

Coronavirus Disease 2019 (COVID-19) Infection-Related Stigma, Depression, Anxiety, and Stress in Iranian Healthcare Workers

Abstract

Background: Psychological conditions aggravate during outbreaks. Here, we have discussed the existing COVID-19 depression, anxiety, and stress and the resulting stigma and its different aspects in Iranian health care workers and their 1st-degree relatives. **Methods:** In this cross-sectional study, information of our study groups (237 participants including health care workers and their nuclear family members) was collected via two online stigma and depression, anxiety, and stress scale (DASS) questionnaires. **Results:** The DASS questionnaire's mean depression, anxiety, and stress scores were 13.59 ± 5.76 , 11.07 ± 4.38 , and 15.05 ± 5.86 , respectively, in our study population. Marriage status was effective on depression and stress scores. Married participants were having less depression ($P = 0.008$) but more stressful ($P = 0.029$) than single ones. Education was found to be effective on anxiety and stress scores. Those with an associate, master, Ph.D., and higher college degrees were significantly less anxious and stressed than those with a diploma or bachelor's degrees ($P = 0.032$ and 0.016 , respectively, for anxiety and stress). Participants with a history of psychiatric conditions showed significantly higher depression, anxiety, and stress rates than those without a past psychiatric condition ($P = 0.001$). Healthcare workers and their nuclear family members suffer from severe stigma (mean stigma scores were 33.57 and 33.17, respectively). **Conclusions:** Healthcare workers and their nuclear family members in Iran suffer from severe COVID-19 related stigma. We also showed that depression, anxiety, and stress are common among Iranian Healthcare workers and their nuclear family members during this pandemic. This study showed that people with preexisting psychiatric conditions need extra mental care during the pandemic.

Keywords: Anxiety, COVID-19, health care workers, pandemic, stigma

Introduction

The severe acute respiratory syndrome corona virus2 (SARS-COV-2) is a novel member of a large family of viruses (coronaviridae), which are known as human and animal pathogens.^[1,2] The morphology of the COVID-19 virus is special due to the crown-like spike expressed on the virus's envelope.^[3] Like the former family member (SARS-COV), the new coronavirus tends to initiate new epidemics due to a large genome capable of constant mutations.^[3,4] Studies have shown that underlying diseases can increase the mortality rate of patients with COVID-19.^[5,6] 216,542,909 confirmed cases, 4,504,507 deaths, and 193,534,037 recoveries were reported globally at the moment of writing this article (August 28th, 2021).^[7]

The reactions that populations show are critically important in spreading the disease and producing emotional distress during an outbreak of an infectious disease.^[8] Despite this fact, recourses are not usually provided well enough to manage the effects of pandemics on the population's mental health.^[9] This could be understandable during pandemics because of the occupation of the health systems in testing and managing possible cases of the infection. Still, the psychological needs of populations must not be neglected because of their important role in controlling the pandemic. For instance, psychological factors play vital roles in the population's adherence to health instructions (such as using masks and getting vaccinated). Thus, providing enough resources to keep the mental health of the society well can be as important as identifying and treating cases of the infection.^[8,9] This increasing number of infected individuals and

Ramin Hosseinzadeh, Seyed Morteza Hosseini¹, Mina Momeni², Amirhossein Maghari³, Ali Fathi-Ashtiani⁴, Parmid Ghadimi⁵, Mohammad Heiat, Pooyan Barmayoon⁶, Mahdiss Mohamadianamiri⁷, Mansour Bahardoust⁸, Taleb Badri⁴, Ashraf Karbasi

Baqiyatallah Research Center for Gastroenterology and Liver Diseases (BRGGL), Baqiyatallah University of Medical Sciences, ¹Medicine, Quran and Hadith Research center, Baqiyatallah University of Medical Sciences, ²Resident of Gynecology, Iran University of Medical Sciences, ³Atherosclerosis Research Center, Baqiyatallah University of Medical Sciences, ⁴Behavioral sciences Research Center, Baqiyatallah University of Medical Sciences, ⁵Faculty of Medicine, Iran University of Medical Sciences, ⁶Department of Radiology, Iran University of Medical Sciences, ⁷Department of Obstetrics & Gynecology, Iran University of Medical Sciences, Akbarabadi Teaching Hospital & National Association of Iranian Obstetricians & Gynecologists (NAIGO), ⁸Department of Epidemiology, School of Public Health, Shahid Beheshti University of Medical Sciences, Tehran, Iran

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Address for correspondence:

Dr. Ashraf karbasi,

Baqiyatallah Research Center for Gastroenterology and Liver Diseases (BRCGL), Baqiyatallah University of Medical Sciences, Tehran, Iran.

