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The Deadly Nature of the Virus Depression: Iranian Medical Staff Battling COVID-19

Hossein Bahrami Moghadam [1], Reza Khedri [1],Arash Forouzan [2], Mahmood Maniati [3], Payam Amini [4], Ali Delirrooyfard [5*], Hossein Eisvand [1], Mehdi Sayyah Bargard [6], Mina Jaberi [7]

[1] Student Research Committee, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
[2] Department of Emergency Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
[3] Department of English, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
[4] Department of Biostatistics and Epidemiology, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
[5] Clinical Research Development Unit, Imam Khomeini Hospital, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
[6] Education Development Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
[7] Clinical Research Development Unit, Golestan Hospital, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

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***Correspo nding Author:**
Ali Delirrooyfard
Clinical Research Development Unit, Imam Khomeini Hospital, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.

Email:
adelir2891@gmail.com

Tel:
+98-917 3159418

ABSTRACT

Background: COVID-19, which began in December 2019 in China, can have a broader impact on individuals' mental dimensions. Meanwhile, the medical staff battling this epidemic are more at risk of mental and emotional problems. This study aimed to examine the level of stress, anxiety, and depression and their relationship with the level of knowledge of medical staff battling in COVID-19 pandemic treatment.

Methods: This descriptive-analytical study was conducted on 641 medical staff using an online platform to design the questionnaire, and its link was placed in different groups of social networks all over the country in which the medical staff battling COVID 19 were members. Statistical analysis was performed by SPSS $_{25}$ and Kolmogorov-Smirnov test, independent samples t-test, independent one-way analysis of variance, and chi-square.

Results: Higher knowledge about COVID-19 was associated with younger age, clinicians, and nurses. Moreover, females were more knowledgeable in terms of support; while males were more reliable in washing hands and disinfecting wet places. Based on the categorical version of psychological factors, the majority of cases had severe stress (39.80 %), normal depression (48.50 %), and normal anxiety (57.30 %). Finally, it was found that married participants had more knowledge about COVID-19, but knew less about its fatality.

Conclusion: Studies have shown negative psychological experiences caused by COVID-19 in nurses, including negative emotions, such as fatigue, discomfort, helplessness due to high-intensity work, anxiety, and worry about family members.

Key words: COVID-19, Stress, Anxiety, Depression, Treatment staff

Citation

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Introduction

One of the most stressful situations is the unpredictable situation and uncertainty to control the disease and the seriousness of the risk (1). Medical care staff carries a huge responsibility and experiences excessive stress. The challenges and stress they experienced could trigger common mental disorders, including anxiety and depressive disorders and posttraumatic stress disorder (2). With the advancement of technology and public access to high-speed Internet, it has become possible to provide mental health programs and increase knowledge for medical staff. The World Health Organization has also launched several online training and content sessions in various languages on COVID-19 to strengthen preventive strategies, including awareness-raising and training among medical staff (3, 4). However, compared with their colleagues in other countries, the Iranian medical care staff are at a disadvantage in terms of social support (5). There are some possible reasons for this disadvantage, namely Iran's unique geographical and political situation, making it prone to natural disasters and international sanctions. The Iranian people's faith in social intimacy can also worsen the situation by increasing the risk of spreading communicable diseases, such as COVID-19 (6). This study focused on the mental health problems of the medical staff during the COVID-19 epidemic in terms of epidemiological dimensions. Particularly, the relationship between the severity of anxiety, fear, and depression among the medical staff in Iran and their level of knowledge about COVID-19 were investigated.

Materials and Methods

The current descriptive-analytical study was performed between April 27 and May 5, 2020. This cross-sectional study was designed to investigate the level of stress, depression, and anxiety and their relationship with knowledge level among medical staff battling COVID-19 pandemic in hospitals of Ahvaz, southwest of Iran. Respondents were invited to the study through a link placed in social network groups. Respondents completed the questionnaires in Persian and anonymously through an online survey platform (Cafepardazesh; Persian of Processing Cafe). All medical staff involved in the study volunteered to participate in the study, and there was no compulsion to participate. During the COVID-19 pandemic, 641 medical staff working in Iran were recruited. Checklists were used to investigate the association of anxiety and depression with knowledge level related to COVID-19. The demographic checklist included information about gender, age, an academic semester, accommodation the second DASS-21 questionnaire, a self-reporting tool indicating recent mood swings (7). The questionnaire included 21 items on a four-point Likert scale, including seven questions about stress, seven questions about anxiety, and seven questions related to the depression subscale.

