

## **Mental health of medical workers during COVID-19 pandemic – literature review**

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### **Summary**

The novel Coronavirus disease 2019 (COVID-19) is an illness caused due to Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). The global pandemic was declared by the World Health Organization on 11<sup>th</sup> March 2020 and COVID-19 has become a clinical threat to the general population and healthcare workers worldwide. This review covers early publications on the effects of COVID-19 on medical staff published from March to May 2020. The studies are scarce and the majority of them is focused on depression, anxiety and insomnia. According to studies, mental health problems are a common response to the COVID-19 pandemic. During the pandemic, healthcare workers are every country's most valuable resource. To minimize the negative psychological impact of the COVID-19 pandemic on this professional group, it is necessary to develop appropriate prevention strategies, as well as training and support programs. It is extremely important to identify risk factors that may help in identifying groups at increased risk and developing adequate interventions. The long-term psychosocial impact of this epidemic on mental health of medical workers remains to be evaluated.

**Key words:** COVID-19, healthcare worker, mental health

### **Introduction**

The COVID-19 pandemic has affected the well-being of people all around the globe. Medical workers are one of the most numerous groups whose stress levels and mental health get tested. The majority of reports concern physicians and nursing staff; some reports are also available on comparative analyses of frontline medical workers (dealing with COVID-19 patients on a continuous basis) and non-frontline medical workers (having no contact with COVID-19 patients).

This literature review covers works published from March to May 2020. MEDLINE database was searched by the author for all English-language studies. References were identified by use of the terms “COVID-19”, “mental health” and “medical workers”.

Very few studies were conducted on the topic of mental health during COVID-19 pandemic in the first few months of 2020. The vast majority of analyzes originate from China, at the time of writing this paper (the work was approved for printing on 03.09.2020) there were no reports originating from Europe.

The published data demonstrate clearly that the medical workers' health is significantly affected by ongoing COVID-19 pandemic. An increase of symptoms of depression, insomnia and anxiety can be noted in the clinical picture of that population.

### **Depression, anxiety, insomnia, and distress**

Kang et al. [1] asked both medical and nursing staff working in Wuhan to participate in the study conducted in the period from 29 January to 4 February 2020. In addition to the sociodemographic data, the study obtained information about the hospital unit, degree of exposure to COVID-19, mental health self-assessment, access to psychiatric care services, extent of need fulfillment with regard to psychological care, health self-assessment. The mental health assessment consisted in measuring the symptoms of depression (using the 9-item Patient Health Questionnaire, PHQ-9), anxiety (using the 7-item Generalized Anxiety Disorder, GAD-7), insomnia (using the 7-item Insomnia Severity Index, ISI), and distress caused by traumatic events (using the 22-item Impact of Event Scale-Revised, IES-R).

Among 994 respondents, 811 (81.6%) were nursing staff, and 183 (18.4%) were medical staff. Further, 85.5% were female and 31.1% of the surveyed individuals were working in high-risk units. In terms of psychological care, 36.3% of the respondents received psychoeducational materials (leaflets, brochures, books), 50.4% used psychological support through the media (including online psychological support as well as information obtained through television and online platforms) and 17.5% participated in group psychological counseling [1].

Based on the cluster analysis of results of mental health questionnaires (PHQ-9, GAD-7, ISI, and IES-R), the respondents were classified into four groups which had significant clinical differences without showing any sociodemographic differences. According to the criteria adopted by the authors of the study, 36% of the medical workers had sub-threshold mental disorders (mean PHQ-9: 2.4, GAD-7: 1.5, ISI: 2.8, IES-R: 6.1), 34.4% had mild disorders (mean PHQ-9: 5.4, GAD-7: 4.6, ISI: 6.0, IES-R: 22.9), 22.4% had moderate disorders (mean PHQ-9: 9.0, GAD-7: 8.2, ISI: 10.4, IES-R: 39.9), and 6.2% had severe disorders (mean PHQ-9: 15.1, GAD-7: 15.1, ISI: 15.6, IES-R: 60.0). It has been noted that the higher the exposure to contact with infected people, the more severe the mental health disorders. Importantly, the persons suffering from severe disorders had access to fewer psychological materials, whether printed or provided by the media. The declared needs in terms of psychological care varied in different groups as well – in the group with more severe mental problems, a clear need to seek specialist (psychiatric, psychotherapeutic) help was distinguished, whereas the group with mild conditions felt the need to seek information support in the media [1].

Lai et al. [2] conducted a cross-sectional survey investigating the mental health of workers exposed to direct contact with persons infected with COVID-19. The survey,

which lasted several days (29 January – 3 February 2020), collected data from 1,257 healthcare workers from 34 different hospitals across China. The survey analyzed the degrees of symptoms of depression, anxiety, insomnia, and distress caused by traumatic events. The same research tools as in the above study [1] were used, i.e., PHQ-9, GAD-7, ISI, IES-R.

