



Determinants of the mental health condition of healthcare workers during the initial phase of the COVID-19 pandemic in Turkey

Yeşim Ünal¹ · Ekin Çakır² · Sidika Tekeli-Yesil³

Received: 3 February 2021 / Accepted: 20 September 2021

© The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature 2021

Abstract

Aim Current study aimed to determine the stressors experienced by healthcare workers during the initial phase of the COVID-19 pandemic in Turkey.

Subject and methods A cross-sectional design was utilized, and an online survey was conducted in early April 2020 among 2506 healthcare workers, using snowball sampling. A questionnaire highlighting the elements pertinent to the COVID-19 outbreak and General Health Questionnaire were used to collect data. Multiple linear regression analysis was performed to assess the impact of the early stages of the outbreak on the mental health condition of healthcare workers.

Results The mean of the General Health Questionnaire-12 was 6.03 (min = .00, max = 12.00). Participants reported high frequency of some variables, such as favorable relationships with their teammates (90.7%, $n = 2274$), striving to create a more hygienic home (84.6%, $n = 2121$), anger and hopelessness due to the community's neglect of precautions (84.2%, $n = 2109$) and fear of exposure to violence against healthcare workers (72.8%, $n = 1825$). The final regression model contained seven variables (gender, individual preparedness, perceived level of training related to COVID-19, meeting basic needs during the pandemic, fear of being infected, fear of infecting loved ones, and family relationships).

Conclusion Our study indicates that the management of the COVID-19 pandemic has to be planned and sustained by relevant measures maintaining the psychological wellbeing of healthcare workers. Psychological support should be provided for individuals and the teams; healthcare workers' families should also be involved in and benefit from sustained and intermittent psychological support.

Keywords COVID-19 · Healthcare workers · Stressors · Mental health · Pandemic

Introduction

A novel coronavirus disease (COVID-19) started in China in December 2019, spread rapidly throughout the world, and was announced as a pandemic by the World Health Organization (WHO) in March 2020 (WHO 2020a). Current numbers indicate the presence of more than 101 million confirmed cases and more than 2 million deaths (WHO 2020b). While it affects millions of individuals' physical and mental health (Xiang

et al. 2020), similarly to previous epidemics and pandemics (Kisely et al. 2020), the COVID-19 pandemic has placed an increased burden on healthcare workers (HCWs) (Lai et al. 2020), making them a high-risk group for the development of mental health issues (Pappa et al. 2020).

With the long and demanding shifts, and the changing nature of the work, WHO draws attention to HCWs potentially having to experience increased psychological distress, fatigue, and burnout, being stigmatised, and being subjected to psychological or physical violence (WHO 2020c). In addition to these factors, previous studies have reported heightened risk of depression (Rossi et al. 2020), anxiety (Matsuishi et al. 2012), insomnia (Lai et al. 2020), acute or posttraumatic stress, and sleep disturbances (Ho et al. 2005; Maunder et al. 2006; Magnavita et al. 2020). Moreover, HCWs may feel overwhelmed by concerns of being infected and infecting others (Ho et al. 2005; Goulia et al. 2010), lack of family support (Kisely et al. 2020) and issues related to work and

✉ Sidika Tekeli-Yesil
sty@tekeli-yesil.ch

¹ International Medical Rescue Association, PhD, Istanbul, Turkey

² Koc University Graduate School of Social Sciences and Humanities Psychology, MSc, Istanbul, Turkey

³ Frauenarztpraxis Rheinfelden, PhD, Rheinfelden, Switzerland

the workplace (Goulia et al. 2010). However, preparedness can have a buffering effect to counter these negative consequences (Liu et al. 2020; Raven et al. 2018).

HCWs have been seriously affected by the negative mental health consequences of COVID-19 pandemic in many countries, such as China (Lai et al. 2020), Italy (Rossi et al. 2020), and the USA (Shechter et al. 2020). Similarly to HCWs in other countries, HCWs in Turkey have experienced a high amount of physical and mental health burden, especially at the beginning of the first wave of COVID-19. The first case was seen on 10 March 2020 in Turkey, and in 3 weeks, the disease expanded to all cities of Turkey, with a total case number of 15679 (Anadolu Agency 2020). The rapid increase of the number of cases led to overload in the healthcare system, leaving 601 HCWs infected with COVID-19 and one internist doctor dead due to the infection at the beginning of April 2020 (Anadolu Agency 2020), when the data of this study was collected.