The knowledge questions were ordered from A1 to A13 as follows:

A1: COVID-19 is thought to originate from bats.

A2: COVID-19 is transmitted through air, contact, fecal-oral routes.

A3: Headache, fever, cough, sore throat, and flu are symptoms of COVID-19.

A4: The incubation period of COVID-19 is 2-14 days.

A5: COVID-19 leads to pneumonia, respiratory failure, and death.

A6: Supportive care is the current treatment for COVID-19.

A7: COVID-19 symptoms appear in 2-14 days.

A8: COVID-19 is fatal.

A9: Flu vaccination is sufficient for preventing COVID-19.

A10: During the outbreak, eating well-cooked and safely handled meat is safe.

A11: Sick patients should share their recent travel history with healthcare providers.

A12: Disinfecting equipment and workplaces in wet markets at least once a day.

A13: Washing hands with soap and water can help preventCOVID-19 transmission.

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A sample approved the reliability of the Persian version of DASS-21 of the general population of Mashhad (400 people) for 70 % depression, 66 % anxiety, and 76 % stress (8). Besides, the validity (0.72) and reliability (0.89) of this tool were confirmed by Mehdipour and Najafi (9, 10). Since this questionnaire was a short form of the main scale of 42 items, the final score of each subscale must be doubled. Then, based on Table 1, the severity of the symptoms could be determined. The Ethics Committee approved this study in Ahvaz Jundishapur University of Medical Sciences (Approval code: IR.AJUMS.REC.1399.108).

Statistical analysis

The normality of continuous observations was checked via the Kolmogorov-Smirnov test. Independent samples t-test and independent one-way analysis of variance, and chi-square test were used to compare the mean and frequencies between variables. The analysis was performed using $SPSS_{25}$ (SPSS Inc., Chicago, Ill., USA). The type Ierror was considered as 0.05.

Results

The descriptive characteristics of the participants are shown in Table 1, Table 2 show the descriptive characteristics of the participants regarding knowledge and perception on COVID-19. Table 3 show the descriptive characteristics of the participants regarding psychological aspects. The questions A1 to A13 were about knowledge of COVID-19. The majority of the participants did not choose the right answer regarding the origin of the Coronavirus. The mean stress, depression, and anxiety was 30.49, 11.79, and 7.76. Based on the categorical version of psychological factors, the majority of cases had very severe stress (39.80 %), normal depression (48.50 %), and normal anxiety (57.30 %).

The association between the demographic and other information with the participants' knowledge about COVID-19 is illustrated in Table 4. The results showed that younger age is associated with less knowledge about the signs and the period of COVID-19 exposure and virus transmission methods. Females had higher knowledge than males in terms of the support feature; while men outperformed women in terms of their knowledge of controlling via washing hands, disinfection of wet places, and virus fatality. Married participants had higher knowledge regarding signs and the period of COVID-19 exposure; while they were less aware of the deadly nature of the virus. Clinicians and nurses were more knowledgeable regarding the virus fatality and transmission. Those subjects without any positive case in the family members had lower information about the safety of eating well-cooked meat during the prevalence. Khuzestan province had less knowledge about the virus role in pneumonia, respiratory failure, and death compared to Iranians from other provinces. Those subjects without any positive case in the family members had lower information about the safety of eating well-cooked meat during the prevalence. Also, the participants with no idea how to control the situation were more associated with no knowledge about the virus signs. The participants who had conference attendance experience were better informed that washing hands can help control the transmission while they did not know that supportive care is the current way to deal with the virus. Those who believed in defeating the virus had less knowledge about the virus deadliness; but had higher information about the transmission ways.

The association between DASS21 subscales and individuals' knowledge due to the high volume of information was not included. The mean stress and anxiety were lower among those who correctly responded to the question about disinfecting equipment and workplaces in wet markets at least once a day. Anxiety was significantly more prevalent among those who did not know the correct incubation period of the disease. Females compared to males experienced more adverse psychological conditions, with significantly higher stress levels. Also, single participants were more likely to experience lower anxiety than their married counterparts. One-way analysis of variance showed that nurses were significantly more anxious than the clinicians. No significant difference was found between those who

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participated in a conference and those who did not. The participants who followed the news and media were more stressed compared to those who used other sources, and depression was less observed among those who used sources other than social and news media. The participants with a positive COVID-19 case in their family members were more anxious, and access to facilities had a positive impact on lower depression and anxiety levels. Those who believed that the situation is not manageable were less stressful and less depressed; while those who believed in failure to defeat the virus were more anxious, depressed, and stressed. The distribution of DASS-21 subscales was statistically the same in residents of Khuzestan and other regions.

