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Evaluation of Phobia, Knowledge, Attitude and Practice about SARS-CoV-2 Infection, a Study on Healthcare Workers and Their 1st Degree Relatives

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Key words: Phobia, knowledge, attitude, practice, COVID-19, healthcare workers
Parole chiave: Fobia, Conoscenze, Atteggiamenti, Comportamenti, COVID-19, SARS-CoV-2, Operatori Sanitari

Abstract

Background. *Phobia as a psychological disorder seems to be aggravated during health crises like the current COVID-19 outbreak. On the other hand, people's knowledge about a situation can help decrease the resulting fear.*
Study design. *This is a cross-sectional analytical study to evaluate the COVID-19 related phobia and to measure knowledge, attitude, and practice of our target Iranian population about COVID-19.*
Methods. *In this study, DSM-5 specific phobia questionnaire, adapted to SARS-CoV2-19 infection, was used to evaluate the COVID-19 related phobia. Moreover, the knowledge, attitude, and practice (KAP) questionnaire, specific for SARS-CoV-2 infection, was applied.*
Results. *Phobia score was significantly higher in 1st-degree relatives of healthcare staff (20.38±5.82) than healthcare staff (18.36±5.68) (p=0.021). Females showed a significantly more severe phobia (20.27±5.41) than males (17.72±5.35, p=0.001). COVID-19 phobia was significantly more severe in those with past psychiatric conditions than in those without psychiatric history (p<0.05). The 1st-degree relatives of healthcare staff had a significantly lower level of knowledge about SARS-CoV-2 infection (8.19±1.65) than healthcare staff (9.08±1.28, p=0.001). Additionally, age had a positive significant correlation with knowledge and practice towards SARS-CoV-2 infection.*
Conclusion. *Both Iranian healthcare staff and 1st-degree relatives of healthcare workers are suffering from moderate COVID-19 phobia. Females are more concerned than males about COVID-19. Phobia is more severe in people with underlying psychiatric conditions than other people. The knowledge level of Iranian healthcare workers and 1st-degree relatives of healthcare staff about COVID-19 is acceptable but it needs improvement in certain areas.*

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Introduction

The Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a new member of the Coronaviridae family, which represent an important group of RNA viruses causing disease in humans and animals, circulating permanently in human societies (1, 2). This new virus, which is morphologically known by a crown-like spike in envelope (3), is a beta coronavirus with a large genome capable of undergoing new mutations and initiating new epidemics exactly like its former family member, severe acute respiratory syndrome coronavirus (SARS-CoV) (3, 4).

Three major epidemics have been reported in the last twenty years caused by the coronaviridae family, started with SARS-COV in 2002, followed by the Middle East Respiratory Syndrome Coronavirus (MERS-CoV) in 2012, and ended with the current pandemic of COVID-19. The first epidemic caused by SARS-CoV ended up with 8,000 confirmed cases and 774 deaths. The second one caused by MERS-CoV was seen only in Saudi Arabia and Korea, and the last one started from a seafood market in Wuhan, China, in December 2019 and has been spreading worldwide (5-10). At the moment of writing this paper (October 27, 2021), 245, 345, 225 COVID-19 cases, 4,980,034 deaths, and 222,419,743 recoveries have been reported globally (11).

SARS-CoV-2 infection is believed to have an incubation period of about 5 days on average, which was quite variable in different patients (12-14). The transmission of the infection via air droplets can occur during both symptomatic and incubation periods, in which every individual can infect 4 people on average (15, 16). The main clinical symptoms of COVID-19 are believed to be chills, fever, dyspnea, dry cough, muscle pain, nausea, vomiting and diarrhea. However, the clinical manifestations can have a wide range, from asymptomatic disease to acute respiratory distress syndrome (ARDS) (17). Almost 80% of patients experience mild symptoms, the remaining 20% develop pneumonia after a week, and about 5% progress to severe disease, which can be presented by ARDS, cardiac, respiratory, or renal failure, and some cases end with death (18, 19). Although different numbers are being reported these days, the infection fatality rate is believed to be 4-11% in admitted patients and 2-3% overall (20).

On the other hand, the SARS-CoV-2 outbreak is now at the center of attention globally. People are being quarantined every day, and basic types of preventive equipment such as masks and gloves are being hardly found in markets. Psychologically, when the environment changes, people tend to feel anxious and insecure, and psychological disorders can be initiated or aggravated as a result (21). The current COVID-19 pandemic is inducing panic which requires a good assessment of society's mental health to confront it (22). It is proven that epidemics have a wide spectrum of psychological impacts on people, resulting in feelings such as fear, stigma and feeling helpless, which can be amplified by city lockdowns and quarantine (23). As we can see, people's behavior like following health-related instructions which are completely dependent on their knowledge and insight about the situation can profoundly impress the outcomes of epidemics (24). Previous data show that sticking to preventive public health measures such as using face masks, hand washing, and social distancing can effectively help control the pandemic (25-28). Therefore, this study aimed to evaluate people's phobia, knowledge, attitude, and practice about COVID-19 infection.

