

THE COVID-19 PANDEMIC'S IMPACT ON HEALTHCARE PROFESSIONALS' MENTAL HEALTH

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Abstract

Mental health has been severely affected by the COVID-19 pandemic. The study aims to determine the effects on mental health during the COVID-19 pandemic among health professionals. Through an online survey, we collected data on socio-demographic factors, workplace, isolation characteristics, psychological factors and psychiatric history, with which we assessed the degree of depression and anxiety. Conclusive statistical correlations were observed between the rate of anxiety and depression and various work-related factors. Overall anxiety and depression scores are within the range established by previous studies. Personal protective equipment was of significant importance in our study, both in terms of its availability and in terms of how staff perceived its effectiveness. Anxiety rating has contrastively correlated with the possibility of treating COVID-19 patients instead of directly interacting with them and depression rating correlates with imposed regulations such as having to suspend private medical activity. The results suggest that healthcare professionals should benefit from interventions that promote psychological support, which can mitigate the impact of the pandemic on mental health.

Rezumat

Studiul și-a propus să determine efectele asupra statusului mental pe parcursul pandemiei de COVID-19 în rândul profesioniștilor din domeniul sănătății. Printr-un sondaj *on-line*, am colectat date privind factorii socio-demografici, locul de muncă, caracteristici legate de izolare, factori psihologici și istoricul psihiatric, cu ajutorul cărora am evaluat gradul de depresie și anxietate. S-au observat corelații statistice concludente între rata de anxietate și depresie și diverși factori legați de muncă. Scorurile generale de anxietate și depresie se încadrează în intervalul stabilit de studiile anterioare. Echipamentul individual de protecție a avut o importanță semnificativă în studiul nostru, atât prin disponibilitatea acestuia, cât și prin modul în care personalul a perceput eficacitatea acestuia. Gradul de anxietate s-a corelat în mod contrastant cu posibilitatea de a lucra cu pacienții cu COVID-19 față de interacțiunea efectivă cu aceștia, iar evaluarea depresiei s-a corelat cu reglementările impuse, cum ar fi suspendarea activității medicale private. Rezultatele obținute sugerează că lucrătorii din domeniul sănătății ar trebui să beneficieze de intervenții care promovează sprijinul psihologic, ce pot atenua impactul pandemiei asupra statusului mental.

Keywords: COVID-19, depression, anxiety, healthcare professionals

Introduction

The entire world was dealing with the COVID-19 pandemic caused by the SARS-CoV-2 virus, initially documented in December 2019 [3, 4, 21]. The reported symptoms of COVID-19 are primarily respiratory symptoms with acute respiratory distress syndrome ultimately leading to death in the most severe of cases [5, 21]. On the other hand, as well as physical health, the potential impact on psychological and mental well-being by the COVID-19 pandemic should not be overlooked [7-9, 13, 15, 16].

According to previous studies conducted on the psychological impact of infectious outbreaks, such as SARS-CoV-1 or Ebola, significant findings have been reported regarding psychiatric symptoms among healthcare professionals, such as anxiety, depression, fear, frustration, insomnia and post-traumatic stress than the average population [14, 16, 21-24, 26]. Factors that played a role in the development of such symptoms include increased workload, working overtime, physical exhaustion, inadequate personal protective equipment, nosocomial transmission, and the need to make ethically difficult decisions. Their resilience has also been tested

by the governmentally mandated lockdowns, social distancing and quarantines, isolation, loss of social support and the risk of infection of friends and relatives [17-19, 28-30].

Given the extent of the COVID-19 pandemic, it is imperative to better understand how a pandemic and associated lockdowns impact mental health in the present. Thus, this study aimed to determine the pandemic's impact on mental health in healthcare professionals and to identify and examine known predictors of mental health outcomes.