Among 1,257 respondents (which constituted 68.7% of all individuals asked to participate in the research study), 76.7% were female, 60.8% of the total respondents were nurses (male and female) and 39.2% were physicians (male and female). Among the respondents, 60.5% worked in the Wuhan hospitals, 41.5% were frontline healthcare workers, 64.7% were between 26 and 40 years old. The obtained results show that 50.4% of the respondents had symptoms of depression, 44.6% had symptoms of anxiety, 34% – symptoms of insomnia, whereas 71.5% experienced distress measured by the IES-R. The medical workers from Wuhan showed higher severity of the tested variables than the medical workers from Hubei province outside Wuhan and outside Hubei province. Similarly, more severe symptom levels of depression were reported among nurses compared to physicians (5.0 [2.0–8.0]; vs. 4.0 [1.0–7.0],  $p = 0.007$ ). More severe anxiety levels were reported in women than in men (4.0 [1.0–7.0] vs. 2.0 [0–6.0];  $p < 0.001$ , accordingly). Multivariate logistic regression showed that frontline workers, i.e., the staff working on direct diagnosis, treatment and care of COVID-19 patients were at higher risk of experiencing symptoms of depression (OR, 1.52; 95% CI, 1.11–2.09;  $p = 0.01$ ), anxiety (OR, 1.57; 95% CI, 1.22–2.02;  $p < 0.001$ ), insomnia (OR, 2.97; 95% CI, 1.92–4.60;  $p < 0.001$ ), and stress (OR, 1.60; 95% CI, 1.25–2.04;  $p < 0.001$ ) [2].

Tan et al. [3] investigated the impact of the COVID-19 outbreak on mental health of healthcare workers in Singapore. The Depression, Anxiety and Stress Scale (DASS-21) and the Impact of Events Scale–Revised (IES-R) were used for the purposes of the study. The survey, which was conducted in the period from 17 February to 13 March 2020, covered the staff of two Singapore facilities, both medical and non-medical workers – nursing staff, physicians, pharmacists, medical technicians, administration workers, and others. Among 470 respondents of the survey, 14.5% experienced anxiety, 8.9% – symptoms of depression, 6.6% – stress, and 7.7% – clinical symptoms of PTSD. The prevalence of anxiety was significantly higher among non-nursing and non-physician healthcare workers than among nursing and physician teams (20.7% vs. 10.8%; corrected OR – 1.85 [95% CI, 1.15 to 2.99];  $p = 0.011$ ). Similarly, non-nursing and non-physician healthcare workers had higher average scores on DASS-21 anxiety and stress subscales and higher IES-R scores. Despite certain limitations (e.g., screening of workers in only two facilities, analysis at an early stage of pandemic in Singapore), the study indicates severe burden of workers of medical institutions who are not directly involved in patient treatment and have less experience and knowledge in the scope of infectious diseases.

From February through April 2020, mental health checks were conducted among medical workers from Singapore and India [4]. The group of respondents ( $N = 906$ ) included 268 physicians (29.6%), 355 nurses (39.2%) and 96 other healthcare professionals (10.6%). The country of origin for most of them was India (55.1%), then China

(33.7%) and Malaysia (4.8%). The vast majority of the surveyed persons were female (583, 64.3%), median age was 29 (25–35), 50.2% were single. The objective of the study was to analyze somatic and mental symptoms among medical workers. The study was based on a questionnaire of demographic variables, medical history and two scales: DASS-21 and IES-R. The DASS-21 scores show that 15.7% of the respondents experienced anxiety, 10.6% – depression, and 5.2% – stress. At the same time, there were no significant differences between the data from India and Singapore. In the group of medical workers (96 respondents, 10.6%) showing symptoms of depression, the results indicated moderate or severe depression in half of the respondents (i.e., 48 individuals). More than a half (55.6%) of the persons experiencing anxiety stated it was moderate or severe. At the same time, symptoms suggesting a stress disorder were reported by 67 respondents (7.4%), 34 of whom stated the symptoms were moderate and severe.

At the beginning of May 2020, the first meta-analysis of 13 studies (with the total of 33,062 respondents) on the health of medical workers during COVID-19 pandemic was published. Twelve of these studies concern the Chinese population. The authors showed that the total prevalence of depression was 22.8% (95% CI; 15.1–31.51,  $I^2 = 96.62$ ), and of anxiety: 23.21% (95% CI; 17.77–29.13,  $I^2 = 99\%$ ). Total insomnia prevalence was estimated at 34.32% (95% CI; 27.45–41.54,  $I^2 = 98\%$ ) [5].