Materials and Methods

Study Design and Setting

In this cross-sectional study, the information on 230 individuals, who were

either healthcare workers or 1st-degree relatives of healthcare staff in Iran, was collected via 2 online questionnaires at <www.porsline.ir>. The enrollment period of questionnaires was from March 1, 2020 until May 30, 2020. The study's inclusion criteria were: being healthcare workers or 1st-degree relatives of healthcare staff and being 18 years old and over. The only exclusion criterion was the omitted or incompletely filled forms.

Data collection was done through two online questionnaires provided in one link. At the beginning of the online form, demographic data (age, gender, education, occupation, marital status, number of children, weight, height, the period of feeling sick, positive or negative history of hospitalization or Intensive Care Units (ICU) admission due to COVID-19 infection, number of family members involved, history of 1st-degree relative deaths, history of physical or psychological disorders, history of smoking and tea or coffee consumption, and targeted study group data (healthcare staff and their 1st-degree relatives) were collected.

The first questionnaire was the standard Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) questionnaire (29) for severity measure of specific phobia, which was specified for COVID-19 phobia (30) and then translated into Persian. The questionnaire was made up of 10 questions measuring the intensity of phobia scored from 0-4 with a total range of 0-40 final score. The final score showed the degree of COVID-19 phobia in 3 levels; mild (0-13), moderate (14-27), and severe (27-40). The level of each participant's phobia was shown to them at the end of the questionnaire.

The COVID-19 KAP questionnaire, which was provided online to the study group too, was accompanied by the DSM-5 specific phobia questionnaire. To have their information saved, the participants had to answer both questionnaires. The KAP questionnaire, which was originally used in a Chinese study, was translated into Persian. The knowledge section of the questionnaire was made up of 12 questions with "Yes", "No", and "I don't know" options for answers. The correct answer was scored as 1 and the wrong answer and "I don't know" answer were scored as 0. The range of the final knowledge score was 0 to 12, which was derived in 3 parts equally resulting in 3 knowledge categories; low, intermediate, and good. Four questions were placed at the end of the questionnaire; 2 questions to evaluate people's practices about going to public places and using masks (practice) and 2 questions to evaluate their hope to control the epidemic (attitude). All participants voluntarily filled the online forms to help control the COVID-19 pandemic. The identity of participants was not asked, and all their information was secret.

This study was approved by the National Ethics Committee under the code number: IR.BMSU.REC.1399.160.

Statistical Analysis

SPSS version 19 was used for data analysis. Mean and standard deviation (SD) were used for quantitative variables. The numbers of the cases (N) and percentages (%) were used for baseline data. Because the normal distribution was not approved, then the Mann-Whitney U test, Kruskal-Wallis H test, and Spearman correlation test were used. The statistical significance level was considered 0.05.

Results

In this study, 230 individuals - who were all healthcare staff or their 1st-degree relatives - participated. Specific COVID-19 phobia and knowledge, attitude, and practice about SARS-CoV-2 were analyzed using DSM-5 specific phobia and KAP questionnaires, respectively. Moreover,

reliability and validity of both questionnaires were confirmed in 2 separate studies by the same authors of this study (Table 1). The validity of the translated questionnaires was confirmed by the forward-backward method. In order to evaluate phobia, knowledge, attitude, and practice in this study group, some changes were made in the content of the questionnaires. The COVID-19 phobia questionnaire was translated to Persian via the forward-backward method as well. Two experts in clinical psychology, infectious diseases, and nursing then reviewed the questionnaires to approve their face and content validity. The mean of CVR (content validity ratio) was 0.81, and the CVI (content validity index) of the questionnaire was 0.92. The reliability of the questionnaire was evaluated via a pilot sampling on 120 individuals before main data collection in which the Chronbach's alpha resulted as 0.754, and, finally, the reliability and validity of the questionnaire were approved. The KAP questionnaire was translated into Persian using the forward-backward method too. Some changes were made in the content of the questionnaire to evaluate knowledge, attitude, and practice about COVID-19 in the study population. Then it was handed to 25 specialists in clinical psychology, infectious diseases and nursing to review its content and face validity. The mean CVR was 0.79 and the CVI was 0.90. The reliability of the questionnaire was approved through a pilot sampling on 120 individuals before the main data collection resulted in a 0.712 Chronbach's alpha. Finally, the reliability and the validity of the questionnaire were approved.

