Anxiety and depression levels of healthcare workers during Covid-19 pandemic

Onur Turan1, Nilgün Yılmaz Demirci2, Güntülü AK3, Şule Akçay4, Ülkü Aka Aktürk5, Semra Bilaçeroğlu6, Funda Coşkun7, Oğuz Köktürk2, Arzu Mirici8, Cengiz Özdemir9, Nazan Şen10, Ülkü Yılmaz11

1. İzmir Katip Celebi University Atatürk Research and Training Hospital, Chest Diseases Department, İzmir-Turkey.
2. Gazi University, Chest Diseases Department, Ankara – Turkey.
3. Eskişehir Osmangazi University, Chest Diseases Department, Eskişehir – Turkey.
4. Başkent University, Chest Diseases Department, Ankara – Turkey.
5. Süreyyapaşa Research and Training Hospital, Chest Diseases Department, İstanbul-Turkey.
6. İzmir Dr. Suat Seren Chest Diseases and Chest Surgery Hospital, Chest Diseases Department, İzmir – Turkey.
7. Uludağ University, Chest Diseases Department, Bursa – Turkey.
8. Canakkale 18 Mart University, Chest Diseases Department, Canakkale – Turkey.
9. Yedikule Research and Training Hospital, Chest Diseases Department, İstanbul-Turkey.
10. Başkent University, Turgut Noyan Research and Training Hospital, Chest Diseases Department, Adana-Turkey.
11. Ankara Atatürk Chest Diseases and Chest Surgery Research and Training Hospital, Chest Diseases Department, Ankara-Turkey.

• All the authors are members of Turkish Respiratory Society (TRS) Board of Directors

Author details:
Onur Turan: Phone: +90 532 352 34 61, e-mail: onurtura@yahoo.com; Nilgün Yılmaz Demirci: nilgundemirci@gmail.com, 90 5055410295; Şule Akçay: msuleakcay@gmail.com, 90 5336435989; Ülkü Aka Aktürk: drulkuaakturk@yahoo.com, 90 5324687685; Semra Bilaçeroğlu: s.bilaçeroğlu@gmail.com, 90 5306437395; Funda Coşkun: fundacoskun@gmail.com, 90 5332500099; Oğuz Köktürk: okokturk@superonline.com, 90 5323263757; Arzu Mirici: arzumirici@gmail.com, 90 532430764; Cengiz Özdemir: cengizoz@yahoo.com, 90 5057991809; Nazan ŞEN: nazansen68@gmail.com, 90 5323450865; Ülkü Yılmaz: ulkuylmzdr@gmail.com, 90 5326264423

Abstract
Background: Coronavirus disease 2019 (covid-19), which causes a pandemic in the world, has started to appear in turkey since march 2020. Healthcare workers are at the top of the groups most at risk for covid-19 infection, which can have a negative impact on psychological state.
Objectives: It was aimed to evaluate anxiety and depression levels among healthcare workers.
Methods: this cross-sectional study performed via an online survey in april 2020. Participants answered questions about sociodemographic features, personal views and experiences about covid-19 and the hospital anxiety and depression scale (hads).
Results: A total of 300 healthcare workers, 193 men and 107 women, participated in the survey. According to hads, 44.6% of participants scored above anxiety and 68.2% scored above depression cut-off points. Being younger than 50 and taking care of covid-19 patients in hospitals were independently associated with anxiety risk. Female gender, young age (less than 50) and having comorbidity were independent risk factors for depression.
Conclusion: Healthcare workers were at high risk of anxiety and depression during covid-19 outbreak. For this reason, psychological support should be given, especially to the group with high risk.
Keywords: Healthcare workers; anxiety; depression; covid-19
DOI: https://dx.doi.org/10.4314/ahs.v22i1.62

Cite as: Turan O, Demirci NY, Güntülü AK, Akçay S, Aktürk ÜA, Bilaçeroğlu S, et al. Anxiety and depression levels of healthcare workers during the Covid-19 pandemic. Afri Health Sci. 2022;22(1):532-40. https://dx.doi.org/10.4314/ahs.v22i1.62

Introduction
On December 2019, some cases of pneumonia of unknown etiology occurred in Wuhan City, China. A new type of virus, named as coronavirus disease 2019 (COVID-19), was found to be the cause of pneumonia1. Because of rapid and worldwide spread of the disease, the outbreak has been declared as pandemic
on March 11, 2020 by WHO. The COVID-19 pandemic was confirmed to have reached Turkey in March 2020. Since then, the number of confirmed total cases in Turkey surpassed 120,000 at the beginning of May 2020.