Table 1. Descriptive characteristics of the subjects

Variable	Category	Frequency (%)
Marital status	Single	496 (77.4 %)
	Married	145 (22.6 %)
Education level	Nurse	156 (24.3 %)
	Clinician	306 (47.7 %)
	Others	179 (28.0 %)
Conference attendance	No	416 (64.9 %)
	Yes	225 (35.1 %)
Source of information	News/Media	223 (34.8 %)
	Social Media	248 (38.7 %)
	Others	170 (26.5 %)
COVID-19 positive case in family	No	452 (70.5 %)
	Yes	189 (29.5 %)
Facilities	Weak	181 (28.2 %)
	Fair	302 (47.2 %)
	Good	136 (21.2 %)
	Perfect	22 (3.4 %)
Can we control the situation?	No	164 (25.6 %)
	No idea	273 (42.6 %)
	Yes	204 (31.8 %)
Can the disease be defeated?	No	364 (56.8 %)
	Yes	277 (43.2 %)
Khuzestan residence	No	154 (24.0 %)
	Yes	487 (76 .0 %)

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Table 2. Descriptive characteristics of the participants regarding knowledge and perception on COVID-19

Question	Correct /Incorrect	Frequency (%)	Binomial test
COVID-19 is thought to be originated from bats	I	301 (47.0 %)	0.133
	C	340 (53.0 %)	
COVID-19 is transmitted through air, contact, fecal-oral routes	I	163 (25.4 %)	0.001
	C	478 (74.6 %)	
Headache, fever, cough, sore throat, and flu are symptoms of COVID-19	I	74 (11.5 %)	0.001
	C	567 (88.5 %)	
The incubation period of COVID-19 (2-14 days)	I	14 (2.2 %)	0.001
	C	627 (97.8 %)	
COVID-19 leads to pneumonia, respiratory failure, and death	I	74 (11.5 %)	0.001
	C	567 (88.5 %)	
Supportive care is the current treatment for COVID-19	I	26 (4.1 %)	0.001
	C	615 (95.9 %)	
COVID-19 symptoms appear in 2-14 days	I	52 (8.1 %)	0.001
	C	589 (91.9 %)	
COVID-19 is fatal	I	222 (34.6 %)	0.001
	C	419 (65.4 %)	
Flu vaccination is sufficient for preventing COVID-19	I	629 (98.1 %)	0.001
	C	12 (1.9 %)	
During the outbreak, eating well-cooked and safely handled meat is safe	I	47 (7.3 %)	0.001
	C	594 (92.7 %)	
Sick patients should share their recent travel history with healthcare providers	I	33 (5.1 %)	0.001
	C	608 (94.9 %)	
Disinfecting equipment and workplaces in wet markets at least once a day	I	79 (12.3 %)	0.001
	C	562 (87.7 %)	
Washing hands with soap and water can help preventCOVID-19 transmission	I	7 (1.1 %)	0.001
	C	634 (98.9 %)	

Table 3. Descriptive characteristics of the participants regarding psychological aspects

Variable	Category	Frequency(%)
Stress	Mean ±SD	30.49 ± 21.27
Stress (Categorical)	Normal	170.00 (26.50 %)
	Mild	37.00 (5.80 %)
	Moderate	84.00(13.10 %)
	Severe	95.00 (14.80 %)
	Very severe	255.00 (39.80 %)
Depression (Mean (SD))		11.79 (10.64 %)
Depression (Categorical)	Normal	311.00 (48.50 %)
	Mild	84.00 (13.10 %)
	Moderate	122.00 (19.00 %)
	Severe	48.00 (7.50 %)
	Very severe	76.00 (11.90 %)
Anxiety (Mean (SD))		7.76 (7.87 %)
Anxiety (Categorical)	Normal	367.00 (57.30 %)
	Mild	41.00 (6.40 %)
	Moderate	128.00 (20.00 %)
	Severe	48.00 (7.50 %)
	Very severe	57.00 (8.80 %)

