| Black | 4 | 3 | 2 | 57 | 43 | 40 | 33 |
| Brown | 26 | 21 | 21 | 59 | 54 | 50 | 47 |
| Yellow | 2 | 2 | 2 | 61 | 65 | 50 | 45 |
| Married/Common-law marriage | 90 | 68 | 75 | 56 | 55 | 49 | 48 |
| Single | 26 | 16 | 18 | 57 | 59 | 51 | 54 |
| Widowed | 1 | 0 | 0 | 50 | 36 | 42 | 44 |
| Divorced | 12 | 11 | 8 | 57 | 56 | 53 | 54 |
| Changed marital status during the pandemic | 8 | 7 | 8 | 53 | 52 | 55 | 59 |
| Married during the pandemic | 6 | 5 | 6 | 55 | 50 | 56 | 60 |
| Divorced during the pandemic | 2 | 2 | 2 | 48 | 59 | 54 | 58 |
| Children from 0–2 years | 13 | 10 | 11 | 48 | 51 | 48 | 49 |
| Children aged 3–5 years | 67 | 46 | 51 | 56 | 54 | 48 | 48 |
| Children aged 6–11 years | 30 | 24 | 25 | 56 | 55 | 47 | 49 |
| Children over 12 years | 7 | 5 | 7 | 59 | 51 | 53 | 50 |
| No children | 31 | 23 | 24 | 60 | 61 | 52 | 55 |
| Lost activity during the pandemic | 19 | 18 | 17 | 57 | 55 | 50 | 53 |
| Increased activity during the pandemic | 44 | 32 | 36 | 60 | 59 | 49 | 50 |
| Professors whose income has fallen | 17 | 14 | 16 | 58 | 62 | 56 | 55 |
| Public HEI | 62 | 45 | 47 | 55 | 55 | 48 | 48 |
| Private HEI | 62 | 47 | 50 | 58 | 57 | 51 | 52 |
| Both HEIs | 5 | 3 | 4 | 57 | 49 | 43 | 39 |
| Doctor | 69 | 47 | 52 | 56 | 55 | 48 | 49 |
| Master | 55 | 44 | 46 | 57 | 57 | 51 | 51 |
| Specialist | 5 | 4 | 3 | 49 | 48 | 46 | 44 |
| Administration | 34 | 26 | 31 | 60 | 59 | 51 | 53 |
| Accounting Sciences | 63 | 44 | 47 | 56 | 54 | 49 | 48 |
| Economy | 5 | 3 | 4 | 45 | 55 | 50 | 57 |
| Engineering | 4 | 1 | 1 | 54 | 52 | 38 | 40 |
| Other areas | 32 | 25 | 23 | 54 | 56 | 49 | 50 |
| Does not use narcotic substances | 64 | 44 | 46 | 58 | 54 | 50 | 47 |
| Started using during the pandemic | 13 | 8 | 13 | 54 | 58 | 53 | 54 |
| Uses substances but has not increased consumption | 45 | 37 | 29 | 60 | 51 | 51 | 44 |
| Substance use and increased consumption | 33 | 26 | 32 | 57 | 60 | 55 | 57 |
| Stopped using | 11 | 9 | 11 | 49 | 59 | 43 | 53 |
| Has another professional activity | 44 | 35 | 31 | 58 | 55 | 50 | 49 |
| Perceives life as very different during the pandemic | 69 | 53 | 62 | 60 | 59 | 51 | 53 |
| Desires to return to classes immediately | 17 | 14 | 12 | 57 | 57 | 49 | 49 |
| Desires to return to classes in 2021-2nd | 51 | 36 | 39 | 54 | 54 | 50 | 50 |
| Desires to return to classes in 2022 | 17 | 13 | 15 | 59 | 54 | 47 | 47 |
| Does not know when classes should resume | 46 | 32 | 36 | 57 | 57 | 48 | 50 |
| Desires to return only after being vaccinated | 86 | 62 | 70 | 56 | 57 | 48 | 51 |

| Desires to return to classes without being vaccinated | 43 | 33 | 31 | 57 | 53 | 52 | 47 |
|---|---|---|---|---|---|---|---|

**Note:** C1 – The first data collection; C2 – the second data collection.
**Source:** Prepared by the authors based on research data

In addition to the variables presented in Table 1, the following variables were examined: job satisfaction, hours dedicated to subjects including their preparation and adaptation to the remote format, the time spent on other professional activities, self-perception of mental health, whether maladjustment was associated with the number of daily deaths from COVID-19 (Varma et al., 2021), and whether the time elapsed since the start of the pandemic could influence maladjustment (Brooks et al., 2020; Goularte et al., 2021). However, these factors were not significant ($p > 0.1$).