From doctors to nurses, all medical health workers are first-line fighters treating patients with COVID-19. This fact makes healthcare workers to have a high risk of exposure to the virus all around the world. Europe had the highest absolute numbers of reported COVID-19 infections (119,628), and the Eastern Mediterranean region had the highest number of reported deaths per 100 infections among healthcare workers. The total number of health workers infected COVID-19 in Turkey has reached 7,428 according to ministry of health at the end of April 2020.

Anxiety and depression are common in healthcare professionals due to the stressful working environment and long working hours. More than a fifth of healthcare professionals working in the hospitals screened positive for depression or anxiety ahead of the coronavirus pandemic.

Outbreaks like COVID-19 not only injure the health, but also have a negative psychological impact on healthcare workers. Previous studies considered severe acute respiratory syndrome (SARS) 2003 outbreak to be a psychological trauma among frontline healthcare workers. As they are directly involved in the diagnosis and treatment of COVID-19, they also face a risk of developing psychological distress about this situation. However, there is no study targeting the psychological status of healthcare workers in Turkey yet.

There are many factors that may affect the psychological mood in people, such as gender and age. It has been well established that women are in greater risk for anxiety and depression than men, because of the interactions between biological factors and social determinants. Older persons have significantly lower frequencies of any current anxiety disorder, but they have been at greater risk of developing depression because of the cumulative effect of numerous risk factors, such as chronic illness and isolation. These parameters can also affect the presence of anxiety and depression in healthcare workers.

Therefore, our study aimed to assess mental health outcomes, levels of anxiety and depression, and factors affecting psychological status in healthcare workers during COVID-19 pandemic in Turkey.

Material-method
Procedure
This is a web-based, cross-sectional study performed via an online survey in April 2020. Between April and May 2020, a total of 300 health workers, 193 males and 107 females, participated in the survey. The study was performed nearly one month after the start of COVID-19 outbreak in Turkey. Data was collected through an online questionnaire using SurveyMonkey software (SurveyMonkey, San Mateo, CA, USA). The web-based questionnaire link was sent to the members of Turkey Respiratory Society, including chest disease specialists, pulmonology research assistants and pulmonology-related group members (nurses, technicians, physiologists) via e-mail to their personal e-mail addresses. The healthcare workers who joined this survey and answered all the questions were included in the study.

The study was approved by Local Ethic Committee of Gazi University School of Medicine, in accordance to the principles in the Declaration of Helsinki.

Participants
Health care workers who work in Turkey’s seven geographical regions participated in the study. The majority of participants were in the 40-49 age group. There were 246 (82%) doctors, 33 (11%) nurses and 21 (7%) other healthcare professionals as participants in our study. Only 17.3% of healthcare workers had at least one comorbidity. Table 1 shows the sociodemographic features of the participants.
Measures
The survey included 36 questions with multiple choices. The first 8 questions based on sociodemographic features, such as gender, age and occupation. Questions between 9 and 22 were about COVID-19 experiences (Appendix 1).

The anxiety and depression of the study subjects was evaluated using the hospital anxiety and depression scale (HADS), which included questions from 23 to 36. This scale contains two subscales measuring symptoms of depression (HADS-D) and anxiety (HADS-A). It includes seven statements on each disorder, and each statement is ranked on a 4-point (from zero to three) scale with zero denoting the lowest and three denoting the highest level of anxiety or depression. Aydemir et al. published validity and reliability of Turkish Version of HADS, which had a cut-off score more than 10 for HADS-D and 7 for HADS-A revealing potential depression and anxiety. The Cronbach’s alpha values were 0.7426 for HADS-A and 0.6962 for HADS-D in this study. The Cronbach’s alpha coefficients for anxiety and depression in our study were 0.81 and 0.79, respectively.