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Table 4. The association between the variables and the participants' knowledge on COVID-19

Question	Correct/ [ncorrect	Age mean (SD)	Sex	Marital	Occupation			Facilities				Can we control Covid-19			Defeat	Khuzestan
			Female	Single	Nurse	Clinician	Others	Weak	Fair	Good	Perfect	No	No idea	Yes	Yes	Yes
COVID-19 is thought to be originated from bats	I	26.77	203	231	67	134	100	85	145	58	13	70	124	107	127	228
	C	26.96	223	265	89	172	79	96	157	78	9	94	149	97	150	259
COVID-19 is transmitted through air, contact, fecal-oral routes	I	25.40**	102	138	37	78	48	47	73	39	4	34	74	55	54	126
	C	27.37	324	358	119	228	131	134	229	97	18	130	199	149	223	361
Headache, fever, cough, sore throat, and flu are symptoms of COVID-19	I	24.70**	50	64	17	38	19	19	33	18	4	12	42	20	26	59
	C	27.15	376	432	139	268	160	162	269	118	18	152	231	184	251	428
The incubation period of COVID-19 (2-14 days)	I	26.29	9	9	5	7	2	2	7	4	1	4	8	2	6	12
	C	26.88	417	487	151	299	177	179	295	132	21	160	265	202	271	475
COVID-19 leads to pneumonia, respiratory failure, and death	I	27.19	56	58	21	33	20	21	35	15	3	20	32	22	31	63
	C	26.83	370	438	135	273	159	160	267	121	19	144	241	182	246	424
Supportive care is the current treatment for COVID-19	I	25.50	12	21	8	11	7	8	13	4	1	8	9	9	12	19
	C	26.93	414	475	148	295	172	173	289	132	21	156	264	195	265	468
COVID-19 symptoms appear in 2-14 days	I	24.87*	36	41	12	31	9	18	21	12	1	11	25	16	21	39
	C	27.00**	390	455	144	275	170	163	281	124	21	153	248	188	256	448
COVID-19 is fatal	I	27.93	163	150	66	86	70	60	107	49	6	60	96	66	110	175
	C	26.31	263	346	90	220	109	121	195	87	16	104	177	138	167	312
Flu vaccination is sufficient for preventing COVID-19	I	26.84	420	489	152	303	174	178	297	133	21	159	269	201	269	476
	C	28.25	6	7	4	3	5	3	5	3	1	5	4	3	8	11
During the outbreak, eating well-cooked and safely handled meat is safe	I	24.96	27	38	16	16	15	15	21	9	2	15	20	12	24	36
	C	27.02	399	458	140	290	164	166	281	127	20	149	253	192	253	451
Sick patients should share their recent travel history with healthcare providers	I	27.42	23	22	8	11	14	8	14	10	1	5	19	9	16	23
	C	26.84	403	474	148	295	165	173	288	126	21	159	254	195	261	464

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Question	Correct/ Incorrect	Age mean (SD)	Sex	Marital	Occupation			Facilities				Can we control Covid-19			Defeat	Khuzestan
			Female	Single	Nurse	Clinician	Others	Weak	Fair	Good	Perfect	No	No idea	Yes	Yes	Yes
Disinfect equipment's and workplaces in wet markets at least once a day	I	27.50	65	61	24	31	24	21	37	21	0	20	29	30	29	61
	C	26.78	361	435	132	275	155	160	265	115	22	144	244	174	248	426
Washing hands with soap and water can help prevent COVID-19 transmission	I	23.29	7	5	1	4	2	1	4	2	0	2	2	3	3	6
	T	26.91	419	491	155	302	177	180	298	134	22	162	271	201	274	481

thought we cannot defeat COVID-19 *: P-value < 0.05, **:P-value < 0.01, ***:P-value < 0.001

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Discussion

After the outbreak of Coronavirus, nurses and physicians stood at the frontline of the war against this disease. However, the virus spread around the world to become a pandemic, increasing fear and anxiety not only among lay people but also in the hearts of the medical staff (1, 2). Psychological distress and traumatic fear among medical staff have been cited as the most common mental disorders (3, 4). Given the severe stress, uncertainty, and difficult medical nature of global infectious disease epidemics, such as Coronavirus (COVID-19), special attention needs to be paid to the needs of health care staff (5).