Since the onset of the pandemic, a limited number of studies on HCWs have been carried out in Turkey. These studies concluded that health professionals showed a higher proportion of hopelessness and apprehension than the general population (Hacimusalar et al. 2020), and there were high rates of depression, anxiety, and psychological stress symptoms among healthcare workers (Şahin et al. 2020). Additionally, in a WHO report it was stated that violence against healthcare workers has been increasing all over the world (WHO 2020d), and some reports published in Turkey revealed similar cases (Sevimli 2020).

The findings from the literature show that problems arising during pandemics affect several aspects of HCWs' lives. Therefore, to be able to understand the effects of the COVID-19 pandemic on HCWs' mental health and take necessary actions, their difficulties and stressors need to be identified and examined comprehensively.

Previous studies have overwhelmingly focused on either one or a limited number of mental health factors (Matsuishi et al. 2012; Maunder et al. 2006), such as depression, anxiety, or insomnia, and were conducted either with limited sample sizes (Goulia et al. 2010; Ho et al. 2005) or in just one hospital or a restricted group of institutions (Goulia et al. 2010; Matsuishi et al. 2012; Maunder et al. 2006). Most of the preliminary studies consist of data obtained from some certain locations and it is seen that they mostly focus on the psychological consequences of HCWs (Barello et al. 2020).

An advantage of this study is the large sample size covering diverse professions and occupations from various institutions, regions, and cultures. Additionally, many problems faced by HCWs during the acute phase of the pandemic were investigated. Thus, the current study aimed to achieve a deeper understanding of the stressors and difficulties experienced by HCWs, and to offer suggestions with regard to future policies to maintain HCWs' health, motivation, and working capacity;

to enhance their wellbeing; and to ensure preparedness for future pandemics and crises. This study contributes to the literature by shedding a fresh light on the difficulties and stressors that affect the mental status of healthcare professionals.

Methods

An online survey was conducted from 2–4 April in 2020 during the early and challenging times of the outbreak in Turkey. Participants were recruited using the snowball technique with the help of the International Medical Rescue Teams Association (UMKE Derneği) of Turkey. Due to the pandemic conditions, we could not apply any proper randomisation method, and there was no chance for face-to-face interviews. All participants were working in health facilities of the Ministry of Health of Turkey. The type of health facility where participants were working and the cities where these facilities were located represented a diverse spectrum.

The General Health Questionnaire (GHQ-12) developed by Goldberg and Williams (1998) and adapted into Turkish (Kılıç et al. 1997) was used to assess the current mental health status of the participants. Higher scores on the GHQ-12 indicate more mental health problems. A questionnaire was developed by the authors following online meetings with key HCWs between 27 March and 2 April 2020, which included items on the sociodemographic characteristics of the participants and 26 COVID-19-related items. The questionnaire was pilot-tested using a sample of HCWs to evaluate the appropriateness of the items, and all necessary changes were made before conducting the survey. We performed a new categorisation process for the following variables: age, region of health facility, accommodation type, occupation, and type of health facility. Additionally, we grouped the responses related to COVID-19-specific stressors into never/rarely, sometimes, and often/always.

SPSS® 21.0 was used to enter, clean, and analyse data. For the study sample characteristics, we reported numeric variables as mean \pm SD and categorical variables as frequencies and percentages. For descriptive information, frequency analysis and cross-tabulations were made, and statistical significance was determined using the chi-square test. We specified GHQ-12 score as the dependent variable. The association between GHQ-12 score and the independent variables was assessed in a multiple linear regression model using a backward stepwise procedure. All significant variables with a p value < 0.05 were entered into the multivariate analysis. Ethical approval for the study was obtained from the Ethics Board of İstanbul Bilgi University (No:2020-40082-63), and necessary research permissions were obtained from the Scientific Research Platform of the Ministry of Health of Turkey and UMKE Derneği.

