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THE IMPACT OF THE COVID-19 PANDEMIC ON TEACHERS' MENTAL HEALTH: A SYSTEMATIC LITERATURE REVIEW

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Abstract: The COVID-19 pandemic had significant impacts on education, increasing the challenges faced by educators, a category that previously already dealt with problems related to high levels of stress. This article aimed to analyze the mental health of educators during the COVID-19 pandemic, through a systematic review of scientific works published during the period, that evaluated domains such as quality of life, anxiety, depression, stress, burnout and exhaustion in these professionals. From the search for keywords, 1003 articles were obtained, and of these, nine articles addressed the proposed topic and were the object of analysis in the review. The articles were distributed in seven countries, all by survey, with two of them using a longitudinal methodology and seven a cross-sectional one. Only one article evaluated school teachers, the other selected articles examined university professors. The categories of analysis selected were isolation and support, children and family, gender, age, finances and stability, physical health and sleep, comparison between groups and pedagogy. Most participants in the surveys analyzed had high levels of depression, anxiety and stress, and reported an increase in their workload during the pandemic. The populations most subject to the incidence of depression, anxiety and stress were women, younger professionals and individuals with children at home. Furthermore, it was found that support from family and in the work environment are protective factors against the incidence of the aforementioned disorders.
Keywords: Mental Health, Professors, Teachers, Faculty, COVID-19, Occupational Health.

INTRODUCTION

Teachers are one of the categories most subject to stress, as stated by the International Labour Organization (ILO), with stress and Burnout being the main causes of absence from work for teachers. Stress is considered by the ILO as an occupational risk of the profession (Pereiral *et al.*, 2020), and Burnout is a chronic and gradual process of exhaustion, lack of work motivation and reduced productivity. It is an occupational syndrome according to the ICD-11, since May 2019, which, according to the ILO, teachers are at high risk of developing and it may even have a higher incidence in this category than in health professionals (Miguel *et al.*, 2021). Contributing factors to high levels of stress in the profession are: the lack of social recognition and motivation for work; poor working conditions; problems related to the relationship with students (emotional involvement with the student's life problems, conflicts and behavioral problems); high workload (meetings and extracurricular work, numerous classes); constant need for qualification and learning; demands from parents; and issues related to time management. Symptoms related to burnout are problems related to sleep, drug abuse, exhaustion, in addition to common mental disorders, such as mood disorders and stress (Diehl & Marin; 2016).

COVID-19 is a disease caused by the new coronavirus (SARS-Cov-2), which was discovered by doctors in Wuhan, China, in December 2019. The first cases were followed by a vertiginous local increase in infections, having quickly spread to neighboring countries. Thus, in March 2020, the United Nations (UN) declared COVID-19 a new pandemic (Pan *et al.,* 2020). It is a systemic viral infection capable of generating a lethal immune response with frightening transmissibility and infectivity (Chan *et al.*, 2020). With the vertiginous increase in the number of dead and infected, social isolation measures were implemented, making it necessary to close services classified as non-essential and restrict

the movement of people on the street in an attempt to limit the contagion and prevent the collapse of the health network. Thus, suddenly people had their realities completely changed. Such measures, although fundamental, added to the intrinsic difficulties of the lived period, and were responsible for feeding an illness that goes beyond the limits of viral infection: the psychological one (Reynolds *et al.*, 2020). According to Xiang *et al.* (2020) and Ni *et al.* (2020), the number of people who are depressed, anxious or who have experienced a psychological disorder that is directly or indirectly linked to social isolation has greatly increased.

In the Covid-19 pandemic, education underwent a sudden change in a short period of time, with the interruption of face-to-face classes and the need to adapt to the remote model. Many of the teachers had no previous knowledge of remote teaching, and had no time for preparation. Students could also feel the effects of change and need more attention from teachers, which caused an increase in workload (Melo *et al.*, 2020).

Given the challenges that education faced in the pandemic, with increased demands towards the educators, it was necessary for teachers to learn how to use technologies and their creativity to adapt classes to the new remote teaching model. Thus, in the case of educators, in addition to the emotional demands experienced by everyone during social isolation and the pandemic, they also had great challenges related to changes in their work style. Furthermore, the uncertain context generates fears and anguish, exacerbating the emotional difficulties that existed even before the pandemic (Santos, 2020; Faustino & Silva, 2020).

The training and new skill requirements during the rapid transition to homeschooling and the feeling of unpreparedness for the new format of activities made teachers more vulnerable to increase in stress during the pandemic (Pereiral *et al.*, 2020). Stress can be understood as the emotional result of stimuli that exceed the individual's coping mechanisms (Sadir *et al.,* 2010). Occupational stress

> "can be conceptualized as a process in which work requirements are perceived as stressing variables, generating situations that transpose the individual's coping repertoire and resulting in numerous negative implications" (Weber *et al.* , 2015, p. 41)

Stress has an impact not only on the teacher's quality of life, health and social relationships, but also on their professional performance (Weber *et al.*, 2015). By affecting the educators' abilities to work, stress becomes a systemic problem in education, and thus an issue of social relevance. Hence, it is necessary to value teachers and their work, and to also consider their quality of life, especially in the context of the COVID-19 pandemic and the changes in education resulting from the social isolation necessary for its containment.