Materials and Methods

We collected data from 98 healthcare professionals in Romania, most of which are doctors, but also pharmacists, nurses, and medical and pharmacy students. The data were collected between April 2020 and June 2020 using an online survey. The questionnaire was structured using Google Forms and distributed in various medical-related Facebook groups. The study was conducted in accordance with the Declaration of Helsinki and was approved by the Ethics Committee of the "Socola" Institute of Psychiatry, Iași, România. The anonymous online questionnaire consisted of demographic data, data on the respondent's profession, workplace, and workload, and the Hamilton Anxiety Rating Scale (HAM-A) [10] and the Hamilton Depression Rating Scale (HAM-D) [11] questionnaires adapted for self-evaluation. HAM-A was one of the first psychometric scales developed to assess the severity of anxiety symptoms. The scale is now widespread in both clinical and academic settings in clinical trials, having 14 items, each defining a series of symptoms and measuring both mental anxiety such as mental agitation or psychological distress and somatic anxiety (physical symptoms related to anxiety). We used HAM-A to sample anxiety symptoms in the studied population. Each item is rated on a scale of 0 to 4 where 0 indicates the absence of symptoms and 4 indicates the maximum severity for that symptom. The maximum score can thus be 56. A lower value than 17 points indicates the minimum anxiety, a score between 18 - 24 moderate anxiety and 25 - 30 severe anxiety. Hamilton scale for depression assessment the most widely used tool available to the clinician. The original version consists of 17 items that refer to the intensity of depressive symptoms in the last week. As it is the case for HAM-A, we used HAM-D to sample the phenomena of depressive symptoms in the studied population, without any intention to diagnose or to monitor the course of an alleged psychiatric disorder. Each item can be rated from 0 to 4, except for questions about insomnia, somatic symptoms, and disease awareness where the maximum score for each item is 2. A total score of less than 7 points is considered normal, between 7 and 13 sub-clinical depression, from 14 to 18 mild depression, between 19 and 22 moderate depression, and a score

above 23 points is representative for severe depression. The whole questionnaire had questions that allowed the respondents to indicate where they work, whether or not they used protective equipment, whether or not they worked in direct contact with patients diagnosed with COVID-19, and open-ended questions that allow us to classify healthcare professionals by level of education, age or professional experience. We also asked questions related to the degree of interaction between the respondent and COVID-19 patients and whether or not they received adequate PPE (personal protective equipment). To prevent any confusion in our study, we also wanted to know if the respondents have any previously diagnosed mental disorders. Six respondents mentioned that they were previously diagnosed with an anxiety-related disorder. Their results were excluded from the final data interpretation which comprised 92 fully completed questionnaires.

Statistical analysis

The results were analysed using the Microsoft Excel Software (MS Excel) for Windows. The non-parametric Pearson Correlation was used for the comparison of the depression and anxiety scores and other dependent. For all the statistical analyses the significant level of $p < 0.05$ was used.

Results and Discussion

Our findings have shown that 19 healthcare professionals had a suggestive score for mild anxiety (HAM-A Score 18 - 24), 10 healthcare professionals had a suggestive score for moderate anxiety (HAM-A Score 25 - 30) and 9 healthcare professionals had a suggestive score for severe anxiety (HAM-A Score > 30). The rest of 54 respondents had insignificant levels of anxiety symptoms on the HAM-A scale (< 18).

We investigated if there was a correlation between the respondent's age and the HAM-A score (Figure 1). The Pearson Correlation resulted in a coefficient r of -0.3 with a p -value of 0.0003 suggesting that younger people are more vulnerable to anxiety caused by the COVID-19 pandemic.

In addition, we wanted to investigate whether these data are the result of actual age or professional grade or seniority in employment. We thus divided the respondents into 5 categories: students, nurses, residents, specialists and primary care physicians. We noticed that in these 5 groups, the correlation coefficient between age and HAM-A score is small and statistically insignificant for each case. HAM-A scores did not vary significantly between groups either: 19.3 ± 11.1 for students, 16.1 ± 13.0 for nurses, 16.2 ± 10.2 for residents, 17.2 ± 8.3 for specialists and 10.7 ± 7.5 for primary care physicians. The means are statistically significant only between primary care physicians and the other categories (*vs.* students $p = 0.05$, *vs.* residents $p = 0.04$, *vs.* specialists $p = 0.02$) but not compared to nurses ($p = 0.27$) (Figure 2).