Table 1: Demographics of the healthcare workers

| Demographics and characteristics | Participants (n=300) | %  |
|----------------------------------|---------------------|----|
| **Age**                          |                     |    |
| 20-29                            | 48                  | 16 |
| 30-39                            | 57                  | 29 |
| 40-49                            | 107                 | 35.7|
| 50-59                            | 47                  | 15.6|
| ≥60                              | 11                  | 3.7 |
| **Gender**                       |                     |    |
| Male                             | 107                 | 35.7|
| Female                           | 193                 | 64.3|
| **Occupation**                   |                     |    |
| Doctor (specialties)             | 242                 | 82 |
| Pulmonology                      | 200                 | 82.6|
| Chest surgery                    | 8                   | 5.8 |
| Internal medicine                | 7                   | 2.9 |
| Infectious disease               | 5                   | 2.1 |
| Family medicine                  | 8                   | 2.5 |
| Emergency medicine               | 2                   | 0.8 |
| Other                            | 5                   | 3.3 |
| Nurse                            | 32                  | 10.9|
| Healthcare stuff                 | 21                  | 7.1 |
| **Type of working hospital**     |                     |    |
| University                       | 113                 | 37.6|
| State                            | 151                 | 50.3|
| Private                          | 29                  | 9.8 |
| Family medicine practice         | 2                   | 0.7 |
| Health center                    | 5                   | 1.6 |
| **Comorbidity**                  |                     |    |
| Present                          | 52                  | 17.3|
| Not present                      | 248                 | 82.7|

Statistical analysis
Statistical analyses were performed using SPSS version 20.0®. Descriptive statistics were used to present baseline characteristics. Continuous variables were expressed as mean ± standard deviation and median (range). Chi-square test (χ²) was used to compare the differences between groups. Student t test was used to compare the means of 2 independent samples. A P-value < .05 was considered statistically significant. Participants were grouped as individuals with anxiety and depression based on HADS cut-off scores, and binary logistic regression was used to identify factors associated with anxiety and depression. Odds ratio (OR) and 95% confidence interval (95% CI) were obtained from logistic regression models.
Table 2: Perceptions and experiences of healthcare workers about COVID-19

| Statement                                                                 | Yes, n (%) | No, n (%) |
|--------------------------------------------------------------------------|------------|-----------|
| I think my knowledge about COVID-19 is sufficient.                        | 219 (73%)  | 81 (27%)  |
| There has been COVID-19 case in my hospital.                             | 279 (94%)  | 18 (6%)   |
| There is inpatient service or polyclinic of COVID-19 at my hospital.     | 258 (96.5%)| 9 (3.5%)  |
| I take care of COVID-19 patients.                                        | 189 (73%)  | 70 (27%)  |
| I had contact with the COVID-19 patient without a mask.                  | 213 (82.2%)| 46 (17.8%)|
| I took a swab sample from the COVID-19 patient.                          | 118 (45.6%)| 141 (54.4%)|
| It is a protective health equipment that I use in any case in contact with the COVID-19 patient. | Medical mask | 229 (91.2%) | 22 (8.8%) |
| Medical gloves                                                          | 207 (82.8%)| 43 (17.2%)|
| N95 / FFP2 mask                                                         | 195 (76.8%)| 59 (23.2%)|
| Shield / protective glasses                                              | 183 (72.3%)| 70 (27.7%)|
| Disposable overalls Apron                                                | 185 (74%)  | 65 (26%)  |
| I make possible / definitive COVID-19 patients wear medical mask during hospital stay. | 257 (99.2%)| 2 (0.8%)  |
| I gave a swab sample for COVID-19.                                       | 78 (30.2%) | 180 (69.8%)|
| I was treated with the diagnosis of COVID-19.                            | 17 (6.6%)  | 241 (93.4%)|
| I totally obey the isolation rules at home.                              | 203 (78.7%)| 55 (21.3%)|

COVID-19: Coronavirus disease 2019

Results

There were 219 participants (73%) who think that they have sufficient knowledge about Coronavirus. The rate of healthcare professionals who directly followed the coronavirus patient was 73%. The most frequently used protective health equipment was told as the medical mask in contact with the possible / definitive COVID-19 patients (91.2%). Nearly 7% of healthcare workers stated that they received treatment with the diagnosis of COVID-19. While 77.2% of participants expressed feelings of anxiety and fear due to COVID-19, 4% stated that they received psychological support. Table 2 shows the perceptions and experiences of healthcare professionals about COVID-19.