The stress resulting from the pandemic did not select its victims, being considered a public health problem, but categories that were already vulnerable to it had its effects amplified, and this is the case of educators. Therefore, evaluating stress management strategies for educators is essential in the current context.

METHODS

To assess mental health and the different strategies used to deal with stress for educators, a Systematic Review was carried out, according to the PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analyses). For this present Review a survey of articles was carried out utilizing the databases of the Virtual Health Library, BDENF, *Coleciona SUS* (Brazilian Unified Health System Collection), IBECS,

Psychology Index, LIPECS, LILACS, MEDLINE, PUBMED and Cochrane. The terms used for search were the following health descriptors (DECs): *((faculty) AND (Mental Health)) AND ((coronavirus) OR (Covid-19) OR (SARS-CoV-2))*. Thus, 198,271 articles were initially found, then the filters were applied: articles published between January 1, 2020 and September 5, 2021 (delimiting the period of the pandemic and the research period), in English and Portuguese. There remained 1003 articles, of which 18 were duplicates. From then on, 32 articles were selected, and after reading the abstracts, 10 articles were excluded. Then, 22 articles were selected to be read in full, of which 9 entered in the final review. Only original studies were chosen for the final review, with or without a control group, presenting among their studied population teachers at different levels of the education system. Secondary sources such as reviews, opinion articles, comments, case reports, case series and retrospective studies were excluded. Articles containing only the abstract, animal studies, as well as articles that did not discriminate between the profession of the groups interviewed in their reports or only spoke of measures to improve quality of life and mental health.

For all selected studies, the risk of bias was assessed using the "*Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies*" of the *National Institutes of Health* (NIH), categorizing the studies as "Good", "Fair" or "Poor", as shown in Fig. 1 (National Heart, Lung and Blood Institute *et al.*, 2014; Ma *et al.*, 2020).

Then, data collection was carried out through a complete rereading of the selected articles, extracting information on: mental health, changes in routine, gender, children and family, finances, health and sleep, pedagogical adaptations and age. In terms of data collection methods, all the articles found used online questionnaires, by survey, which was already expected, due to social isolation measures. Then, the data collected was checked through rereading for ratification of the information. Finally, the findings were grouped for comparison and descriptive review, along with a comparison with the literature findings.

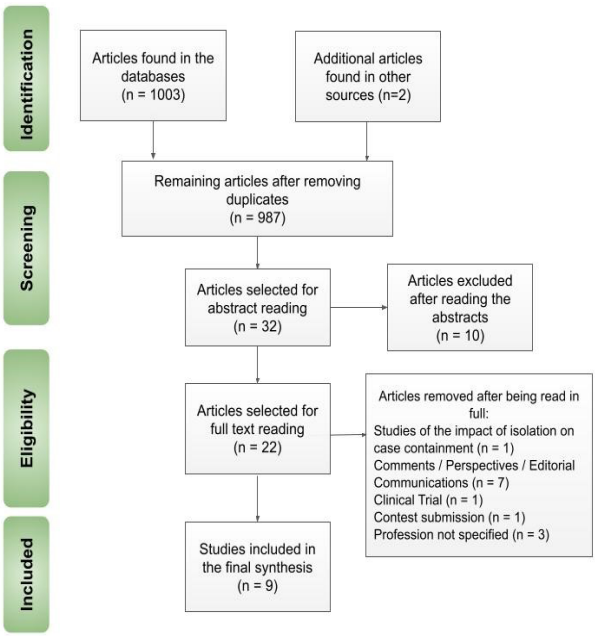

Figure 1. Methodology.

Source: Moher, D.; Liberati, AA, Tetzlaff, J., & Altman, DG (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. BMJ , v. 339, p. b2535.

RESULTS

Nine articles were selected for analysis, originating from seven countries. Two of them were longitudinal and seven Cross sectional, all of which the data was collected using a questionnaire. Most works studied university professors, only one article studied school teachers. Furthermore, most of the selected articles interviewed Health Sciences professors, and many compared professors with other populations, such as university students, university administrative workers and researchers.

The papers analyzed mental health, pedagogical adaptations, work experience, adaptation to the situation and factors that could contribute to mental health. Work-life balance, intention to resign or reduce working hours and acceptance or not of leadership positions were also taken into account. In terms of mental health, they evaluated anxiety, depression, *burnout*, quality of life and resilience.