The current cross-sectional research investigated the mental health problems of the 641 medical staff during the COVID-19 epidemic in Iran, evaluating the relationship between the severity of anxiety, fear, and depression among these medical staff and their level of knowledge about COVID-19. According to the results, higher knowledge about COVID-19 was associated with younger age, clinicians and nurses, and living outside Khuzestan province. Moreover, females were more knowledgeable in terms of support; while males were more reliable in terms of washing hands and disinfecting wet places, and fatality of the virus. Finally, it was found that married participants had more knowledge about COVID-19; but knew less about its fatality.

The results were consistent with those of Lai et al. (5), in which nurses, women, frontline workers, and those in Wuhan reported experiencing more severe symptom levels of depression, anxiety, insomnia, and distress. As far as the age of the medical staff was concerned, the results of the present study were in line with those of Huang and Zhao (3), in which younger people had a significantly higher prevalence of general anxiety disorder and depressive symptoms than older people. This is also consistent with Cai et al. (6) who investigated the psychological abnormality in health care workers battling the COVID-19 epidemic. According to their results, medical staff who had no public health emergency treatment experience had a worse performance in mental health, resilience, and social support, and tended to suffer from psychological abnormality on interpersonal sensitivity and photic anxiety. The almost high anxiety among nurses in Shiraz, Iran (4) could be due to some reasons, including fear of being infected, the difficulty in controllingthe epidemic, and the shortage of medical facilities across the country. On the other hand, the results of the present study were not in line with of the study by Moghadasi
(7) who found that multiple sclerosis (MS) fellowships treating a significant portion of Iranian MS society were nearly not anxious in the current situation. He attributed this to their mental well-being and considered it as a promise for MS patients to be provided with optimal services by their physicians.

Different people react differently to stressful situations. The emotional impact of an emergency on an individual can depend on personal characteristics and experiences, the economic and social conditions of the individual and their community, and the availability of resources. Also, if people frequently see images and news about an emergency, their emotional response will be affected. This includes patients' fear of death, and for those who are quarantined, it involves feelings of loneliness and anger (8). Therefore, psychological interventions against the negative consequences of epidemics become the condition sine qua non of any health care system in the context of public health emergencies (9)

When it comes to the medical staff, the situation even become worse amid the turmoil of the epidemic. Studies have shown that negative psychological experiences caused by corona in nurses, including negative emotions, such as fatigue, discomfort, helplessness due to high intensity work, anxiety, and worry about family members are very obvious. In such crises, anxiety is beyond the direct physical consequences of the disease. Previous studies have identified a number of factors that contribute to this situation, namely the contagiousness of the disease (10, 11), the high morbidity associated with it, its potential fatality (12), lack of facilities and equipment, and

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the rising number of suspected and actual cases. (13).

A number of solutions can be proposed to alleviate this problem. First of all, relying on social capital (1) is one possible way to deal with the anxiety among medical staff. Xiao et al. (2) found an association between low levels of social capital and increased levels of anxiety and stress, but increased levels of social capital were positively associated with increased quality of sleep. Anxiety in their study was associated with stress and reduced sleep quality, and the combination of anxiety and stress reduced the positive effects of social capital on sleep quality. Another possible solution according to Chen et al. (5), is arranging leisure activities and training the medical staff on how to relax. Last but not least is considering counselling a proper option in this regard. Cognitive behavior therapy for example may be effective in reducing the psychological and psychiatric symptoms followed by COVID-19 pandemic (14, 15).

Conclusion

It was found that excessive workload, the pressure of job demands, and the impact of various aspects of the congregate living setting in healthcare facilities as well as changes in work shifts have accelerated the spread of psychological problems among the Iranian medical staff. Future studies can consider the role of other counselling practices (e.g., interpersonal therapy) on reducing the anxiety and stress induced by COVID-19. The limitation of the current study was lack of access to other nurses through social networks.

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Conflict of interests

The authors declared that there is no conflict of interests.

Authors' contributions

Bahrami Moghadam H, Khedri R, Delirrooyfard A, Forouzan A, and Sayyah Bargard M designed research; Eisvand H, Maniati M, and Jaberi M conducted research; Amini P analyzed data; and Delirrooyfard A and Maniati M wrote the manuscript. Delirrooyfard A had primary responsibility for final content. All authors read and approved the final manuscript.

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