E-mail: ashraf.karbasi@yahoo.com

Dr. Mansour Bahardoust,

Department of Epidemiology, School of Public Health, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

E-mail: mansourbahari93@gmail.com

dead ones, plus the very rapid transmission of the virus, has resulted in extreme anxiety and fear in human societies.^[10] From a psychological point of view, when a major change in a human's living environment is made, people get involved with bad feelings like insecurity and anxiety. This situation may worsen psychological conditions.^[11] Previous data show that stigma^[12] (an attribute that is deeply discrediting and reduces someone from a whole and usual person to a tainted, discounted one) and fear are usual during epidemics. The situation gets even worse by applying city quarantines and lockdowns.^[13,14] On the other hand, this fear and anxiety are seen much more in healthcare workers due to their direct contact with infected patients and the increased risk of getting infected. Previous outbreaks had shown us that healthcare workers experienced psychological problems such as depression and anxiety. This could result from the fear of transmitting the virus to their beloved ones, feeling rejected and stigmatized, and working in long shifts.^[15] A study on 442 healthcare workers during the COVID-19 pandemic in Turkey showed that 64.7% of the studied population had depression, 51.6% had anxiety, and 41.2% suffered from stress.^[16] The result was a little different in the general population as a meta-analysis showed that 29.6% of the studied population had stress, 31.9% had anxiety, and 33.7% had depression.^[17] Stigma, on the other hand, is another serious problem during pandemics. Multiple groups of people have been stigmatized during the COVID-19 pandemic. At the frontline, healthcare workers in constant direct contact with COVID-19 infected individuals are the main victims,^[18] while people who have recovered from COVID-19 are another group faced with COVID-19 related stigma.^[19] A previous study in Iran showed that being stigmatized is common among healthcare workers during the COVID-19 pandemic and strongly correlates with post-traumatic stress disorder (PTSD). In other words, Iranian healthcare workers who had been stigmatized more showed stronger signs of PTSD.^[20] Some other studies have also demonstrated that the Iranian population are struggling with COVID-19 related depression, anxiety, and stress.^[21-23]

While dealing with the pandemic itself is a major concern, managing the pandemic's resulting psychological sequences is another serious issue. Paying not enough attention to the psychological sequences of a pandemic can result in a public psychological crisis,^[24] while managing it properly can help reduce the burden of the disease and increase the chance to control the pandemic. Here, we aimed to study the stigma, depression, anxiety, and stress caused by the outbreak of the novel coronavirus 2019 on Iranian healthcare workers and their 1st-degree relatives.

Material and Method**Study design and setting**

In this cross-sectional analytical study, information of 237 participants) including health care staff and their nuclear family members (was gathered online through a link at www.porsline.ir. Target populations were health care workers and their nuclear family members from all over Iran. The online link was sent to health care workers and their nuclear family members using online multimedia applications. Inclusion criteria were: job (being a healthcare worker or nuclear family members) and age over 15 years old. Incomplete forms were excluded from the study. Two questionnaires plus opening questions for demographic data were provided in one link. All participants filled out the forms voluntarily to help the COVID-19 situation. Their identity was not asked and all data remained secret. Demographic data included age, education, sex, job, marriage status, height, weight, number of children, number of family members involved with COVID-19, number of 1st-degree relative deaths due to COVID-19, history of smoking, physical and psychological disorders, hospitalization and ICU admission due to COVID-19 infection, and tea or coffee consumption.

The first questionnaire (stigma questionnaire) was derived from a Canadian study by Robert G. Maunder, who evaluated SARS-related stigma and interpersonal avoidance in Canada. The validity and reliability of the questionnaire were confirmed in the same study.^[25] We specified the questionnaire for SARS-COV-2 in the Iranian population. The stigma questionnaire was translated to Persian. The validity of the translated questionnaire was confirmed by the forward-backward method. To evaluate stigma in our study group, some changes were made in the content of the questionnaire. It was then given to 25 experts in clinical psychology, medicine, and nursing to confirm the questionnaire's content validity and face validity. The mean content validity ratio (CVR) of the questionnaire was 0.78 and the total content validity index (CVI) was 0.85. Reliability was also confirmed in a pilot sampling by 100 individuals before initiation of the study, which resulted in a 0.758 Cronbach's Alpha. Finally, the validity and reliability of the questionnaire were approved. The stigma questionnaire was made up of nine questions with six options for an answer from disagreeing entirely (score = 0) to completely agree (score = 5), which made a range of 0–45 for the final score, which was divided into three parts equation for mild, moderate, and severe stigma.