The study found an increase in workload during the pandemic, followed by work exhaustion, along with difficulties in separating work tasks and household assignments, significant changes in routine and need for adaptation. In addition, the imposed social isolation makes it difficult to receive social support, which is essential for well-being. Hence, resilience was an important protective factor, according to Keener *et al.* (2021).

According to Evanoff *et al.*'s study in the United States (US) in 2020 with 870 university professors, comparing them to university employees (n=4470) and postdoctoral researchers (n=210), 67.8% of faculty (p<.001) reported worsening in their general well-being related to life changes brought about by the COVID-19 pandemic while 69.7% reported worsening in their mental well-being

Study	Country	No	Study Design	Population	Evaluation Mode	Study Quality
Croll, L *et al.*, 2020	US	91	Cross sectional	Teachers and Administrative Workers	Survey	Good
Evanoff, B *et al.*, 2020	US	870	Cross sectional	Teachers and Administrative Workers, Doctoral Students	Survey, DASS-21, PFI, FSSB-SF	Good
Jojoa, M *et al.*, 2021	Spain, Colombia, Chile, Nicaragua	554	Longitudinal	Teachers and Administrative Workers, Students	Survey	Good
Keener, T *et al.*, 2020	US	52	Cross sectional	Nursing Professors	Survey, WHOQOL-BREF, CD-RISC-10	Good
Lizana, P *et al.*, 2021	Chile	63	Longitudinal	School teachers	SF-36, Survey	Good
Matulevicius, S *et al.*, 2021	US	1186	Cross sectional	Professors of Medicine	Survey	Good
Miguel, C *et al.*, 2021	Portugal	51	Cross sectional	Professors of Medicine	Survey, CBI, Resilience Scale, DASS, SWLS, Socio- demographic Questionnaire	Good
Odriozola-González, P *et al.*, 2020	Spain	2530	Cross sectional	Teachers and Academic Staff	Survey, DASS, IES	Good
Salazar, A *et al.*, 2021	Spain	423	Cross sectional	Administrative Team, University Professors, Researchers	Survey, DASS-21, BIPQ, EMAS, Brief COPE-28	Good

Table 1. Studies Included.

Table 1. Articles in the review and their Risk of Bias.

(p=.63). In addition, 15.9% of teachers had moderate to severe depression according to the Depression, Anxiety and Stress Scale - 21 Items (DASS-21), (p=.36), moderate to severe anxiety (p=.02, 10%), moderate to severe stress (p=.01, 12.6%) and high work exhaustion (49.7%, p<.001). Similar percentages were found in comparison groups, i.e. university staff and postdoctoral researchers. Statistically significant factors related to decrease in well-being and higher levels of stress, anxiety, depression and work exhaustion, in all analyzed groups, were: insufficient supervisor support, a greater number of family/domestic stressors and age <40 years old.

In a longitudinal survey carried out in 4 countries (Spain, Colombia, Chile and Nicaragua) with 554 university professors, using the LockedDown survey, developed by *The London School of Economics and Political Science,* in different weeks at the beginning of the pandemic, Jojoa *et al.* (2021) found that levels of depression and anxiety increased over the weeks (weeks 1-2=39.9%, weeks 3-4=50.7%, week 5 onwards=51.3%), and that quality of life and stress remained the same or worsened.

Keener et *al.* (2021), in a study in the US, with 52 Nursing university professors, using the WHO Quality of Life-BREF and Connor-Davidson Resilience Scale 10, found that the psychological domain of quality of life had low scores in 19.23 % (α=.89) of respondents, and on the resilience scale, 17.30% (α=.90) of participants had low scores.

It was also found that the level of resilience was the variable most positively related to good quality of life and that a higher quality of life in one of the domains measured by the WHO-QoL-BREF (physical health, mental health, social relationships and environment) was associated with higher quality of life in the other domains, thus indicating that a greater ability to adapt to changes and challenges helped maintaining good levels of quality of life.

Lizana *et al.* (2021), in a longitudinal study in Chile with 63 school teachers, measuring quality of life before and after the containment measures, using the *Short-Form 36 Health Survey* (SF-36) found that before all quality of life scores were higher than during the pandemic (p<.01), as were mental health scores (M=45.7/36.8, p<.001). During the pandemic, the SF-36 topics with the lowest scores were social functioning (M=35.2) and mental health (M=36.8).

Miguel *et al.* (2021) carried out a cross-sectional study with 51 university professors from a medical school in Portugal, using the Copenhagen Burnout Inventory (CBI), Depression, Anxiety and Stress Scales (DASS), Satisfaction with Life Scale (SWLS) and Resilience Scale. Most of the sample had normal levels of depression (82.4%), anxiety (84.3%) and stress (78.4%), and moderate (49%) or high level (37.3%) of resilience. As for Burnout, they showed low levels of burnout related to student activities (84.3%), work related (62.7%) and in the personal area (58.8%).