**Table 2 -** Logistic regression - Brazil - 2021

| Variable | Model | | |
|---|---|---|---|
| | Pooled (robust) | Random effects | Fixed effects |
| Anxiety | 0.0416872** | 0.0491303** | 0.0890621 |
| | (0.169362) | (0.228235) | (0.0955087) |
| Female gender | 1.130254*** | 1.325576** | - |
| | (0.3846969) | (0.5275115) | - |
| Married | 1.23061*** | 1.442969*** | - |
| | (0.3909632) | (0.5394813) | - |
| Teaching time | -0.0534826** | -0.0610108** | - |
| | (0.0233921) | (0.0298523) | - |
| Perceived physical health | -0.7531268*** | -0.9236911*** | -35.67693 |
| | (0.259799) | (0.3386178) | (7439.393) |
| Does not use substances | -0.6132107* | -0.77299092* | -19.13492 |
| | (0.3517002) | (0.4624599) | (5181.097) |
| Altered perception of life | 0.9088582** | 1.049308** | - |
| | (0.36661) | (0.4810681) | - |
| Constant | 1.690822 | 2.147.997 | - |
| | (1.686785) | (2.033384) | - |
| Prob> Chi2 | 0.00000 | 0.0024 | 0.00000 |
| Wald test | 0.0000 | 0.0024 | 0.8328 |
| Chow's F-test | 0.091 | | - |
| Hausman test | - | 1.0000 | |

*p*: ***0.01. **0.05. and *0.1
**Source:** Prepared by the authors based on survey data

Consequently, only the significant variables listed in Table 2 were considered for the model, and the odds of occurrence, sensitivity, specificity, and the ROC curve were estimated and presented in Table 3.

**Table 3** - Chance of occurrence and model adequacy tests - Brazil - 2021

| Variable/test | Percentage |
|---|---|
| Anxiety | 4.25% |
| Female gender | 209.64% |
| Married | 242.33% |

| | |
|---|---|
| Teaching time | -5.20% |
| Perceived physical health | -52.91% |
| Does not use substances | -45.84% |
| Altered perception of life | 148.15% |
| Sensitivity | 94.90% |
| Specificity | 37.10% |
| ROC curve | 81.93% |

**Source:** Prepared by the authors based on research data

The fact that stress does not appear as a significant event in the pandemic situation, while anxiety is significantly more frequent and pronounced, has been documented in the literature and may be associated with the average duration of teaching experience (17.9 years, correlation -0.21, *p* <0.001) in this study's sample (Alnazly et al., 2021; Varma et al., 2021). This is because stress is linked to expertise (Nascimento, 2017; Alnazly et al., 2021; Goularte et al., 2021; Varma et al., 2021). Put differently, the experience allowed the professors in the sample to perceive less stress in relation to work demands, demonstrated by a 5.2% reduction in the likelihood of maladjustment for each year of teaching experience.

Consequently, with experience, professors can better adapt to the work environment and challenges, leading to improved resilience (Alnazly et al., 2021; Varma et al., 2021). However, this and other moderating factors did not prevent the significant distress caused by fear (Taylor, 2021). In situations of distancing and isolation, experiences of malaise such as feelings of powerlessness, boredom, loneliness, irritability, sadness, and various fears (e.g., falling ill, passing away, losing one's livelihood, transmitting the virus) are common. These conditions can lead to changes in appetite and sleep patterns, as well as escalate family conflicts and increase the consumption of alcohol or illicit drugs (Lima, 2020; Talevi et al., 2020). Thus, confinement, loss of regular routine, and reduced social and physical contact may have resulted in boredom, frustration, and a sense of isolation, distressing the participants and causing the observed high levels of state anxiety.

Specifically concerning the effect of state anxiety on respondents' maladaptation, a 1-point increase in the perception of state anxiety can increase the likelihood of professors experiencing maladjustment during the pandemic by 4.25%. This finding indicates a significant need for discussion, proposals, and follow-up on the topic to not only aid professors' adjustment but also to alleviate their mental anguish. Consequently, based on the reported stress and state anxiety, H1 of this study was rejected, whereas H2 was confirmed.