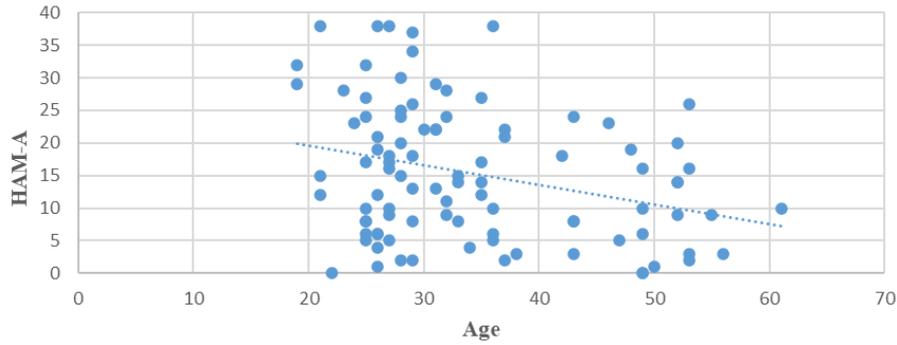


Figure 1.
Age correlated with HAM-A scores

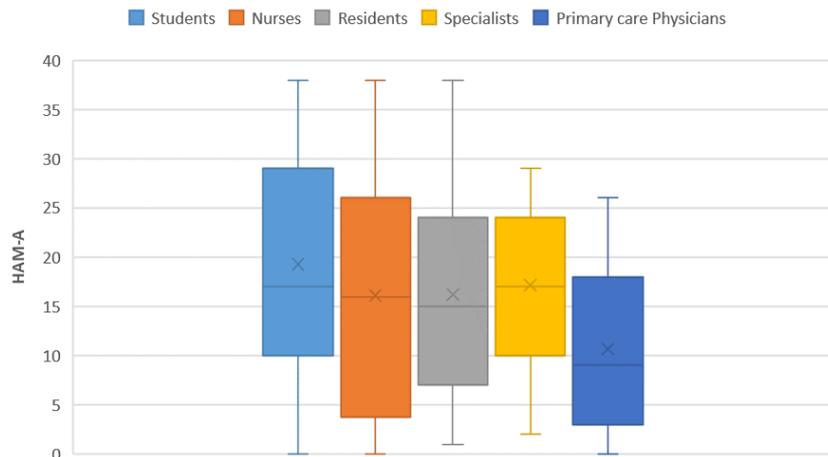


Figure 2.
HAM-A scores and professional experience

This similarly applies to HAM-D scores, the means being statistically significant only between primary care physicians and other categories (*vs.* students $p = 0.02$, *vs.* residents $p = 0.001$, *vs.* specialists $p = 0.006$), but not compared to nurses ($p = 0.37$) (Figure 3). For both, anxiety and depression, we could theorize that experience in the field acts as a protective factor,

given that the scores for HAM-A and HAM-D were lower in the cases of primary care physicians and nurses. Also, as it can be observed in Figure 2 and Figure 3, in the case of nurses, we observed the highest variance out of all professional categories. This could be explained by the fact that this category fits people with varying degrees of working experience.