Burnout in personal life was the variable correlated to psychological problems with the highest significance, being present in 41.2%. Relating the variables by multivariate linear regression, it was found that satisfaction with life, change in sleep patterns and stress explained approximately 56% of the variance in burnout related to personal life. In relation to work-related burnout, 55% of the variance was explained by the variables stress and resilience.

Odriozola-González *et al.* (2020) carried out a cross-sectional study in Spain, with 2530 university professors, dividing them according to areas of knowledge (Arts and Humanities, Sciences and Health, Social Sciences and Law, Engineering and Architecture) and

comparing them with the administrative team of university, using the DASS-21 and the Impact of Event Scale (IES). They found that 34.19% study participants had moderate to severe levels of depression, 28.14% of stress 21.34% had anxiety. Moreover, 50.45% had moderate to severe scores in the IES scale (≥ 26).

Salazar *et al.* (2021), in a cross-sectional study with 423 Spanish university professors and researchers, comparing them to the university's administrative team, using the DASS-21, BIPQ (Brief Illness Perception Questionnaire), EMAS (*Escala Multidimensional de Apoyo Social Percibido*), Brief-COPE-28 and sociodemographic data, found that the prevalence of levels of depression (M=4.7), anxiety (M=3.2) and stress (M=8.0) were within normal levels according to DASS-21. This article also analyzed the means of dealing with the situation among the participants, the most common being Acceptance (M=6.4, range: 2-8), Active Coping (M=5.6) and Planning (M=5.3) and the least common were Substance Use (M=2.2) and Denial (M=2.6).

Correlating the DASS-21 data with the *Brief*-COPE, it was found that depression levels decrease when certain positive coping strategies (divided into emotion-based and problem-focused strategies as distinct from dysfunctional strategies) such as positive reframing and acceptance are used. However, levels of depression increase when dysfunctional strategies are used, but also when certain functional strategies such as emotional support, instrumental support and religion are used.

Anxiety and stress decreased with acceptance and increased with emotional support, instrumental support, religion, and dysfunctional strategies. Mood related to higher anxiety scores, while depression and stress related to anxiety scores. As for stress, coping, planning and venting strategies were related to higher scores, and denial to lower scores. Stress was greater when any coping strategies, adaptive or not, were used. Denial was related to lower levels of stress, which Salazar *et al.* (2021) relates to the concept of hedonistic non-involvement. By denying and avoiding information, it is possible to maintain momentary well-being, thus reducing stress levels.

As for the teachers' routine, 50.4% of the participants in the study by Evanoff *et al.* (2020) reported increased workload with the pandemic. Along the same lines, Jojoa *et al.* (2021) and Keener *et al.* (2021) found that changes in work routine, and difficulties in separating work tasks from household activities were disruptive. Keener *et al.* (2021) found that having a separate space in the house for work activities, with the necessary materials such as scanners, printers and a good internet connection was related to better levels of resilience and quality of life in the environment domain.

Still regarding the influences of the physical environment, Salazar *et al.* (2021) found that those teachers who did not have open spaces such as balconies or patios or whose homes were smaller had higher scores for depression, anxiety and stress. This correlation may be due to sunlight and proper ventilation, more possibility of separating leisure and work time and more space for privacy, which a larger environment allows.

DISCUSSION

Even before the pandemic, teachers had lower quality of life, which worsened with changes resulting from the pandemic (Lizana *et al.*, 2021). The current health crisis causes important changes to social activities, notably: prolonged mandatory quarantine time, distance learning/working, and limited social interaction (Frank, 2020). These changes

brought more occupational stress, decreased research productivity (39%), delayed manuscript submissions (29%) and decreased academic opportunities for professors (23%) (Matulevicius *et al.*, 2021). Based on the articles, the categories selected for analysis were as follows.

ISOLATION AND SUPPORT

Salazar *et al.* (2021) found that when social support decreased, levels of anxiety, depression, and stress increased, but most workers reported good social support (EMAS – M=70.53, range: 12-84).

Many university workers, according to Croll *et al.* (2020) were living far from their families, due to fear of infecting their relatives. It is important to point out that since the sample was from a medical school, the professors commonly also had clinical work ties, while social isolation due to lockdown is a risk factor for the appearance of depressive symptoms (Salazar *et al.*, 2021). On the other hand, those who did not leave their families had the fear of bringing the disease to their families as a stressor.

Interesting data was found by Evanoff *et al.*, (2020): workers' perception of supervisors' support for family issues, which demonstrates the organization's support for personal issues, reduced stressors related to family/ domestic life and financial security, and reduced conflicts between work and family, improved well-being and job satisfaction. This indicates that institutional measures can be implemented to improve teachers' mental health.

CHILDREN AND FAMILY

Before the pandemic, 17% of teachers with children were considering resigning, compared to 9% of teachers without children. Since the pandemic, 29% of teachers with children and 16% of those without children (all p<.001) have considered resigning. Demonstrating that since before the pandemic, teachers with children had a greater intention to leave their jobs, and since the pandemic, there has been a significant increase in the intention to leave work in both groups, keeping the previous proportions in the end, despite the overall increase (Matulevicius *et al.*, 2021).