Results In total, 2506 HCWs participated in the study, of whom 71.5% ($n = 1790$) were women and 28.5% ($n = 713$) were men. One thousand and seventeen individuals (40.6%) were either nurses or midwives, 503 (20.1%) were other health service providers (psychologist, social workers, physiotherapists, child development specialist, physiotherapist, pharmacist, and dietician), 493 (19.7%) were health service technicians (X-ray, medical laboratory, emergency medical, and anesthesia), 281 (11.2%) were physicians/specialists/dentists, and 212 (8.5%) were administrative or support staff (security, cleaning, administrative, health information, and driver). One thousand one hundred and seventy-nine participants (47%) worked at high-risk health facilities during the initial phase of the pandemic, 479 (19.1%) at moderate-risk facilities, and 848 (33.8%) at low-risk facilities. Table 1 shows the sociodemographic characteristics of the participants.

With regard to frequency of experiencing COVID-19-related stressors, participants reported a higher frequency of often/always experiencing fear of infecting loved ones (83.7%, $n = 2098$) than being infected themselves (76.1%, $n = 1908$). Other stressors experienced often/always that had high frequencies were: maintaining favourable relationships with their teammates (90.7%, $n = 2274$), feeling anxious over ongoing uncertainty (90.2%, $n = 2261$), feeling anger and hopelessness due to the community's neglect of the precautions (84.2%, $n = 2109$), making great effort to create a more hygienic environment at home (84.6%, $n = 2121$), being adversely impacted by news of teammates getting infected and/or quitting work as a result of potential infection (82.3%, $n = 2063$), and fear of exposure to violence (72.8%, $n = 1825$) (Table 2).

The mean GHQ-12 score was 6.03 (min = .00, max = 12.00). Table 3 shows that a substantial proportion of HCWs reported not being able to enjoy day-to-day activities (80.1%, $n = 2007$) and not feeling reasonably happy (79.1%, $n = 1981$); however, they felt that they have been playing a useful part in things (84.2%, $n = 2110$).

Table 4 shows the results of the multiple linear regression analysis. Perceived levels of individual preparedness and training related to COVID-19 were negatively associated with GHQ-12 scores. Female gender, meeting basic needs during the pandemic, fear of being infected and infecting loved ones, and poor family relationships were positively associated with GHQ-12 scores.

Discussion

The findings of the study showed that most participants faced several stressors and serious mental health consequences. Most of the participants reported a high frequency of anxiety rooted in uncertainty, anger, and hopelessness due to the community's neglect of precautions, striving to create a more

hygienic environment at home, being adversely impacted by news of colleagues getting infected and/or quitting, and maintaining good relationships with teammates; however, these variables were not statistically associated with the mental health of HCWs. This may be due to an imbalance in the distribution. A future study including participants whose stress levels vary on a wide spectrum may provide a clearer understanding of the effect of these stressors. It has been reported that there has been an increase in violence against HCWs during the COVID-19 pandemic in some countries (Şahin et al. 2020; WHO 2020d). In parallel with these reports, many participants of the current study expressed anxiety about being exposed to violence.

Consistent with the literature (Rossi et al. 2020; WHO 2020c), fear of being infected and infecting loved ones was prevalent among HCWs and was related to worse mental health. Similarly to the findings of previous studies, female gender and lower perceived levels of individual preparedness (Matsuishi et al. 2012) and training (Maunder et al. 2006) related to COVID-19 were associated with an increased risk of mental health problems.

In addition to supporting earlier findings, the current study revealed that poor family relationships were strongly associated with poorer mental health among HCWs. Meeting basic needs was related to worse mental health; however, current accommodations may have played a moderating role in this relationship.