HAM-D scores and professional experience

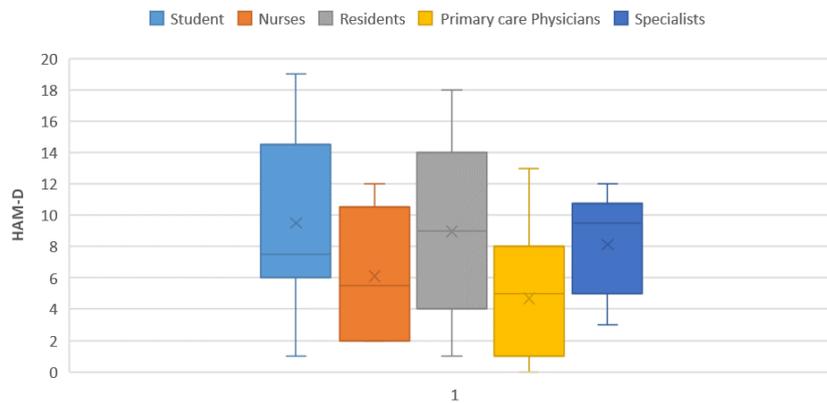


Figure 3.
HAM-D scores and professional experience

We also wanted to see if there were any significant differences between healthcare professionals on-call and those who were working during normal work hours, given that being on-call can be itself a source of anxiety among healthcare professionals. Thus, we noticed that there are no significant differences

between the two populations (13.76 with normal work hours, 15.65 on-call, $p = 0.44$) but in the group being on-call we noticed that the degree of anxiety increases with the number of days being on-call ($r = 0.3$, $p = 0.045$) (Figure 4).

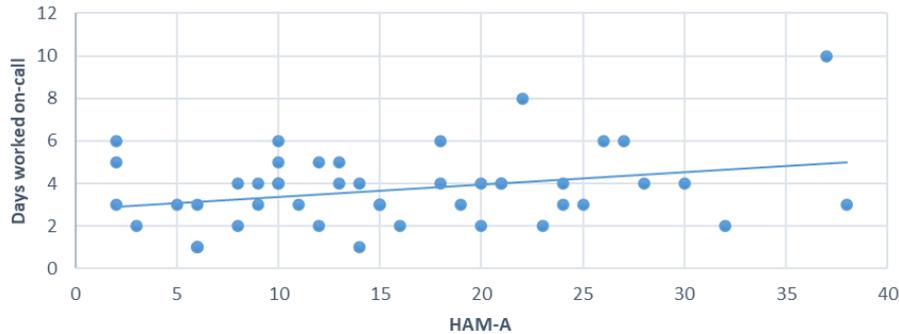


Figure 4.
Days worked on-call

Regarding direct contact with confirmed cases of COVID-19, direct contact itself was not a factor in our study to increase the level of anxiety. Direct contact in the workplace (i.e. treatment of COVID-19 patients) also does not correlate with the level of anxiety compared to healthcare professionals who do not interact with COVID-19 patients. Interestingly, the prospect of treating COVID-19 patients was a positive correlated factor with the degree of anxiety: healthcare professionals who do not treat COVID-19 patients but worked in clinics where COVID-19 patients were treated had a 76% HAM-A score higher than those who do not work in clinics where COVID-19 patients were treated (on average 20.4 vs. 11.6, $p = 0.03$). The staff working in hospitals where COVID-19 patients are treated, compared to staff who did not treat COVID-19 patients had on average a 52% higher HAM-A score (17.6 vs. 11.6, $p = 0.03$). The same is confirmed by the activity in the “COVID-19” or “COVID-19 support” hospitals. Thus, the healthcare professionals assigned to COVID-19 hospitals, although they presented on average a higher score for HAM-A than the healthcare professionals assigned to hospitals that did not receive any role in the pandemic context (15.22 vs. 10.66), is not significant

($p = 0.17$). In contrast, healthcare professionals in COVID-19 support hospitals had on average a significantly higher HAM-A score by 51% (16.15 vs. 10.66, $p = 0.03$) than healthcare professionals in medical units without a designated role in the fight against the pandemic. The presence of comorbidities as a risk factor for mortality from SARS-CoV-2 infection was not correlated in our study with an increase in HAM-A score. Additionally, neither the presence of comorbidities in the respondent's loved ones nor their contact with the virus has had any role in the increase of HAM-A scores. Quarantine or self-isolation, as well as the need to suspend work activity during the state of emergency, was not a factor correlated with the increase in HAM-A scores. Most healthcare professionals declared that they were provided with adequate protective equipment. On the other hand, among the healthcare professionals who do not benefit from protective equipment, we notice the most dramatic increase (71%) in the HAM-A score (22.8 vs. 13.3, $p = 0.006$). The subjective perception of the level of safety offered by the protective equipment ($r = -0.21$, $p = 0.05$) (Figure 5), as well as the competence of colleagues ($r = -0.2$, $p = 0.07$) was correlated with a lower HAM-A score (Figure 6).