Participants’ mean HADS-A and HADS-D scores were 9.72 ± 5.03 and 9.62 ± 4.32, respectively. HADS total mean score was 19.16 ± 8.84. According to HADS, 44.6% of healthcare workers scored above the anxiety and 68.2% scored above the depression cut-off points. In other words, over two-thirds of healthcare workers were at risk for depression, and nearly half of them had this risk for anxiety.

Female healthcare professionals had statistically significant higher HADS-A and HADS-D scores than male (p<0.001 and p=0.004, respectively). Similarly, participants under 50 years old had significantly higher HADS-A and HADS-D scores when compared with those over 50 (p<0.001 and 0.007, respectively). Mean HADS-A scores were statistically higher in the healthcare workers who who took care of COVID-19 patients (p=0.003) and had taken a swab sample from a patient with SARS-CoV2 (p=0.037). There were statistically significant higher HADS-D score in healthcare workers who had at least one comorbidity (p= 0.022). Mean HADS-A and D scores according to characteristics of participants are in Table 3.

African Health Sciences, Vol 22 Issue 1, March, 2022
Table 3: Mean HADS-A and D according to characteristics of participants

| Respondent characteristics | HADS - A (mean ± SD) | St. Error | df | p value | HADS - D (mean ± SD) | St. Error | df | p value |
|----------------------------|-----------------------|-----------|----|---------|-----------------------|-----------|----|---------|
| Age ≥ 50                   | 7.42±4.59             | 0.648     | 256| <0.001  | 8.16±4.05             | 0.572     | 256| 0.007   |
| Age < 50                   | 10.27±4.99            | 0.346     | 256| <0.001  | 9.97±4.32             | 0.299     | 256| 0.007   |
| Gender Male                | 8.13±4.89             | 0.379     | 256| <0.001  | 8.58±4.06             | 0.428     | 256| 0.004   |
| Gender Female              | 10.57±4.92            | 0.515     | 256| <0.001  | 10.18±4.36            | 0.336     | 256|         |
| Occupation Doctor          | 9.53±5.00             | 0.324     | 256| 0.050   | 9.47±4.27             | 0.277     | 256| 0.062   |
| Occupation Other health workers | 11.95±5.00          | 1.118     | 11.35±4.65 | 1.039   | 256| 0.004   |
| Status of doctor Specialist doctor | 9.61±5.08          | 0.362     | 233| 0.741   | 9.56±4.42             | 0.315     | 233| 0.465   |
| Status of doctor Resident doctor | 9.32±4.56           | 0.740     | 256| 0.050   | 9.11±3.32             | 0.538     | 256| 0.022   |
| Comorbidity Present        | 10.19±5.41            | 0.825     | 252| 0.520   | 11.05±4.70            | 0.717     | 252| 0.022   |
| Comorbidity Not present    | 9.64±4.95             | 0.340     | 256| 0.341   | 9.39±4.19             | 0.289     | 256| 0.111   |
| Knowledge about COVID-19   | Sufficient            | 9.47±4.93 | 0.400| 256| 0.179  | 9.37±4.22             | 0.442     | 256| 0.277   |
| Knowledge about COVID-19   | Insufficient          | 10.43±5.30| 0.346| 256| 0.360  | 10.34±4.54             | 0.360     | 256| 0.111   |
| Taking care of COVID-19 patients | Yes                  | 10.24±5.21| 0.380| 256| 0.380  | 9.84±4.38             | 0.320     | 256| 0.098   |
| Taking care of COVID-19 patients | No                   | 8.31±4.38 | 0.519| 256| 0.494  | 9.18±4.07             | 0.494     | 256| 0.098   |
| Taking swab sample from COVID-19 patient | Yes              | 10.45±5.09| 0.470| 255| 0.376  | 10.13±4.48             | 0.376     | 255| 0.098   |
| Taking swab sample from COVID-19 patient | No                 | 9.14±4.94 | 0.418| 256| 0.379  | 9.24±4.06             | 0.379     | 256| 0.716   |
| Having diagnosis of COVID-19 | Yes                  | 9.77±4.12 | 0.338| 256| 0.178  | 9.66±4.33             | 0.340     | 256| 0.716   |
| Having diagnosis of COVID-19 | No                   | 9.22±4.03 | 0.412| 256| 0.388  | 9.54±4.21             | 0.388     | 256|        |