As for gender differences, it was found that women are approximately 210% more likely than men to be maladapted during the COVID-19 pandemic, resonating with findings by Brooks et al. (2020), Talevi et al. (2020), and Goularte et al. (2021). This difference may be attributed to specific biopsychosocial conditions, including evidence suggesting that fluctuations in ovarian hormone levels during the menstrual cycle enhance sensitivity to emotional stimuli and may underpin a specific vulnerability to psychological disorders in women (Soni et al., 2013). Moreover, women's neural networks related to fear tend to react more strongly than those in men (Felmingham et al*.,* 2010). In addition to the biological factor, women are socially obligated to assume the caregiving role within the household, resulting in a greater emotional burden for them (Broche-Pérez et al., 2020). This means that women are expected to be more concerned about the well-being of their family members. Furthermore, the closure of schools and childcare facilities has significantly increased the need for childcare, particularly affecting working mothers. Given the demographic profile of the women in the sample—58% are married and 73% have at least one child—the combined cultural and biological pressures they face have significantly hindered their adaptation during the pandemic.

The conclusion that married individuals have a significantly higher risk (242% higher) of poor adaptation during the pandemic corroborates other studies (Brooks et al., 2020; Talevi et al., 2020; Alnazly et al., 2021). One potential explanation for this phenomenon, which needs further investigation, may involve the apprehension of one spouse over the possibility that the other might contract the disease and suffer severe consequences. This concern could amplify feelings of fear and necessitate increased

caregiving efforts, thereby heightening the psychological burden of anxiety and maladjustment. In this context, Pietromonaco and Overal (2020) suggest that significant stressors, like the pandemic, can destabilize marital relationships, leaving them vulnerable. Thus, as per Pietromonaco and Overal (2020), COVID-19 is likely to inflict harm on dyadic relationships (e.g., hostility, distancing, diminished supportive responses), deteriorating the quality of the couple's relationship. These adverse effects may be intensified by the broader pre-existing context within which couple relationships exist (e.g., social class, minority status, age) and their susceptibilities (e.g., emotional insecurity, depression) (Pietromonaco & Overal, 2020).

Considering the survey data, it becomes apparent that self-perceived physical health reduces the likelihood of maladaptation during the pandemic by approximately 53%. This finding is supported by the research of Alonzi et al. (2020) and Cheval et al. (2020). This result is particularly notable because, unlike the survey conducted outside the pandemic context, it was observed that the perception of physical health was not significant ($p > 0.1$) for the mental health of the same participants.

This shift seems to be linked to what has been extensively documented during the pandemic; specifically, individuals with comorbidities faced a significantly increased risk (up to 79% higher chance) of severe complications and mortality rates when infected with the novel coronavirus (Guan et al., 2020; Wu & McGoogan, 2020). Thus, the findings of this study suggest that perceiving oneself as being in a good state of health can provide psychological protection against maladaptation during the pandemic. In essence, understanding that physical health aids in preventing severe outcomes of COVID-19 infection, the belief in one's good physical condition enables better adaptation during the health crisis.

The results related to the non-use of substances align with the findings of Brooks et al. (2020), Talevi et al. (2020), Rogers et al. (2020), and Taylor et al. (2021). Specifically, individuals in the sample who abstained from substance use during the data collection period demonstrated a better adjustment to the pandemic. This represented an almost 46% greater likelihood of avoiding adjustment disorder. Rogers et al. (2020) argue that substance use is linked to individuals' attempts to cope with the negative emotions triggered by the pandemic. However, this coping strategy, aimed at avoiding pandemic-related emotions, prevents the processing of these emotions, consequently hindering the use of positive emotional regulation strategies such as social interaction, physical activity, and the opportunity for adaptive behavioral activation (Rogers et al., 2020; Taylor et al., 2021).