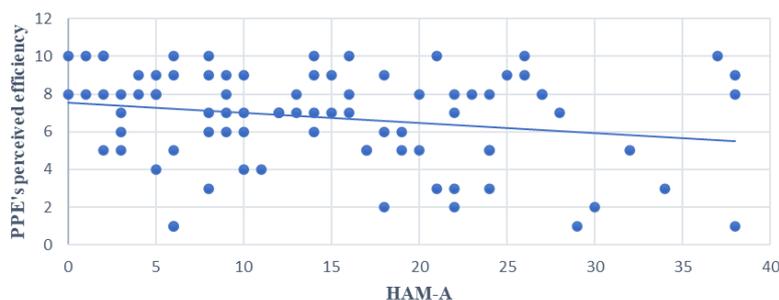


Figure 5.
PPE's (Personal protective equipment) perceived efficiency

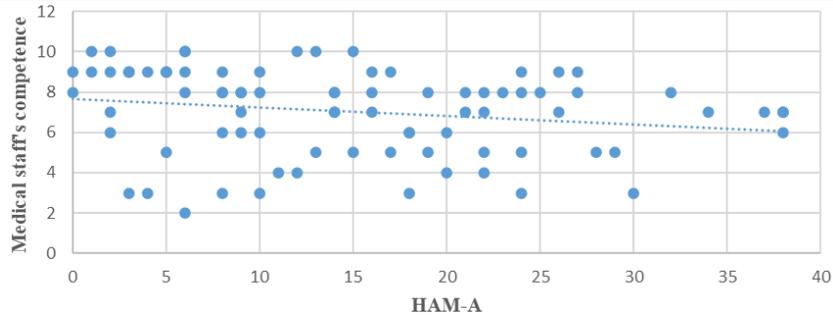


Figure 6.
The perceived medical staff's competence

Furthermore, the subjective perception of the level of safety offered by the protective equipment was correlated with a lower HAM-D score ($r = -0.25$, $p = 0.01$), while the healthcare professionals who did not

benefit from proper protective equipment had a higher HAM-D score (10.4 vs. 7.04, $p = 0.006$) (Figure 7). Perception of the risk of SARS-CoV-2 infection is not significantly correlated with the HAM-A score ($r = 0.16$, $p = 0.14$) (Figure 8).