The presence of children at home was a significant stressor in most studies (Jojoa *et al.*, 2021; Keener *et al.*, 2021; Matulevicius *et al.*, 2021). Stress related to remote schooling, child care and setting boundaries with them in relation to the work routine were mentioned. Only Evanoff *et al.* (2020) found that having children at home would be a protective factor for symptoms of anxiety and depression.

A study cited by Matulevicius *et al.* (2021), found that workers with children increased their hours of homework and childcare by 27 hours a week. This increase in weekly workload may explain the results, with a greater number of teachers in the Pandemic who considered leaving their jobs because of stressors related to work-life balance and childcare (133 [14%] vs 225 [23%]; P < .001).

Regardless of the pandemic, teachers with children were 3 times more likely to turn down leadership opportunities because of child care or difficulties with work-life balance (Matulevicius *et al.*, 2021). Finally, the stress related to caring for older family members and the fear of infecting them with the virus was also mentioned (Evanoff *et al.*, 2020; Jojoa *et al.*, 2021).

GENRE

Another topic that emerged in most of the articles was how the pandemic and changes in the work routine affect individuals according to their gender, both in productivity at work and in mental health. Women had higher levels of anxiety, work-related exhaustion, and less quality of life (Evanoff *et al.*, 2020).

Lizana *et al.* (2021) found that before the pandemic, the results in the areas of quality of life according to the SF-36 scale were close (difference in the average value of around 2 points), whereas, despite both genders having lower scores in the pandemic period, the difference between them widened in some categories, up to 5 points.

> "In men, there were statistically significant differences in the dimensions of role limitations due to physical problems, general health perceptions, social functioning, and mental health ($p < 0.05$). However, among women, every dimension and summary measurement presented significant differences (all $p < 0.05$)." (Lizana *et al.*, 2021, p. 6).

Lizana *et al.* (2021) hypothesizes that one of the reasons for the greater impact on women's quality of life compared to men would be the large amount of domestic responsibilities assumed by them or socially instituted. They also mention that in a recent study in Chile female teachers had more work-related exhaustion and less engagement than male teachers, regardless of having children in the house. Studies from before the pandemic already indicated that women of working age were more likely to experience stress than men.

A study cited by Matulevicius *et al.* (2021) indicates that women with young children had a 4 to 5-fold decrease in their working hours in their jobs, compared to men with children. Differences in pay, promotion and work distribution especially affect female doctors, leading them to reduce their working hours to part-time or leave their careers, even before the pandemic. Female professors at the medical school analyzed in the study by Matulevicius *et al.* (2021) were nearly twice as likely to consider quitting their jobs compared to before the pandemic (154 [28%] vs 94 [17%]; P < .001). In this study there was no significant difference between men with and without children, before or after the pandemic, regarding the intention to leave work (before: 24 [12%] vs 10 [6%], P = .03; since the pandemic: 34 [17%] vs 21 [12%], P = .21) or considering leaving or having already reduced working hours to part-time (previously: 15 [8%] vs 29 [16%], P = .009; since the pandemic: 29 [15%] vs 20 [11%], P = .33). But men with children were more likely to deny leadership opportunities because of conflicts between life and work, both before: 41 [21%] vs 7 [4%], *P* < . 001 and since the pandemic: 43 [22%] vs 9 [5%], (p< .001). As for academic productivity, researchers with children aged 5 and under have had less productivity since the beginning of the pandemic, women with children being affected twice as much, which opposes the trend of increasing female academic representation and gender equity previously observed (Matulevicius *et al.*, 2021).

AGE

Teachers younger than 45 years had a significant decrease (p<.05), when comparing before and after, in all quality of life variables of the SF-36 QoL Scale, except for function limitations due to emotional problems (p =.19). Teachers aged 45 and over had a significant decrease in half of the categories (function limitations due to physical or emotional problems, vitality, mental health and summary of the mental component, p < 0.05) (Lizana *et al.*, 2021).

Salazar *et al.* (2021) found a relationship between workers' age and concerns about losing their jobs. Younger workers were more likely to fear losing their jobs (average age of those who feared losing their job: 45 years x average age of those who were not afraid: 52 years; p<.001). This may be associated with the fact that the average age of workers with temporary contracts was 30-40 years old, while those with permanent contracts had on average over 49 years (p<.001).

FINANCE AND STABILITY

Financial stability was another topic widely discussed in the analyzed articles, presenting itself as a stress-causing factor (Evanoff *et al*., 2020; Keener *et al*., 2021), and it was pointed out that an income lower than 70,000 USD per year was associated with higher levels of stress, anxiety and depression (Evanoff *et al*., 2020). Even so, in Keener *et al*. (2021), quality of life concerning the environmental domain, acceptable living conditions and adequate transportation, was helped by financial stability.