Limitations and conclusions

A limitation of the current study is that a probability sampling strategy could not be used due to pandemic conditions. As such, the sample may not be representative of the HCW population in Turkey. Additionally, the cross-sectional design of the study did not allow inference of causal relationships. Nevertheless, this study has several strengths. Considering the time of data collection, when uncertainty, demands, and needs peaked, and the large sample size, comprising diverse occupations, organisations, and regions, the findings of this study offer a comprehensive outlook for HCWs' experiences during the early and challenging times of the pandemic. The results have utility for shaping future policies for overcoming crises and pandemics. First, risk groups facing more stressors and/or having worse mental health conditions should be triaged psychologically for interventions. In particular, women facing problems with their families and those with caregiver responsibilities should be monitored for their needs and provided with psychosocial support, including both mental health support and life facilitators such as free care facilities for children and older adults or handicapped relatives, if necessary. Second, effective communication and briefing should be provided regularly to HCWs by health managers to share information and allow HCWs to contribute to the decision-

Table 1 Sociodemographic characteristics of participants: Turkey, April 2020

Variables	<i>N</i>	%
Age		
20-35	1464	58.4
36-65	1042	41.6
Gender ^a		
Female	1790	71.5
Male	713	28.5
Marital status		
Single/divorced/widowed	1002	40.0
Married/living together	1504	60.0
Having children		
No	1163	46.4
Yes	1343	53.6
Living with:		
Spousechildren/parents/friends/relatives/other	2115	84.4
Alone	391	15.6
Current accommodation		
Home	2339	93.3
Hospital room/hotel/guest house/other	167	6.7
Meeting basic needs		
No	112	4.5
Yes	2394	95.5
Region ^a		
Marmara Region	897	35.8
Karadeniz (Black Sea) Region	364	14.5
Akdeniz (Mediterranean) Region	307	12.3
Ege (Aegean) Region	289	11.5
Guneydogu Anadolu (Southeastern Anatolia) Region	225	9.0
Dogu Anadolu (Eastern Anatolia) Region	221	8.8
Ic Anadolu (Central Anatolia) Region	201	8.0
Occupation		
Physician/specialist/dentist	281	11.2
Nurse/midwife	1017	40.6
Other health service providers (psychologist/social workers/child development specialist/physiotherapist/pharmacist/dietician)	503	20.1
Health service technicians (X-ray/medical laboratory/emergency medical/anesthesia)	493	19.7
Health management and support workers (security/cleaning/administrative/health information/driver)	212	8.5
Health facility		
High-risk (112 ambulance service/ER/OR/pandemic response unit/maternity unit/ ICU, XR, laboratory unit)	1179	47.0
Moderate-risk (public health center and primary healthcare service)	479	19.1
Low-risk (administration/dental unit ^b /others)	848	33.8

ER: emergency room; OR: operating room; ICU: intensive care unit; XR: X-ray

^a Differences in total *n* are due to missing values in items

^b The dental units were out of service due to pandemic conditions during the early period of the outbreak in Turkey, April 2020

making process, thereby avoiding problems of uncertainty or fear arising due to the epidemic. Third, the need for personal protective equipment and other physical, psychological, and social needs should be identified and met regularly to ensure HCWs' wellbeing and maintain their motivation for work.

Moreover, well-prepared training, including practical demonstrations, should be designed, updated frequently according to the concrete needs of the field and concerns of HCWs, and offered regularly for the purposes of individual and organisational preparedness. It is vital that the management

Table 2 Frequency of experiencing COVID-19-related stressors among participants: Turkey, April 2020