When examining findings related to the altered perception of life and discovering that this perspective can increase the likelihood of maladjustment by up to 148%, it is evident that the sample's perception of their situation during and after the COVID-19 crisis heightened their risk of maladjustment. This conclusion is consistent with the research of Truskauskaite-Kuneviciene et al. (2020) and Brailovskaia and Margraf (2020). Consequently, concern caused by the pandemic or the overwhelming amount of information, which is occasionally inaccurate (Talevi et al., 2020), has resulted in a negative perception regarding the organization of people's lives post-pandemic. This is not to undermine the legitimacy of the respondents' perceptions but to highlight that maintaining a positive outlook, despite adversities, serves as a protective factor against the development of adjustment disorder symptoms and fosters resilience against other mental health disorders (Truskauskaite-Kuneviciene et al., 2020). Maintaining high levels of positive thinking enables individuals to perceive uncertain situations as less stressful, adapt more swiftly to new living conditions, and incorporate learning opportunities into their current circumstances—an adaptive response (Brailovskaia & Margraf, 2020).

Regarding the reports provided by the professors in the sample, Figures 1 and 2 demonstrate the most frequently used words by both groups: "work," "no," "a lot," "classes," "activities," "pandemic," "family," "feel," "relationship," and "home." This indicates common concerns among the two groups. However, a difference emerged in the group of professors without adjustment disorder condition, who utilized more positive terms, such as: "hope," "future," "despite," and "adapting." Conversely, the other group used words such as "routine," "back," "lack," and "return." Notably, the word "COVID" was more prevalent in the group with adjustment disorder, suggesting that those who adjusted better to the pandemic focused more on the future, whereas those who were maladapted appeared more concerned with their current limitations and the nostalgia for their pre-pandemic routine.

Figure 1 - Word cloud from the report of professors without adjustment disorder
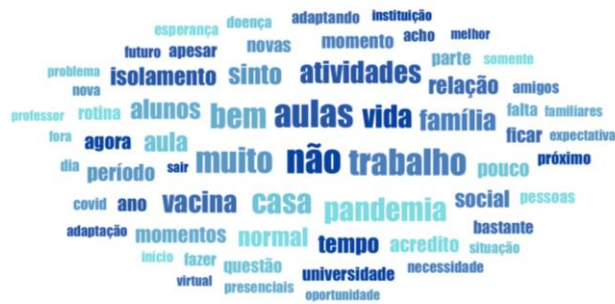


**Source:** Prepared by the authors based on research data

Figure 2 - Word cloud of the report of professors with adjustment disorder



**Source:** Prepared by the authors based on research data

## FINAL CONSIDERATIONS

Our findings support the claims of the psychological state of HEI lecturers as perceived during the COVID-19 pandemic. This study analyzed a group of 129 professors during the year following the declaration of COVID-19 as a pandemic. The main result of this research was the significant number of professors in the sample who were in a situation of adjustment disorder. Approximately 78% of respondents could be identified in this situation. The high prevalence of symptoms observed in the sample indicates that the impact of the COVID-19 pandemic on mental health should be considered a public health problem in Brazil. In other words, health systems must be prepared to offer and implement specific interventions to identify and treat mental health problems (Goularte et al., 2021).

This result was explained, in part, by the high levels of anxiety among the professors. It was identified that 50% of the sample could be classified with high levels of state anxiety, thus exposing the fears that the professors felt: fear of becoming infected with COVID-19, fear of coming into contact with contaminated surfaces, fear of interaction with individuals from abroad (i.e., xenophobia related to the disease), fear of the socio-economic consequences of the pandemic, fear of being constantly bombarded by alarming news, fear of ineffective government responses, compulsive checking and seeking reassurance about possible pandemic-related threats, symptoms of traumatic stress related to the pandemic (e.g., nightmares, intrusive thoughts), among other fears (Brooks et al., 2020; Talevi et al., 2020; Lima, 2020; Taylor, 2021; Varma et al., 2021).

Furthermore, other factors were associated with the likelihood of professors not adjusting to the pandemic, such as being female, being married, and being uncomfortable with the restructuring of life due to numerous restrictions and risks. However, some factors contributed to adaptation, including the length of time teaching, perception of physical health, and abstaining from substance use such as alcohol, cigarettes, medication, and others. The psychosocial vulnerability of professors during the pandemic was thus verified, making it unequivocal that there is a need to develop public and private policies to contribute to these individuals' adjustment, especially considering the negative long-term

repercussions (Ornell et al., 2020; Rogers et al., 2020), particularly on new professionals entering the job market and the potential consequences for the organizations they will join.