Syd Lovibond and Peter Lovibond developed a depression, anxiety, and stress scale (DASS) questionnaire at the University of New South Wales, Australia, in 1995.^[26] DASS questionnaire has two forms: First form is with 42 items and the second form is with 21 items and both have three self-report scales [4 options for answer; never (score = 0), sometimes (score = 1), often (score = 2), and a lot (score = 3)]. We used the 21 item form for this study, which has seven questions for each part (Depression, anxiety, and stress). Depression score is defined as follows: normal (0–4), mild (5–6), moderate (7–10), severe (11–13), and extremely severe (14+). Anxiety score is defined as follows: normal (0–3), mild (4–5), moderate (6–7), severe (8–9), and extremely severe (10+). Stress score is defined as follows: normal (0–7), mild (8–9), moderate (10–12), severe (13–16), and extremely severe (17+). The reliability and availability of the questionnaire were previously confirmed in Iran.^[27]

Statistical analysis

Descriptive analysis [Mean and standard deviation (SD) for quantitative variables and number of cases (N) and percentage] was used for baseline data. Independent sample T-test was used for data with normal distribution, and Mann–Whitney U test was performed for data without normal distribution. SPSS version 19 was used for data analysis. The statistical significance level was considered 0.05 in this study.

Results

Information of 237 individuals who were either healthcare staff or their nuclear family members was collected. COVID-19 related stigma, depression, anxiety, and stress were analyzed using stigma and DASS questionnaires, respectively.

Demographic data, past medical and psychiatric history

Of 237 participants, 67.5% were healthcare workers, and 32.5% were 1st-degree relatives of healthcare staff. The mean age of this study’s participants was 34.25 ± 8.83 years ranged from 15 to 63 years [Table 1].

Past medical and psychiatric history

Hypertension was the most prevalent underlying physical illness (5.1%) and cardiovascular disorders (4.2%) and diabetes (1.7%) were next. Anxiety was the most common psychiatric preexisting condition (12.8%), while depression (8.9%) and phobia (2%) were next.

Evaluation of questionnaires and their scores

The mean score of the stigma questionnaire was 33.43 ± 7.51. Analysis showed that the questionnaire’s score does not have a significant difference in any of the demographic subgroups of the study. It was also revealed that there is no significant difference in stigma score among different preexisting psychiatric conditions.

Table 1: Summary of demographic data

	<i>n</i>	%
Study group		
Healthcare workers	160	67.5
1 st -degree relatives	77	32.5
Sex		
Male	120	50.6
Female	117	49.4
Marriage status		
Single	87	36.7
Married	148	62.5
Divorced	2	0.8
Education		
Diploma or below	20	8.6
Associate	12	5.1
Bachelor	76	32.3
Master	45	19.1
Ph.D. or higher	82	34.9
Job		
Freelance job	35	14.8
Governmental	139	58.6
Housewife	19	8
College student	35	14.8
School student	5	2.1
Unemployed	4	1.7
Number of children		
No Children	131	55.7
1	50	21.3
2	39	16.6
3	13	5.5
4 or more	2	0.9
BMI		
<18.5 below normal	9	3.8
18.5–25 normal	122	52.2
25–30 overweight	81	34.6
>30 obesity	22	9.4

The mean depression score of the DASS questionnaire was 13.59 ± 5.76. Marriage status was effective on depression score where married participants showed significantly lower depression scores than single ones (*P* = 0.008). The job was demonstrated as an effective factor on depression score; school students showed a significantly higher depression score than others, while housewives showed a significantly lower depression score (*P* = 0.001). Participants with a history of psychiatric conditions showed a significantly higher depression score than those without a past psychiatric condition (*P* = 0.001) [Table 2].