Table 1 - Reliability of questionnaires

Questionnaire	N of questions	Cronbach's alpha
Phobia	10	0.751
KAP	16	0.709

Demographic Data, Past Medical and Psychiatric History

From a total number of 230 participants, 67.8% were healthcare workers, and 32.2% were 1st-degree relatives of healthcare staff. The mean age of participants was 38.12±10.64, ranging from 18 to 67 years old. The mean body mass index (BMI) was 25.9±3.65 (Table 2).

Past Medical and Psychiatric History

Participants of this study declared the following underlying disorders as past medical history: 10% had hypertension, 5.2% were diabetic, 3.9% had a respiratory disease and 3.5% suffered from a cardiovascular disease. Past psychiatric history of the participants was analyzed as following; 82.2% had no psychiatric history, 9.5% had anxiety, 4.3% had depression, 2.7% had obsessive compulsive disorder (OCD) and 1.3% suffered from phobia (Table 3).

Evaluation of Questionnaires and Their Scores

The mean score of the phobia questionnaire was 19.01±5.51. Phobia score was significantly higher in 1st-degree relatives of healthcare staff (20.38±5.82) than healthcare staff themselves (18.36±5.68, $p=0.021$). On the other hand, females showed a significantly greater phobia score (20.27±5.41) than males (17.72±5.35, $p=0.001$). The results showed that the phobia score was significantly higher in those with past psychiatric conditions than in those without psychiatric history ($p<0.05$). It was also demonstrated that among those participants with underlying psychiatric conditions, those with a background of phobia showed a significantly greater COVID-19 phobia than those with other psychiatric pre-existing disorders (Table 4).

According to table 5, knowledge score didn't show any significant difference in demographic subgroups of the study,

Table 2 - Summary of demographic data

		N	%
Study group	Healthcare workers	156	67.8
	1st-degree relatives	74	32.2
Gender	Male	113	49.1
	Female	117	50.9
Marital status	Single	59	25.7
	Married	171	74.3
Education	Diploma or below	21	9.1
	Associate	57	24.8
	Bachelor	44	19.2
	Master	76	33
	PhD or higher	32	13.9
Occupation	Freelance job	127	55.9
	Governmental	25	11
	Housewife	2	0.9
	College student	3	1.3
	School student	28	12.3
	Unemployed	88	38.8
Number of children	No Children	83	36.1
	1	97	42.1
	2	29	12.6
	3	12	5.3
	4 or more	9	3.9
BMI	<18.5 below normal	9	3.9
	18.5-25 normal	118	51.3
	25-30 overweight	29	12.7
	>30 obesity	74	32.1

Table 3 - Past medical and psychiatric history

Variable		N (%)
Past medical history	Diabetes	12 (5.2)
	Cardiovascular	8 (3.5)
	Hypertension	23 (10)
	Respiratory	9 (3.9)
	Corticosteroid therapy	7 (3)
	Chemotherapy	1 (0.4)
	Cancer	2 (0.9)
	Organ transplant	0 (0)
	AIDS	0 (0)
Past psychiatric history	Anxiety	22 (9.5)
	Depression	10 (4.3)
	Phobia	3 (1.3)
	Obsessive compulsive disorder(OCD)	6 (2.7)
	No psychiatric history	189 (82.2)

Table 4 - COVID-19 phobia score

		Mean	SD	Range	P-value
Study group	Healthcare workers	18.36	5.68	3-29	0.021[1]
	1st-degree relatives	20.38	5.82	5-35	
Gender	Male	17.72	5.35	3-28	0.001[1]
	Female	20.27	5.41	2-31	
Marital status	Single	19.41	5.63	3-29	0.492[1]
	Married	18.84	5.38	4-32	
Education	Diploma or below	19.93	5.31	3-29	0.702[2]
	Associate	18	4.91	5-27	
	Bachelor	18.71	5.19	5-30	
	Master	19.70	6.21	3-33	
	Doctoral or higher	18.67	5.42	4-34	
Occupation	Freelance job	19.44	4.78	5-35	0.395[2]
	Governmental	18.5	5.59	5-33	
	Housewife	19.8	4.08	4-32	
	College student	20.04	6.64	4-36	
	School student	19.5	3.54	5-30	
	Unemployed	24	10.82	7-38	
Pre-existing Psychiatric Condition	Anxiety	21.36	6.86	6-36	0.018[2]
	Depression	21	4.29	8-36	
	Phobia	24	8.19	11-37	
	OCD	23.33	4.03	9-36	
	Nothing	18.51	5.58	4-26	
Smoking History	Positive	18.77	5.48	3-27	0.598[1]
	Negative	21.09	5.62	5-29	