Item	Never/rarely		Sometimes		Often/always	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Fear of being infected	313	12.5	285	11.4	1908	76.1
Fear of infecting loved ones	225	9.0	183	7.3	2098	83.7
Deterioration of relationship with family ^a	1370	54.7	453	18.1	683	27.3
Feeling of pressure due to community's trust in HCWs	689	27.5	585	23.3	1232	49.2
Feeling responsible for motivating teammates	643	25.7	610	24.3	1253	50.0
Anger and hopelessness due to community's neglect of the precautions	168	6.7	229	9.1	2109	84.2
Being adversely impacted by working with teammates and at a unit different from the usual	976	38.9	495	19.8	1035	41.3
Making much effort to create a more hygienic environment at home ^a	209	8.3	176	7.0	2121	84.6
Feeling uncomfortable with changes in daily routines ^a	294	11.7	399	15.9	1813	72.3
Feeling anxious over ongoing uncertainty	103	4.1	142	5.7	2261	90.2
Feeling disturbed by losing control over one's life	255	10.2	278	11.1	1973	78.7
Not being able to care for one's children (if any) due to changes in working conditions ^b	227	17.3	184	14.0	902	68.7
Experiencing challenges caused by distancing from family	627	25.0	415	16.6	1464	58.4
Being adversely impacted by news of teammates getting infected and/or quitting ^a	234	9.3	209	8.3	2063	82.3
Anxiety due to having a chronic disease	1741	69.5	216	8.6	549	21.9
Feeling a moral burden due to distancing oneself from family members	537	21.4	315	12.6	1654	66.0
Being exposed to family pressure for quitting the profession	1955	78.0	213	8.5	338	13.5
Being avoided by people due to being an HCW	842	33.6	483	19.3	1181	47.1
Fear of exposure to violence against HCWs	368	14.7	313	12.5	1825	72.8
Maintaining good relationships with teammates	74	3.0	158	6.3	2274	90.7
Feeling respected by the community as an HCW working in pandemic conditions	364	14.5	654	26.1	1488	59.4
Personal protective equipment is well-supplied	1244	49.6	603	24.1	659	26.3
Thinking that the amount of training related to COVID-19 is sufficient	748	29.8	593	23.7	1165	46.5
Thinking that the organizational preparedness level related to COVID-19 is sufficient ^a	919	36.7	726	29.0	861	34.4
Thinking that the individual preparedness level related to COVID-19 is sufficient ^a	380	15.2	688	27.5	1438	57.4
Feeling bad due to having to perform medical triage at the moment/in future ^c	100	35.6	38	13.5	143	50.9

HCW, health care worker.

^a Total percentages may not add up to 100 due to decimal rounding.

^b Within the number of participants who reported having children (*n* = 1313).

^c Within the number of participants whose position requires performing medical triage (*n* = 281).

Table 3 Frequencies of psychological distress indicators of participants (General Health Questionnaire-12), Turkey, April 2020

Item	Yes <i>n</i> (%)	No <i>n</i> (%)
Have you been able to enjoy day-to-day activities?	499 (19.9)	2007 (80.1)
Have you been feeling reasonably happy?	525 (20.9)	1981 (79.1)
Have you been feeling unhappy and depressed?	1936 (77.3)	570 (22.7)
Have you felt constantly under strain?	1621 (64.7)	885 (35.3)
Have you lost much sleep due to worry?	1336 (53.3)	1170 (46.7)
Have you been able to face up to problems?	1172 (46.8)	1334 (53.2)
Have you felt you couldn't overcome your difficulties?	1169 (46.6)	1337 (53.4)
Have you been losing confidence?	980 (39.1)	1526 (60.9)
Have you felt capable of making decisions?	922 (36.8)	1584 (63.2)
Have you been able to concentrate on what you are doing?	1626 (64.9)	880 (35.1)
Have you been feeling worthless?	549 (21.9)	1957 (78.1)
Have you felt playing a useful part in things?	2110 (84.2)	396 (15.8)

Table 4 Multiple linear regression analysis of the association between GHQ-12 score and sociodemographic characteristics and COVID-19-related stressors, Turkey, April 2020

Variable	95.0% CI for EXP (B)	P value*	VIF	S.E.	β	t value	ΔR^{2a}
Gender	-0.127 [-0.178–0.076]	0.001	1.154	0.024	-0.245	-4.911	0.061
Meeting basic needs	0.049 [0.177–0.080]	0.000	1.346	0.023	0.036	3.587	0.003
Fear of being infected	0.082 [0.038–0.127]	0.008	1.218	0.021	0.190	3.624	0.090
Fear of infecting loved ones	0.084 [0.037–0.131]	0.018	1.270	0.023	0.181	3.494	0.031
Family relationship	0.089 [0.058–0.120]	0.000	1.137	0.015	0.280	5.693	0.138
Perceived level of training related to COVID-19	-0.047 [-0.079–0.015]	0.020	1.275	0.015	-0.153	-2.916	0.034
Perceived level of individual preparedness related to COVID-19	-0.036 [-0.071–0.000]	0.015	1.256	0.017	-0.102	-1.973	0.054

*: Significant at $p < .05$.