The mean anxiety score of the DASS questionnaire was 11.07 ± 4.38. Education was found to be effective on anxiety scores. Those with associate, master, Ph.D., and higher college degrees showed a significantly lower anxiety score than those with a diploma or bachelor’s degrees (*P* = 0.032). Participants with a history of

psychiatric conditions showed a significantly higher anxiety score than those without a past psychiatric condition ($P = 0.001$) [Table 3].

The mean stress score of DASS questionnaire was 15.05 ± 5.86 . Marriage status was effective on stress score. Married individuals showed a significantly higher stress score than single ones ($P = 0.029$). Education was found to be effective on stress scores. Those with associate, master, Ph.D. and higher college degrees showed a significantly lower stress score than those with a diploma or bachelor's degrees ($P = 0.016$). The job was demonstrated as an effective factor on stress score; school students showed a significantly higher stress score than others, while housewives showed a significantly lower stress score ($P = 0.33$). Participants with a psychiatric condition history showed a significantly higher stress score than those without a past psychiatric condition [Table 4].

There was a significant positive correlation between DASS (all three parts) and stigma scores ($P < 0.05$) [Table 5].

Discussion

This study was designed to evaluate the possible COVID-19 related stigma, depression, anxiety, and stress in healthcare staff and their nuclear family members in Iran. We found that healthcare staff and their nuclear family members in Iran suffer from severe stigma, extremely severe depression, extremely severe anxiety, and severe stress. Similarly, the study by Asmundson and Taylor^[28] in 2020 in Canada showed that 1/3 of the studied population had anxiety about COVID-19 and 7% of them were suffering from extreme anxiety. Elbay *et al.*'s study^[16] on 442 healthcare workers in Turkey using the DASS-21 questionnaire to evaluate their depression, anxiety, and stress demonstrated that 64.7% of their studied cases had depression, 51.6% had anxiety, and 41.2% had stress, which shows that depression, anxiety, and stress are major concerns in Turkish healthcare workers.^[16] Stigma and discrimination against healthcare workers during the recent COVID-19 pandemic and previous epidemics have been severally discussed in previous data. A review study by Brooks *et al.*^[29] showed that the stigma about healthcare workers who were quarantined during SARS and Ebola outbreaks was so severe that some of them had to resign

Table 2: DASS score (depression)

	Mean	SD	P
Study group			
Healthcare workers	13.34	5.56	0.337*
1 st -degree relatives	14.12	6.18	
Sex			
Male	13.27	6.09	0.394*
Female	13.91	5.41	
Marriage status			
Single	14.85	6.01	0.008*
Married	12.76	5.46	
Education			
Diploma or below	15.80	7.18	0.066 [†]
Associate	13.50	5.48	
Bachelor	14.50	5.80	
Master	13.14	5.45	
Doctoral or higher	12.35	5.38	
Job			
Freelance job	14.34	5.07	0.001 [†]
Governmental	13.03	5.71	
Housewife	11.16	3.85	
College student	14.97	6.08	
School student	23.40	4.22	
Unemployed	13.50	6.61	
Preexisting psychiatric condition			
Positive	17.38	5.73	0.001 [†]
Negative	12.18	5.12	
Smoking History			
Positive	15.11	5.11	0.033*
Negative	13.23	5.85	

*Mann-Whitney U Test [†]Kruskal-Wallis-H Test

Table 3: DASS score (anxiety)

	Mean	SD	P
Study group			
Healthcare workers	11.28	4.36	0.613*
1 st -degree relatives	11.07	4.38	
Sex			
Male	11.11	4.39	0.883*
Female	10.97	4.40	
Marriage status			
Single	11.03	4.39	0.590*
Married	11.21	4.36	
Education			
Diploma or below	11.65	4.43	0.032 [†]
Associate	10.17	3.10	
Bachelor	12.23	5.05	
Master	10.36	4.12	
Doctoral or higher	10.20	3.66	
Job			
Freelance job	10.94	3.29	0.061 [†]
Governmental	11.10	4.64	
Housewife	9.47	3.39	
College student	11.36	4.03	
School student	16.40	6.88	
Unemployed	4.19	9.75	
Preexisting psychiatric condition			
Positive	13.51	4.53	0.001 [†]
Negative	10.11	4.11	
Smoking History			
Positive	11.36	3.49	0.621*
Negative	11.00	4.57	

*Mann-Whitney U Test [†]Kruskal-Wallis-H Test

Table 4: DASS score (stress)