It is clear, therefore, that the impact of COVID-19 on professors' health, lifestyle, psychological safety, and well-being is substantial. Hence, the threat posed by the pandemic necessitates innovative techniques to support a large number of individuals in need while respecting the "new normal." Addressing mental suffering is paramount, requiring collaboration among health professionals, administrators, and community representatives. Specifically, establishing an ethically acceptable code for pandemic contexts is critical to bolstering the morale of the academic community.

Specifically, in discussions about returning to in-person activities, concerns regarding the physical and emotional safety of the academic community must be meticulously addressed to ensure that physiological needs, such as the availability of personal protective equipment and safe working environments, are fulfilled. Thus, public leaders must reassure both professors and their families that adequate support will be provided should they contract COVID-19, including medical, financial, and psychosocial assistance. Moreover, HEI leaders should identify sources of anxiety and arrange for periodic, comprehensive assessments by professionals capable of evaluating the biological and psychological risks to the well-being of the academic community.

It is noteworthy that substantial financial investments are not always necessary to assist individuals in adapting during the pandemic. Well-conceived and structured strategies, such as sending short positive messages or self-care information, can significantly aid in better adjustment (Agyapong et al., 2021). Moreover, the promotion of meetings/discussions held by individuals capable of fostering the development of healthy coping mechanisms in response to work stressors, especially with the participation of those diagnosed or suspected of having contracted COVID-19, in addition to providing individual advice on mental well-being and prevention — particularly emphasizing the importance of vaccination and ongoing caution post-immunization — could be implemented without significant financial outlay. For HEIs in particular, this approach is highly viable, given the extensive pool of knowledgeable personnel in preventive care and psychosocial stress management. These professionals could facilitate appropriate adaptation to changes during the pandemic and afterward. In summary, any effort by governments or HEIs to make professors feel welcomed, cared for, and integral will contribute to maintaining or enhancing their well-being (Alnazly et al., 2021; Agyapong et al., 2021). Such policies are advisable to extend to all academic community members, as workplace social support can instill in professionals the sense of being part of a social network, thereby providing the opportunity to forge and solidify human connections.

From this viewpoint, it should be observed that the COVID-19 pandemic, while instilling a sense of vulnerability and helplessness in many, has also uncovered society's capacity to reinvent itself, creating opportunities for learning, coexistence, and collective triumph over adversity. At this juncture, we urge education professionals, bound by highly similar life contexts, to unite in surmounting the detrimental impacts of the pandemic. This unity aims to establish, maintain, and permanently enhance a network of contact and support capable of enduring periods of uncertainty and isolation. It is crucial to remember that it is through the endeavors of professors and researchers that significant progress has been made in curtailing the pandemic's spread, addressing both physical and mental health issues effectively despite formidable challenges and uncertainties. Therefore, we must have faith that the collective experience of fear and anxiety brought about by the pandemic will be surmounted, leaving the teaching community with a renewed appreciation for unity, mutual support, and the importance of science.

Future studies might explore adverse behavioral factors during the COVID-19 pandemic and assess whether elements such as social isolation, lack of academic structure, unemployment, and other financial worries, along with various forms of violence (e.g., physical, emotional, mental, or sexual abuse), contribute additional stress leading to adjustment disorder. Additionally, the effectiveness of intervention and prevention efforts at the community level, including efforts to bolster economic support to alleviate financial strain and establish support networks or other coping strategies, in facilitating better adjustment for professors warrants further examination. A final area for investigation could include the impact on the mental health of the academic community in institutions that have resumed face-to-face activities.

Finally, the interpretation of the results must consider certain limitations of the study. Firstly, this online survey employed a convenience sampling method, which may not yield a representative sample of the broader population. Secondly, relying on self-reported outcomes rather than objective assessments means that the responses could be influenced by recall and social desirability biases. Thirdly, the lack of a pre-pandemic comparison group for some data precludes the ability to determine the pandemic's specific contributions to the observed increase in the prevalence of reported symptoms relative to their typical occurrence within the sample.

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**AUTHORS' CONTRIBUTIONS**

Author 1 - Conception and development, supervision, design and development of the methodology, data collection, data analysis, and writing of the text.
Author 2 - Conception and development, methodological design, critical revision of the text, and addition of significant parts.
Author 3 - Conception and development, methodological design, critical revision of the text, and addition of significant parts.

**DECLARATION OF CONFLICT OF INTEREST**

The authors declare that there is no conflict of interest.