^a Adjusted $R^2 = 0.346$.

of COVID-19 is planned and sustained in a way that prioritises the psychological wellbeing of HCWs. To achieve this goal, psychological wellbeing programmes for both individuals and groups, such as teams working together, should be provided to ensure their individual resilience. We also maintain that HCWs and their families would benefit from sustained and intermittent psychological support. Finally, ensuring a safe working atmosphere for HCWs should be one of the priorities, as well as security measures, and community programmes should be implemented for the sake of community health.

Considering that the COVID-19 pandemic and its consequences will not disappear soon and pandemics will always be an issue of healthcare systems, the above-mentioned measures should be integrated into long-term health care policies by health policy makers and health managers.

Acknowledgment We want to thank Mr. Levent Bircan and Ms. Tülay Akgün from UMKE Demeği for their valuable effort in the data collection process.

Authors contribution Yeşim Ünal initiated and designed the study, analyze and interpreted the data, drafted and revised the article. Ekin Çakır initiated the study, participated in collecting, cleaning and interpretation of data, drafted and revised the article. Sidika Tekeli-Yesil initiated the study, planned and supervised the statistical analysis, interpreted the data, and revised the article. All authors read and approved the final manuscript.

Funding No external funding for this manuscript.

Availability of data and material Data available upon request from the corresponding author.

Code availability Not applicable

Declarations

Conflicts of interest / Competing interests The authors have indicated that they have no potential conflicts of interest.

Ethics Approval Ethical approval for the study was obtained from İstanbul Bilgi University (No:2020-40082-63).

Consent to participate Online Informed consent was obtained from all individual participants included in the study.

Consent for publication Not applicable

References

- Anadolu Agency (2020) Turkey: Death toll from coronavirus rises to 277. Anadolu Agency, Ankara. <https://www.aa.com.tr/en/health/turkey-death-toll-from-coronavirus-rises-to-277/1788522>. Accessed 19 Jan 2021
- Barello S, Falcó-Pegueroles A, Rosa D et al (2020) The psychosocial impact of flu influenza pandemics on healthcare workers and lessons learnt for the COVID-19 emergency: a rapid review. *Int J Public Health* 65:1205–1216. <https://doi.org/10.1007/s00038-020-01463-7>
- Goldberg DP, Williams P (1998) A user's guide to the General Health Questionnaire. NFER/Nelson, Windsor, United Kingdom
- Goulia P, Mantas C, Dimitroula D, Mantis D, Hyphantis T (2010) General hospital staff worries, perceived sufficiency of information and associated psychological distress during the A/H1N1 influenza pandemic. *BMC Infect Dis* 10:322. <https://doi.org/10.1186/1471-2334-10-322>
- Hacimusalar Y, Kahve AC, Yasar AB, Aydin MS (2020) Anxiety and hopelessness levels in COVID-19 pandemic: a comparative study of healthcare professionals and other community sample in Turkey. *J Psychiatr Res* 129:181–188. <https://doi.org/10.1016/j.jpsychires.2020.07.024>
- Ho SMY, Kwong-Lo RSY, Mak CWY, Wong JS (2005) fear of severe acute respiratory syndrome (SARS) among health care workers. *J Consult Clin Psychol* 73(2):344–349. <https://doi.org/10.1037/0022-006X.73.2.344>
- Kılıç C, Rezaki M, Rezaki B et al (1997) General Health Questionnaire (GHQ12 & GHQ28): psychometric properties and factor structure of the scales in a Turkish primary care sample. *Soc Psychiatry Psychiatr Epidemiol* 32:327–331. <https://doi.org/10.1007/BF00805437>
- Kisely S, Warren N, McMahon L, Dalais C, Henry I, Siskind D (2020) Occurrence, prevention, and management of the psychological effects of emerging virus outbreaks on healthcare workers: rapid review and meta-analysis. *BMJ* 369:m1642. <https://doi.org/10.1136/bmj.m1642>