COVID-19: Coronavirus disease 2019, HADS-A: Hospital Anxiety and Depression Scale - Anxiety, HADS-D: Hospital Anxiety and Depression Scale – Depression, St: Standard, df: degree of freedom
Anxiety scores were significantly higher among healthcare workers younger than 50 (p = 0.001, compared with those over 50), women (p = 0.008, compared with men), and individuals taking care of COVID-19 patients (p = 0.005, compared with those who did not provide healthcare to COVID-19 patients). Younger participants (<50), female healthcare workers and individuals with chronic diseases had statistically significant higher depression scores (p = 0.040, 0.019 and 0.042, respectively). Table 4 reveals the association between respondent characteristics and psychological status.

Table 4: Association between respondent characteristics and presence of anxiety/depression according to HADS

| Respondent characteristics | Anxiety (n) | No Anxiety (n) | Value  | df | p value  | Depression (n) | No Depression (n) | Value  | df | p value  |
|----------------------------|-------------|----------------|--------|----|----------|----------------|-------------------|--------|----|----------|
| Age ≥ 50                   | Yes         | 12             | 39     | 1  | 0.001    | 29             | 22                | 4.269  | 1  | 0.040    |
|                            | No          | 103            | 104    |    |          | 147            | 60                |        |    |          |
| Gender                     | Female      | 85             | 83     | 1  | 0.008    | 123            | 45                | 5.547  | 1  | 0.019    |
|                            | Male        | 30             | 60     |    |          | 53             | 37                |        |    |          |
| Occupation                 | Doctor      | 94             | 123    | 1  | 0.283    | 148            | 69                | 1.388  | 1  | 0.822    |
|                            | Other health workers | 21 | 19 | | | 28 | 12 | | |
| Status of doctor           | Specialist doctor | 80 | 106 | | | 125 | 61 | | |
|                            | Resident doctor | 15 | 19 | | | 24 | 10 | | |
| Comorbidity                | Present     | 94             | 119    | 1  | 0.756    | 36             | 9                 | 3.490  | 1  | 0.042    |
|                            | Not present | 21             | 24     |    |          | 140            | 73                |        |    |          |
| Knowledge about COVID-19   | Sufficient  | 81             | 109    | 1  | 0.294    | 126            | 64                | 1.202  | 1  | 0.273    |
|                            | Insufficient | 34 | 34 | | | 50 | 18 | | |
| Taking care of COVID-19    | Yes         | 94             | 94     | 1  | 0.005    | 130            | 58                | 0.052  | 1  | 0.704    |
| patients                  | No          | 21             | 48     |    |          | 46             | 23                |        |    |          |
| Taking a swab sample       | Yes         | 58             | 59     | 1  | 0.155    | 117            | 86                | 2.509  | 1  | 0.113    |
|                            | No          | 57             | 83     |    |          | 140            | 90                |        |    |          |
| Having diagnosis of COVID-19 | Yes  | 5             | 12     | 1  | 0.183    | 11             | 6                 | 0.061  | 1  | 0.710    |
|                            | No          | 110            | 129    |    |          | 165            | 74                |        |    |          |