	Mean	SD	P
Study group			
Healthcare workers	15.61	5.86	0.313*
1 st -degree relatives	15.05	5.86	
Sex			
Male	15.33	5.58	0.456*
Female	14.78	5.86	
Marriage status			
Single	14.76	6.14	0.029*
Married	16.08	5.90	
Education			
Diploma or below	16.20	7.08	0.016 [†]
Associate	14.08	5.79	
Bachelor	16.63	6.18	
Master	14.24	4.98	
Doctoral or higher	13.64	5.33	
Job			
Freelance job	16.23	5.62	0.033 [†]
Governmental	14.50	6.06	
Housewife	13.11	3.89	
College student	16.36	5.36	
School student	21.20	7.19	
Unemployed	14.00	5.72	
Preexisting Psychiatric condition			
Positive	19.30	5.49	0.001 [†]
Negative	13.53	5.16	
Smoking History			
Positive	16.16	4.91	0.115*
Negative	14.79	6.04	

*Mann–Whitney U Test [†]Kruskal–Wallis-H Test

Table 5: Correlation between DASS and Stigma

DASS	stigma		P
	Number	correlation	
Depression	218	0.197	0.004*
Anxiety	220	0.134	0.047*
Stress	219	0.168	0.013*
Total	217	0.175	0.010*

*Spearman Correlation Test

their jobs over this issue over this issue. In a Chinese study, Ren *et al.*^[30] showed that the COVID-19 outbreak had caused much stigma against COVID-19 patients. Another study in Nepal^[18] showed that healthcare workers and patients who recovered from COVID-19 have faced with COVID-19 related stigma.

Similarly, we showed that both Iranian healthcare workers and their nuclear family members suffer from severe COVID-19 related stigma. The possible theory is that as much as anxiety about an outbreak like COVID-19 increases, stigma against infected individuals and those with high exposure to the infection increases. Another study in China about COVID-19 related stigma on the general population^[31] categorized their participants into

three profiles of stigma; The “Denier” (35.98%), “Confused moderate” (48.13%), and “Perceiver” (15.89%). They showed that people familiar with quarantined cases are likely distributed in the “Perceiver” group. The Chinese paper shows that people in touch with possible carriers of COVID-19 are stigmatized.

Similarly, we showed nuclear family members of healthcare staff who are possible carriers of COVID-19 were suffering from severe COVID-19 related stigma. Interestingly, we showed that education has a negative relationship with COVID-19 related anxiety and stress. The current study demonstrated that individuals with associate, master, Ph.D., and higher college degrees were significantly less anxious and stressed than those with diplomas or bachelor’s degrees. Similarly, a study on the general Iranian population during the COVID-19 pandemic by Khademian *et al.*^[21] showed that education has a negative correlation with COVID-19 related anxiety, and participants with higher college educations show lower levels of anxiety about COVID-19. According to these findings, we can probably say that when people’s knowledge about a threatening condition is improved, their stress and anxiety about that condition are decreased. Our study showed that participants with a history of psychiatric conditions showed significantly higher rates of COVID-19 related depression, anxiety, and stress than those without a past psychiatric condition which is in line with previous studies in this field.^[11] Elbay *et al.*^[16] also showed that being single is associated with higher scores of COVID-19 related depression, anxiety, and stress, whereas having a child was associated with lower scores in each subscale. Similarly, our results showed that married participants have lower depression scores than single ones, but our results also showed that married participants have higher stress scores than singles. This can be a result of differences in genetics and race. Another reason to explain this mismatch is that the Turkish study has analyzed married participants with a child, while our study analyzed married participants regardless of having children. Depression, anxiety, and stress seem to be less severe in the general population than healthcare workers. A meta-analysis on the general population^[17] showed 29.6% prevalence for stress, 31.9% for anxiety, and 33.7% for depression, while the Turkish study on healthcare workers showed pretty higher numbers.

The current study had several limitations. The forms were filled out online by our participants; thus, some participants may have entered some wrong information. We did not have direct access to the studied population to verify whether they meet the inclusion criteria, and we trusted the information our participants provided.

Conclusions

Both healthcare workers and their nuclear family members in Iran suffer from severe COVID-19 related stigma. Depression, anxiety, and stress are common among Iranian Healthcare workers and their nuclear family members.

People with preexisting psychiatric conditions need extra mental care during the pandemic.

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Conflicts of interest

There are no conflicts of interest.

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