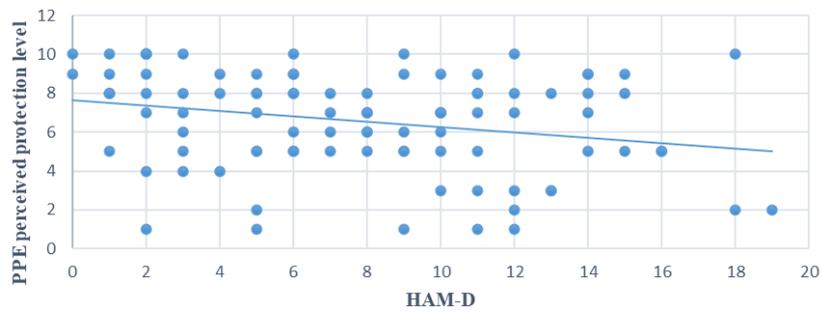


Figure 7.
PPE's (Personal protective equipment) perceived protection level

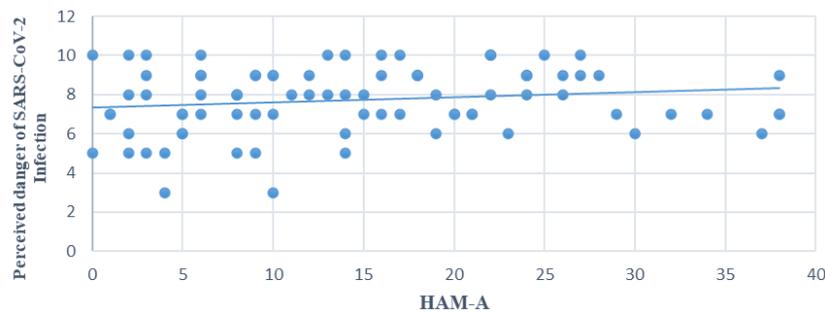


Figure 8.
The perceived danger of the SARS-CoV-2 infection

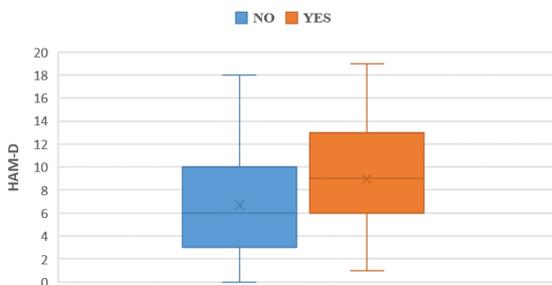


Figure 9.
HAM-D score correlated with healthcare professionals who were required to suspend their work activity

The most alarming aspect of this study regarding depressive symptoms turned out to be the medical personnel's need to temporarily suspend their work activity has led to an increase in HAM-D score by 30% (7.0 vs. 9.2, $p = 0.03$), a fact that can easily be applied to the general population as well (Figure 9). As such, conclusive statistical correlations were observed between anxiety and depression rating and various work-related factors. General anxiety and depression scores are within the range established by previous similar studies [4, 5]. Studies also report higher anxiety and depression rates in healthcare professionals compared to the general population [3]. In the same study, results

differ from ours when comparing anxiety and depression concerning the proximity to the virus, where rates were found to be higher in healthcare professionals diagnosed with COVID-19.

Personal protective equipment was of significant importance in our study, both in its availability and in the way medical personnel perceived its effectiveness. Anxiety rating has contrastively correlated with the possibility of treating COVID-19 patients instead of directly interacting with them and depression rating correlates with imposed regulations such as having to suspend private medical activity.

The COVID-19 pandemic has caused extensive psychological harm among not only the general public, but also healthcare professionals. During their training, healthcare professionals are taught to prioritize the patient. However, practicing self-care can be of vital importance to coping with the demands and workload of their profession. Findings suggest that public health initiatives should identify and target people with heavy psychological burdens since many healthcare professionals can benefit from a variety of interventions across psychological, social, and self-care domains that promote psychological support, which, as a result, may mitigate the impact of the COVID-19 pandemic [1, 2, 6, 12, 15, 20]. Findings hint at how we could improve our response in the future by providing adequate PPEs, informing healthcare professionals about the risks they are being exposed to, improving collaboration between colleagues, and providing psychological support for those in need [1, 25, 27].

Conclusions

Our study found significant correlations between various socio-demographic characteristics, work-related factors, and the intensity of anxiety and depression symptoms among healthcare professionals. Having more experience in the field of work acts as a protective factor for anxiety and depression alike. Working long hours, such as on-call duty, increases anxiety while having to suspend private practice led to higher scores for depression. Unavailable or inadequate PPE at the beginning of the pandemic led to increased anxiety rating, as did the perspective of interacting with COVID-19 patients. In our experience, the medical community came forward for those in need, but to our best knowledge no systematic support program was established nationwide and in consequence, it is hard to assess the effectiveness of the programs that were implemented.

Conflict of interest

The authors declare no conflict of interest.

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