COVID-19: Coronavirus disease 2019.
DF: degrees of freedom.
Being younger than 50 (OR, 2.675, 95% CI, 1.260–5.678; p = 0.010) and taking care of COVID-19 patients in hospitals (OR, 1.912; 95% CI, 1.051–3.556; p = 0.0046) were independently associated with anxiety risk among healthcare workers. On the other hand, being female (OR, 1.972, 95% CI, 1.073–3.441; p = 0.028), being younger than 50 (OR, 2.247, 95% CI, 1.103–4.577; p = 0.026) and having a comorbidity (OR, 2.718; 95% CI, 1.144–6.459; p = 0.024) were predictors for depression among healthcare professionals. Table 5 shows the binary logistic regression analysis about the risk factors for depression and anxiety.

Discussion

This web-based study investigated if mental health of Turkish healthcare workers was negatively affected by COVID-19 outbreak. Our results demonstrated a high risk of anxiety and depression in healthcare professionals. Female gender, younger age (less than 50), having an organic disease or a contact with COVID-19 patients were found as potential risk factors.

Healthcare professionals seemed to be at high risk of anxiety and depression during COVID-19 outbreak. The 2019 coronavirus disease is a public health problem that causes international concern and negatively affect the psychological state\(^1\). Li et al. demonstrated that 24% of healthcare workers had varying levels of anxiety, and 33% of them had depression during COVID-19 pandemic\(^12\). There was a similar psychological impact on the public during the 2003 SARS outbreak\(^13\). This indicates that the pandemic is destabilizing the psychological status of the whole society affected by COVID-19.

As all medical health workers are first-line fighters during COVID-19 outbreak, they have a higher risk of exposure to the virus than almost everyone. This fact may disrupt the psychological stability of the healthcare workers. The main reasons for the psychological distress might be related to the many difficulties, such as feeling of being unsafe at work, the long-term workload at hospitals and the lack of medical protective equipment\(^1\). Our study revealed that 68% of healthcare workers were at risk of depression and 45% of them were at risk of anxiety according to HADS. Our findings about anxiety and depression seem extremely high when compared with similar studies. The overall prevalence of general anxiety disorder and depressive symptoms were 35% and 20% respectively in one study about COVID-19\(^14\). Lai et al. reported symptoms of depression in 50.4% and anxiety in 44.6% among healthcare workers in Coronavirus outbreak, which is the study with the closest results to our rates of anxiety and depression\(^15\). There is only one study evaluating the levels of anxiety and depression by HADS score during the COVID-19 pandemic, like ours. Özdin et al. demonstrated anxiety and depression levels and rates of Turkish society as 45.1% and 23.6% respectively (16). Anxiety level seems to be same in both studies. Due to results of both studies, we can say that medical health workers have a greater risk for anxiety and depression during COVID-19 outbreak.

In our study, anxiety and depression levels were found to be higher in women healthcare workers. It may reflect the greater psychiatric impact of COVID-19 pandemic on women. Female gender is vulnerable to depression according to literature data\(^17\). Many previous researches reported that women were more likely to have anxiety\(^18\) and depression\(^17\) than men. This fact may be associated with some hormonal (menstruation, menopause) and emotional (sensitive and fragile personality) features. Women are also estimated to be more affected than men during pandemics\(^16,20\). Pandemics may cause female gender to suffer more re-experiencing and negative alterations in cognition and mood\(^21\). This may explain why women were more severely affected in our study.

Healthcare workers younger than age of 50 were found to have high levels of anxiety and depression in our study. Huang et al. similarly reported that younger participants (< 35 years) were more likely to develop anxiety and depressive symptoms during COVID-19 outbreak\(^14\). These study findings suggest that younger healthcare workers were more vulnerable and cope less with the chaotic mood created by COVID-19 outbreak. According to binary logistic regression analysis, we found that presence of at least one comorbidity and taking care of COVID-19 patients may be potential risk factors for depression and anxiety, respectively. Having an organic disease and having a contact with COVID-19 patients in hospitals were specified as common and independent risk factors for anxiety and depression among medical health workers in a previous study\(^22\). It is understandable that those with comorbidity or those who followed COVID-19 patient may have higher depression or anxiety levels.