PHYSICAL HEALTH AND SLEEP

As for physical health, for Salazar *et al.* (2021), 80.5% of the sample said they had the same health status as before the pandemic. As for health problems 41% of subjects had an increase in chronic pain during the lockdown. In addition, worse perception of illness and history of chronic illness were linked to higher levels of depression.

A constant concern among the subjects was also the fear of infection by the virus, either personally or in family members (Evanoff *et al*., 2020).

Trouble sleeping at night was linked to higher levels of depression, and depression levels decreased in people who slept 9 hours or more a night. Also, 88.2% of the sample slept between 6 and 8 hours, 48.9% had problems when sleeping and 42.8% had difficulties sleeping and 23.8% had lockdown related dreams (Salazar *et al.*, 2021).

Changes in sleep patterns lead to fatigue, drowsiness and exhaustion and can increase the risk of burnout (Miguel *et al.*, 2021). In the study by Miguel *et al.* (2021), the sleep variable caused higher levels of personal burnout (12.69 points higher in those with changes in sleep pattern) and student activity-related burnout (10.81 points higher in teachers with changes in sleep pattern).

On the other hand, experiences such as stressful events, also lead to higher depression levels; affect quality and patterns of sleep, as well as the content of dreams. Thus, the relationship between stress, anxiety, depression and sleep patterns, although it is known to exist, it is not possible to define the causality of one in relation to the other, and it is more likely that there is a closed loop feedback mechanism between sleep and mental health (Salazar *et al.*, 2021).

COMPARISON BETWEEN GROUPS

The study by Odriozola-González *et al.* (2020) compared professors from different fields of study and found that those in the Humanities and Arts had higher levels of anxiety, depression and stress, as well as concern about the social situation, compared to those in Health and Sciences. These, however, had higher anxiety levels compared to professionals in Engineering and Architecture. Also, teachers had significantly lower levels of depression than students, but commonly had more worries.

Moreover, medicine and nursing professors with clinical ties had first-hand experience of the suffering caused by the virus, which was a contributing factor to the worsening of their mental state. Although none of the articles had psychology professors as a population, we could infer that they would also be more prone to detriments to their mental health due to pandemic related demands in any of the psychologist's possible areas of activity.

PEDAGOGICAL ISSUES

As for the challenges transitioning to remote teaching, in the study by Jojoa *et al.* (2021), 50% of the teachers said they preferred the face-to-face model, but that the distance model is possible. In addition, 37% of them said that the distance model had a negative impact on their professional

experience, while 23% said that the impact of switching to this model was positive, and 35% said there was no impact at all. Lizana *et al.* (2021) mentioned the term "techno stress" describing the negative effects on people's behavior caused by technology.

Miguel *et al.* (2021) mentions the lack of technical skills, institutional support and motivation, as well as weak bonds between teachers and students as obstacles to adapting to the new teaching model. Of the study participants, 19.6% agreed with the decision to close higher education establishments, 33.3% were neutral and 47.1% disagreed. It is worth mentioning that the questionnaire was available between the end of June and the end of July 2020, and that teaching activities were suspended in Portugal (site of study) on March 16, 2020.

Those who said they did not agree with remote learning argued the impossibility of knowing when the pandemic would end, leading to the need to face the situation instead of establishing temporary protection measures. Thus, they said that the best would be to return to face-to-face classes with safety measures, or the hybrid model, with theoretical classes remotely and practical classes in person. Regardless of whether or not they agreed with closing educational institutions, most participants considered distance education to be unfeasible in the long term, and should only be used as a temporary measure or a complementary resource.

Other distance education challenges were the lack of socialization, especially between teachers and students, and the consequent dehumanization of teaching. In addition, teachers feared an increased risk of mental illness related to this situation, and out of concern for students' mental health, they avoided overloading students with activities, in order to prevent burnout and to safeguard their mental health. They also reported difficulties balancing this with effective learning.

Regarding class dynamics, the obstacles mentioned were the difficulty of motivating students to participate, students having their cameras turned off and the impossibility of practical classes. Another issue was testing the students, since the possibility of cheating during traditional tests carried out at a distance is a concern for the effectiveness of the evaluation.

As for the advantages of remote teaching, while some professionals answered that the only advantage of the model is having classes during the lockdown, others pointed out the flexibility (easier to have guest speakers, more schedule flexibility, comfort, no need of displacement, possibility of staying at home for students and teachers from other cities) and opportunity for pedagogical innovation (more diversity of materials, the possibility of recording classes, more autonomy and responsibility for students), and, of course, it was also mentioned as advantageous as a containment measure to control the pandemic.