Unlike the above-mentioned studies, the research conducted by Yin and Zeng [6] focused on the needs of the nursing staff. In-depth interviews with nursing personnel were conducted, focusing on such aspects as: feelings about caring for COVID-19 patients compared to professional experience from before, impact of the care on personal life, needs and expectations. Qualitative analyses indicated that the dominant needs were the needs for health and safety, interpersonal relationships, affection, community concern, as well as knowledge concerning COVID-19.

### **Vicarious traumatization**

Vicarious traumatization occurs in situations where the therapeutic contacts with individuals who have survived trauma, severe stress or crisis go above the professional's window of tolerance and contribute indirectly to various mental irregularities. The term was coined to explain the mental burden of psychotherapists, however, in the midst of the COVID-19 pandemic, frontline medical workers, who maintain long-lasting and direct contact with infected patients, may also experience this effect to a greater or lesser degree. The symptoms of vicarious traumatization include fatigue, loss of appetite, sleep disorders, irritability, inattention, fear, despair.

Researchers of the impact of the COVID-19 outbreak on mental health point out to the phenomenon of vicarious traumatization and consider it to be an element which – if left untreated – may be a negative factor for mental well-being of medical staff in the long run, including development of post-traumatic stress disorder [7–10]. In addition to vicarious traumatization, Alharbi [10] mentions compassion fatigue and burnout among medical workers, whereas Neto et al. [11] speak even of mental exhaustion. The only study published thus far about vicarious traumatization in members and non-members of medical teams is that by Li et al. [7].

The study by Li [7, 8] conducted in the period from 17 to 21 February 2020 used the Traumatic Stress Institute Belief Scale (TSI), the Impact of Event Scale (IES) and the Vicarious Trauma Scale (VTS). Seven hundred forty individuals participated in the study, including 234 frontline nurses working directly with COVID-19 patients and 292 non-frontline nurses. Although the study has been criticized for the use of statistical analysis methods [9], the most important conclusion refers to the higher level of vicarious traumatization in the non-frontline nursing personnel compared to that in the frontline workers. According to Li et al. [7, 8], it may result from the fact of volunteering to work in the front line, psychological preparation, as well as professional experience of this group of employees. Therefore, the authors recommend that support be provided also to the medical workers who are not directly involved in the treatment of COVID-19 patients.

### Quarantine

Ever since the COVID-19 outbreak, scientific institutions were stressing the importance of protecting the health of persons particularly exposed to COVID-19 infections, including healthcare workers. Initially, due to lack of updated research, arrangement of psychological aid was based on the data from previous epidemics, mostly the SARS epidemic. Some reports drew attention to the data on negative consequences of isolation during the SARS epidemic. The most frequent immediate consequences of 9-day quarantine among medical service providers included experiencing such emotions and conditions as: exhaustion, irritability, anxiety, retreating from relationships, insomnia, attention deficit disorders, deterioration of professional performance, including contemplation of leaving one's job [12]. Importantly, the consequences of quarantine were the predictor of PTSD symptoms during the subsequent three years [13]. After quarantine (the duration of which was 8.3 days; SD = 3.1, on average, according to the respondents, while according to the statistical base – 5.2 days; SD = 2.2, on average), medical workers reported persisting symptoms of protective and avoidance behaviors, e.g., avoiding crowded spaces, public places or contacts with persons showing symptoms of infection [14]. The aid provided to the medical workers was initially arranged on the basis of experience and guidelines developed during the SARS epidemic [15]. One of the recommendations was relating to screenings for depression, anxiety and suicide risk among medical staff as well as persons who have been tested positive or are awaiting the results. All the more so since the experience from the SARS outbreak indicated significant stress levels among medical workers, which prevailed as long as one year after the epidemic [16, 17]. China developed mental health protection strategies at an early stage of COVID-19 epidemic based on experience from previous epidemics and extensive studies of various population groups. Since the beginning of February 2020, 72 studies on the impact of COVID-19 on various population groups were conducted (including 23 studies on medical workers, 18 studies on students), the results of which helped in proper allocation of resources. Until now, 29 books on COVID-19 have been published, 11 of which concerned mental health, and finally, an online service for psychological aid and counseling has been created, which is

permanently available [18]. Medical workers were offered well-conceived forms of recreation and psychological support, including stress reduction workshops and direct consultations in dedicated relaxation zones [19]. Reflections on the worthwhile interventions, in particular those dedicated to medical workers, originate from various countries and take into account the social and cultural background as well as available scope of interventions [20–23].

### Recapitulation

These reports are pertaining mostly to the medical workers from China. The results cannot be extrapolated to the European population due to such factors as social and cultural conditions, scope and manner of sanitary and epidemiological surveillance, scope of preventive and psychopreventive measures offered to the general public and medical workers. Nevertheless, these reports are deeply concerning and should be an incentive to create a mental health protection strategy and take more intense preventive measures with regard to medical workers. They also indicate the need for monitoring of mental health of that occupational group after the pandemic.

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