Ministry of Health have made some arrangements for healthcare workers in Turkey who are on duty during
COVID-19 pandemic at the beginning of outbreak. However, due to high anxiety and depression levels detected in our study, we think that some additional precautions should be taken. Providing the best physical, mental, and social conditions may increase confidence and morale of our healthcare workers. First of all, professional psychological support interventions should be directed to healthcare workers, working directly with COVID-19 patients. The most evidence-based treatment, cognitive behaviour therapy may help to prevent the spread of infection during the pandemic.

Another important topic is preventive measures, such as personal protective equipment. Strengthening prevention and control measures would bring potential psychological benefits. Wang et al. demonstrated that participants who did not wear face masks had significantly higher levels of anxiety, depression and stress. Personal psychoneuroimmunity prevention measures including hand hygiene and wearing face masks, which were found to be associated with less severe psychiatric symptoms, may be an important precaution. Also, healthcare workers should be warned about subjects such as regular diet and adequate sleep time during pandemic.

This study has some limitations. First, the study has a cross-sectional design, which does not allow to make causal inferences. As the survey process included peak time (end of April) of the pandemic in Turkey, this may cause the high level of anxiety and depression among participants. Second, we had no chance to assess the individuals’ psychological conditions before COVID-19 outbreak. Third, our study mainly used self-reported questionnaires to measure psychiatric symptoms and did not make clinical diagnosis. A study involving structured clinical interview and functional neuroimaging as the gold standard for establishing psychiatric diagnosis would give more realistic results.

Conclusion
Healthcare professionals were at high risk of anxiety and depression during COVID-19 outbreak. Our report demonstrated potential risk factors as female gender, younger age (less than 50), having a comorbidity and having a contact with COVID-19 patients for healthcare workers to develop anxiety and depression. Therefore, these groups may have priority in terms of psychological support.

Acknowledgements
All authors have approval about this manuscript.

Funding details
There is no funding or grant-awarding bodies.

Disclosure statement
There is no financial interest.

References
1. World Health Organization. Director-General’s remarks at the media briefing on 2019-nCoV on 11 February 2020. https://www.who.int/dg/speeches/detail/who-director-general-s-remarks-at-the-media-briefing-on-2019-ncov-on-11-february-2020 (Accessed on February 12, 2020)
2. Republic of Turkey Ministry of Health. Turkey COVID-19 patient table. https://covid19.saglik.gov.tr (Accessed on April 30, 2020)
3. Zhang WR, Wang K, Yin, L, Zhao WF, Xue Q, Peng M, et al. Mental health and psychosocial problems of medical health workers during the COVID-19 epidemic in China. Psychotherapy and Psychosomatic. 2020; 89 (4): 242-250. doi: 10.1159/000507639.
4. Bandypadhyay S, Baticulon RE, Kadhum M, Alser M, Ojuka DK, Badereddin Y, et al. Infection and mortality of healthcare workers worldwide from COVID-19: a systematic review. BMJ Global Health. 2020;5:e003097.
5. Weaver MD, Vetter C, Rajaratnam SMW, O’Brien CS, Qadri S, Benca RM, et al. Sleep disorders, depression and anxiety are associated with adverse safety outcomes in healthcare workers: A prospective cohort study. J Sleep Res. 2018 Dec;27(6):e12722.
6. Hou F, Bi F, Jiao R, Luo D, Song K. Gender differences of depression and anxiety among social media users during the COVID-19 outbreak in China: a cross-sectional study. BMC Public Health. 2020; 20 (1): 1648. https://doi.org/10.1186/s12889-020-09738-7
7. Stordal E, Bjartveit Krüger M, Dahl NH, Krüger Ø, Mykletun A, Dahl AA. Depression in relation to age and gender in the general population: the Nord-Trøndelag Health Study (HUNT). Acta Psychiatr Scand. 2001 Sep;104(3):210-6.
8. Grace SL, Hershenfield K, Robertson E, Stewart DE. The occupational and psychosocial impact of SARS on academic physicians in three affected hospitals. Psychosomatics. 2005; 46(5):385-91.
9. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. Acta Psychiatrica Scandinavica, 1983; 67(6), 361–370.
10. Aydemir O, Güvenir T, Küey L, Kültür S. Reliability and Validity of the Turkish version of Hospital Anxiety and Depression Scale. *Turkish Journal of Psychiatry*. 1997; 8, 280–287.

11. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, et al. Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic among the General Population in China. *Int J Environ Res Public Health*. 2020; 6;17(5). 1729. Published online 2020 Mar 6. doi: 10.3390/ijerph17051729

12. Li Q, Chen J, Xu G, Zhao J, Yu X, Wang S, et al. The Psychological Health Status of Healthcare Workers During the COVID-19 Outbreak: A Cross-Sectional Survey Study in Guangdong, China. *Front Public Health*. 2020 Sep 18; 8:562885.

13. Ko CH, Yen CF, Yen JY, Yang MJ. Psychosocial impact among the public of the severe acute respiratory syndrome epidemic in Taiwan. *Psychiatry Clin Neurosci.* 2006; 60(4):397-403.

14. Huang Y, Zhao N. Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a web-based cross-sectional survey. *Psychiatry Res*. 2020; 288: 112954. doi: 10.1016/j.psychres.2020.112954.

15. Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N. Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease. *JAMA Netw Open*, 2020; 3(3): e203976. doi: 10.1001/jamanetworkopen.2020.3976: 10.1001/jamanetworkopen.2020.3976

16. Özdin S, Bayrak Özdin Ş. Levels and predictors of anxiety, depression and health anxiety during COVID-19 pandemic in Turkish society: The importance of gender. *Int J Soc Psychiatry*, 2020; 8:20764020927051. doi: 10.1177/0020764020927051.

17. Lim GY, Tam WW, Lu Y, Ho CS, Zhang MW, Ho RC. Prevalence of Depression in the Community from 30 Countries between 1994 and 2014. *Sci Rep*. 2018 Feb 12;8(1):2861.

18. Bahrami F, Yousefi N. Females are more anxious than males: a metacognitive perspective. *Iran J Psychiatry Behav Sci*. 2011; 5(2):83-90.

19. Albert PR. Why is depression more prevalent in women? *J Psychiatry Neurosci*. 2015; 40(4): 219–221.

20. Kim SJ, Han JA, Lee TY, Hwang TY, Kwon KS, Park KS et al. Community-based risk communication survey: Risk prevention behaviors in communities during the H1N1 crisis, 2010. *Osong Public Health and Research Perspectives*. 2014; 5(1), 9–19.

21. Liu N, Zhang F, Wei C, Jia Y, Shang Z, Sun L, et al. Prevalence and predictors of PTSS during COVID-19 outbreak in China hardest-hit areas: Gender differences matter. *Psychiatry Research*, 2020; 287: 112921. https://doi.org/10.1016/j.psychres.2020.112921

22. Zhou SJ, Zhang LG, Wang LL, Guo ZC, Chen JC, Wang JQ, et al. Prevalence and socio demographic correlates of psychological health problems in Chinese adolescents during the outbreak of COVID 19. *Eur Child Adolesc Psychiatry*, 2020; 3: 1–10. doi: 10.1007/s00787-020-01541-4

23. Ho CS, Chee CY, Ho RC. Mental Health Strategies to Combat the Psychological Impact of COVID-19 Beyond Paranoia and Panic. *Ann Acad Med Singap*. 2020 Mar 16;49(3):155-160.

24. Wang C, Chudzicka-Czupała A, Grabowski D, Pan R, Adamus K, Wan X, et al. The Association Between Physical and Mental Health and Face Mask Use During the COVID-19 Pandemic: A Comparison of Two Countries With Different Views and Practices. *Front Psychiatry*. 2020 Sep 9;11:569981.

25. Tan W, Hao F, McIntyre RS, Jiang L, Jiang X, Zhang L, et al. Is returning to work during the COVID-19 pandemic stressful? A study on immediate mental health status and psychoneuroimmunity prevention measures of Chinese workforce. *Brain Behav Immun*. 2020 Jul;87:84-92.