As for suggestions of pedagogical solutions, surprisingly, many of the study participants said that a pedagogical adaptation to the new model was not necessary, due to the brief return to the face-to-face model. Others said that the hybrid model should be further explored and developed, seeing that the practical experiences are irreplaceable. They also mentioned the use of active pedagogies, the use of materials such as videos and keeping the cameras on during class.

This pedagogical adaptation requires a lot of extra work from the teacher planning lessons, studying materials, extra support for students and learning technological skills (Miguel *et al.*, 2021; Melo *et al.*, 2020). For this, institutional support is essential,

mentioned as a factor that helps to achieve a better balance between personal and work life (Evanoff et al., 2020).

CONCLUSION

Through this review, it can be seen that in times of health crisis such as the Covid-19 pandemic, the difficulties faced by teachers are at great risk of being exacerbated. Understanding how teachers' mental health was affected by the pandemic is essential for planning interventions aimed at this population. Most of the survey participants analyzed had high levels of depression, anxiety, stress, and reported an increase in their workload during the pandemic.

The populations most at risk of depression, anxiety and stress were women, younger professionals and individuals with children at home. In addition, family support and support at the work environment were found to be protective factors against the incidence of the above mentioned disorders (Salazar *et al.*, 2021). Institutional understanding regarding the effects of the conflict between personal life and work during the pandemic on academic productivity was fundamental for this group most affected by the changes in routine imposed by the pandemic, having to continue to perform academic work and doing research so that science would not lose these professionals, and that the trend of female inclusion in the academic world continued, while promoting the well-being of this population (Matulevicius *et al.*, 2021; Croll *et al.*, 2020). Resilience was identified as a protective factor against burnout, suggesting that the implementation of programs that promote resilience training in educators can be a measure of promoting mental health at an organizational level (Miguel *et al.*, 2021).

Teachers, therefore, had to adapt to a new pedagogical model, which required learning new skills and flexibility; while also dealing with the more demands from the students, who were also adapting to the new model and needed guidance from teachers, in addition to dealing with household demands, the fear and insecurity caused by the state of alert and the stressful situation of social isolation. This contributes significantly to a general trend of worsening in the mental health indicators of this population.

Although the effects of the pandemic on mental health indicators are general (Xiang *et al.,* 2020; Ni *et al.* 2020; Reynolds *et al.*, 2008), teachers already had an exacerbated workload since before, being more subject to burnout and mental health problems (Pereiral *et al.,* 2020; Diehl & Marin, 2016). Even so, there was an increase in demand and the need for significant adaptation. In addition to general personal and emotional demands, they needed to review their way of working.

It is important to note that most of the studies analyzed were carried out with university professors, who were known to have fewer mental health problems before the pandemic when compared to elementary and high school teachers, and who are more likely to adapt to the remote model (Diehl & Marin, 2016). In turn, the scarcity of studies that analyze the mental health of school teachers is notable and worrying, since, among the category, they would be the most affected by mental health problems before the pandemic, and especially after it. Early childhood educators are usually the ones with the least training and the greatest sense of impossibility of career progression, while they are also the least expressive group among class surveys (Weber *et al.* ; 2015).

The transition to the remote model for teenagers and young people is already challenging, but the transition to this model for children, who need more guidance and help, is even more challenging, specially

because in this scenario help from the parents is essential, which generates greater demand for teachers, who need to sensitize them to take on the task while being aware of the difficulties that they themselves are facing (Oliveira *et al.*, 2020; Melo *et al.*, 2020).

Thus, it is essential to carry out research aimed at the mental health of school teachers, in order to understand the situation they are in and to encourage measures to alleviate the work and psychological difficulties brought about by the pandemic.

REFERENCES

Chan, Jasper Fuk-Woo *et al* . (2020). A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. *The Lancet* , v. 395, no. 10223, p. 514-523.

Croll, Leah, Kurzweil, Arielle, Hasanaj, Lisena, *et al.* (2020). The psychosocial implications of COVID-19 for a neurology program in a pandemic epicenter. *Journal of the neurological sciences* , vol. 416, p. 117034.

Diehl, Liciane; Marin, Angela Helena (2016). Mental Illness in Brazilian Teachers: A Systematic Review of Literature. *Interdisciplinary Studies in Psychology* . London, v. 7, no. 2, p. 64-85.

Evanoff, Bradley A., Strickland, Jaime R., Dale, Ann Marie, *et al.* (2020). Work-related and personal factors associated with mental well-being during the COVID-19 response: survey of health care and other workers. *Journal of medical Internet research*, vol. 22, no 8, p. e21366.

Faustino, Lorena Silva E Silva; Silva, Tulio Faustino Rodrigues Silva (2020). Educators Facing the Pandemic: Dilemmas and Alternative Interventions for Coordinators and Teachers. *Boletim De Conjuntura* (BOCA) year II, vol. 3, no. 7, Boa Vista.