- Lai J, Ma S, Wang Y et al (2020) Factors associated with mental health outcomes among health care workers exposed to coronavirus disease. *JAMA Network Open* 3(3):e203976. <https://doi.org/10.1001/jamanetworkopen.2020.3976>
- Liu Q, Luo D, Haase JE et al (2020) The experiences of health-care providers during the COVID-19 crisis in China: a qualitative study. *Lancet Glob Health* 8(6):e790–e798. [https://doi.org/10.1016/S2214-109X\(20\)30204-7](https://doi.org/10.1016/S2214-109X(20)30204-7)
- Magnavita N, Prinzi RRD, Chirico F, Sacco A, Quintavalle G (2020) COVID-19 and staff mental health: is there an evidence? An Italian field study. *Eur J Public Health* 30(2 Suppl):ckaa165.565. <https://doi.org/10.1093/eurpub/ckaa165.565>
- Matsuishi K, Kawazoe A, Imai H et al (2012) Psychological impact of the pandemic (H1N1) 2009 on general hospital workers in Kobe. *Psychiatry Clin Neurosci* 66(4):353–360. <https://doi.org/10.1111/j.1440-1819.2012.02336.x>
- Maunder RG, Lancee WJ, Balderson KE et al (2006) Long-term psychological and occupational effects of providing hospital healthcare during SARS outbreak. *Emerg Infect Dis* 12(12):1924–1932. <https://doi.org/10.3201/eid1212.060584>
- Pappa S, Ntella V, Giannakas T, Giannakoulis VG, Papoutsis E, Katsaounou P (2020) Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: a systematic review and meta-analysis. *Brain Behav Immun* 88:901–907. <https://doi.org/10.1016/j.bbi.2020.05.026>
- Raven J, Wurie H, Witter S (2018) Health workers' experiences of coping with the Ebola epidemic in Sierra Leone's health system: a qualitative study. *BMC Health Serv Res* 18(1):251. <https://doi.org/10.1186/s12913-018-3072-3>
- Rossi R, Soggi V, Pacitti F et al (2020) Mental health outcomes among frontline and second-line health care workers during the coronavirus disease 2019 (COVID-19) pandemic in Italy. *JAMA Netw Open* 3(5):2010185. <https://doi.org/10.1001/jamanetworkopen.2020.10185>
- Şahin MK, Aker S, Şahin G, Karabekiroğlu A (2020) Prevalence of depression, anxiety, distress and insomnia and related factors in healthcare workers during COVID-19 pandemic in Turkey. *J Community Health* 45(6):1168–1177. <https://doi.org/10.1007/s10900-020-00921-w>
- Sevimli S (2020) Healthcare professionals acting ethically under the risk of stigmatization and violence during COVID-19 from media reports in Turkey. *Eubios J Asian Int Bioeth* 30(5):207–211
- Shechter A, Diaz F, Moise N et al (2020) Psychological distress, coping behaviours, and preferences for support among New York healthcare workers during the COVID-19 pandemic. *General Hospital Psychiatry* 66:1–8. <https://doi.org/10.1016/j.genhosppsych.2020.06.007>
- WHO (2020a) WHO announces COVID-19 outbreak a pandemic. World Health Organization, Geneva <https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/3/who-announces-covid-19-outbreak-a-pandemic> Accessed 22 Jan 2021
- WHO (2020b) WHO coronavirus disease (COVID-19) dashboard. World Health Organization, Geneva <https://covid19.who.int/> Accessed 26 Jan 2021
- WHO (2020c) Coronavirus disease (COVID-19) outbreak: rights, roles and responsibilities of health workers, including key considerations for occupational safety and health. World Health Organization, Geneva [https://www.who.int/publications/i/item/coronavirus-disease-\(covid-19\)-outbreak-rights-roles-and-responsibilities-of-health-workers-including-key-considerations-for-occupational-safety-and-health](https://www.who.int/publications/i/item/coronavirus-disease-(covid-19)-outbreak-rights-roles-and-responsibilities-of-health-workers-including-key-considerations-for-occupational-safety-and-health) Accessed 26 Jan 2021
- WHO (2020d) Attacks on health care in the context of COVID-19. World Health Organization, Geneva <https://www.who.int/news-room/feature-stories/detail/attacks-on-health-care-in-the-context-of-covid-19> Accessed 26 Jan 2021
- Xiang Y-T, Yang Y, Li W et al (2020) Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. *Lancet Psychiatry* 7(3):228–229. [https://doi.org/10.1016/S2215-0366\(20\)30046-8](https://doi.org/10.1016/S2215-0366(20)30046-8)

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.