Frank, Allegra; Grady, Constance (2020). Phone booths, parades, and 10-minute test kits: How countries worldwide are fighting Covid-19. online document, https://www. voice.com/science-andhealth/2020/3/22/21189889/coronavirus-covid-19-pandemic-responsesouth-korea-phillipines-italy-nicaragua-senegal-hong-kong (access 28.03. 2021).

Jojoa, Mario, Lazaro, Esther, Garcia-Zapirain, Begonya, *et al.* (2021). The Impact of COVID 19 on University Staff and Students from Iberoamerica: Online Learning and Teaching Experience. *International Journal of Environmental Research and Public Health* , vol. 18, no 11, p. 5820.

Keener, Tina Antill, Hall, Katherine, Wang, Kesheng, *et al.* (2021). Relationship of quality of life, resilience, and associated factors among nursing faculty during COVID-19. *Nurse Educator*, vol. 46, no 1, p. 17-22. d hi: 10.1097/NNE.0000000000000926

Lizana, Pablo A., Vega-Fernadez, Gustavo, Gomez-Bruton, Alejandro, *et al.* (2021). Impact of the COVID-19 Pandemic on Teacher Quality of Life: A Longitudinal Study from before and during the Health Crisis. *International Journal of Environmental Research and Public Health* , vol. 18, no 7, p. 3764.

Ma, Lin-Lu *et al* . (2020). Methodological quality (risk of bias) assessment tools for primary and secondary medical studies: what are they and which is better?. *Military Medical Research,* vol. 7, no. 1, p. 1-11.

Matulevicius, Susan A., Kho, Kimberly A., Reisch, Joan, *et al.* (2021). Academic Medicine Faculty Perceptions of Work-Life Balance Before and Since the COVID-19 Pandemic. *JAMA network open* , vol. 4, no 6, p. e2113539-e2113539.

Melo, Maria Taís De; Dias, Simone Regina; Volpato, Arceloni (2020). Impact of factors related to the COVID-19 pandemic on the quality of life of teachers working in SC. Florianópolis, SC: *Digital Context* .

Miguel, Carla, Castro, Luísa, Marques Dos Santos, José Paulo, *et al.* (2021). Impact of covid-19 on medicine lecturers' mental health and emergency remote teaching challenges. *International Journal of Environmental Research and Public Health* , vol. 18, no 13, p. 6792.

National Heart, Lung, And Blood Institute *et al.* (2014). Quality assessment tool for observational cohort and cross-sectional studies. *Bethesda: National Institutes of Health, Department of Health and Human Services* , p. 103-11.

Ni, Michael Y. *et al* . (2020). Mental health, risk factors, and social media use during the COVID-19 epidemic and cordon sanitaire among the community and health professionals in Wuhan, China: cross-sectional survey. *JMIR mental health* , v. 7, no. 5, p. e19009.

Odriozola-González, Paula, Planchuelo-Gómez, Álvaro, Irurtia, María Jesús, *et al.* (2020). Psychological effects of the COVID-19 outbreak and lockdown among students and workers of a Spanish university. *Psychiatry research* , vol. 290, p. 113108.

Oliveira, Thamilles Thayanne Frota de, *et al* . (2020). *Challenges in the management of everyday school life of public and private early childhood education in times of pandemic. Anais VII CONEDU* - Online Edition. Campina Grande: Perform Editora.

Pan, An *et al* . (2020). Association of public health interventions with the epidemiology of the COVID-19 outbreak in Wuhan, China. *jam* , v. 323, no. 19, p. 1915-1923.

Pereiral, H.; Santos, F.; Manenti, M. (2020). Mental Health of Teachers in Times of Pandemic: The Impacts of Remote Activities. *CONJUNCTURE BULLETIN (BOCA)* year II, vol. 3, no. 9, Boa Vista.

Reynolds, Diane L. *et al* . (2008). Understanding, compliance and psychological impact of the SARS quarantine experience. *Epidemiology & Infection*, v. 136, no. 7, p. 997-1007.

Sadir, MA, Bignotto, MM, & Lipp, MEN (2010). Stress and quality of life. *Paideia* , Vol. 20, No. 45, 73-81.

Salazar, Alejandro, Palomo-Osuna, Jenifer, De Sola, Helena, *et al.* (2021). Psychological Impact of the Lockdown Due to the COVID-19 Pandemic in University Workers: Factors Related to Stress, Anxiety, and Depression. *International journal of environmental research and public health* , vol. 18, no 8, p. 4367.

Santos, Marcia Pires dos (2020). The Challenges of Early Childhood Education in the Context of the COVID -19 Pandemic. *Anais Integra EaD* – online edition. Large field.

Weber, LND; Milk, CR; Stasiak, GR; Santos, CA Da S.; Forteski, R. (2015). The Stress At The Teacher's Work . *Images of Education* , v. 5, no. 3, p. 40-52.

Xiang, Yu-Tao *et al* . (2020). Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. *The Lancet Psychiatry* , v. 7, no. 3, p. 228-229.