[1] Mann-Whitney U Test; [2] Kruskal-Wallis H Test

except in target subgroups in which the 1st-degree relatives of healthcare staff showed a significantly lower knowledge score (8.19±1.65) than healthcare staff themselves (9.08±1.28, p=0.001). Moreover, mean practice score was significantly higher in females (1.26±1.17) than males (0.76±1.29). It was also observed that age has a positive significant correlation with knowledge and practice scores. The results showed no significant difference of knowledge score neither between those with and without pre-existing psychiatric conditions nor between those with different underlying psychiatric conditions (Table 5).

Finally, the phobia score showed a significant correlation with attitude and practice scores, but no correlation was seen between phobia and knowledge scores (Table 6).

Discussion

This study aimed to show the possible existing phobia about COVID-19 in healthcare workers and their 1st-degree relatives and evaluate the existing knowledge, attitude, and practice about COVID-19 in study subgroups and compare the results among them. In this regard, this study demonstrated that both healthcare workers

Table 5- Summary of KAP score

Variable		Knowledge (range: 0-12)			Attitude (range: 0-2)			Practice (range: 0-2)		
		mean	SD	P-value	mean	SD	P-value	Mean	SD	P-value
Study group	Healthcare workers	9.08	1.28	0.001[1]	1.23	1.05	0.646[1]	0.92	1.29	0.082[1]
	1st-degree relatives	8.19	1.65		1.15	1.12		1.22	1.15	
Gender	Male	8.68	1.54	0.28[1]	1.22	1.1	0.824[1]	0.76	1.29	0.002[1]
	Female	8.89	1.39		1.18	1.05		1.26	1.17	
Marital status	Single	8.54	1.94	0.12[1]	1.15	0.97	0.574[1]	1	1.38	0.838[1]
	Married	8.89	1.64		1.24	1.08		1.04	1.2	
Education	Diploma or below	8.6	1.86	0.066[2]	1.27	1.03	0.888[2]	1	1.25	0.846[2]
	Associate	8.19	1.78		1.2	1.24		0.8	1.47	
	Bachelor	8.56	2.08		1.32	1.13		1.03	1.26	
	Master	8.95	1.49		1.16	1.06		1.16	1.2	
	Doctoral or higher	8.81	1.13		1.13	1.03		0.96	1.26	
Occupation	Freelance job	8.91	1.28	0.570[2]	1.17	1.02	0.114[2]	1.15	1.26	0.817[2]
	governmental	8.62	1.45		1.24	1.08		0.99	1.19	
	housewife	8.60	1.32		1.54	0.83		1.13	1.3	
	College student	8.57	1.79		1	1.41		0.7	0.11	
	School student	8.99	2.11		0.77	1.18		1	1.49	
	unemployed	9.01	1.8		0.33	1.53		0.67	1.15	
Pre-existing Psychiatric Condition	Yes	8.74	1.48	0.89[1]	1.25	1.05	0.019[1]	1.01	1.25	0.714[1]
	No	8.78	1.47		0.68	1.17		0.91	1.31	
	Correlation			P-value	Correlation		P-value	Correlation		P-value
Age	0.191			0.011[3]	0.121		0.071[3]	0.134		0.045[3]
Height	0.101			0.091[3]	0.062		0.356[3]	0.172		0.009[3]
Weight	0.048			0.68	0.069		0.305[3]	0.094		0.16[3]
BMI	0.035			0.75[3]	0.051		0.444[3]	0.005		0.94[3]

1. Mann-Whitney U Test 2. Kruskal-Wallis H Test 3. Spearman Correlation Test

Table 6 - Correlation between Phobia and KAP

KAP	Phobia		
	N	Correlation	P-value [1]
Knowledge	218	0.12	0.11
Attitude	221	0.285	0.001
Practice	222	0.302	0.001

1. Spearman Correlation Test

and their 1st-degree relatives are suffering from a moderate COVID-19 phobia. It also showed that 1st-degree relatives of healthcare workers have a significantly greater phobia score than healthcare workers themselves. Interestingly, it showed that females have a significant greater COVID-19 phobia compared to males. It also showed that COVID-19 phobia is more severe in people with underlying psychiatric conditions than other people. Another important finding of this study was that COVID-19 phobia is a lot more severe among patients with pre-existing phobia than patients with other psychological conditions.

The study showed that both healthcare workers and their 1st-degree relatives have a good level of knowledge about COVID-19 infection as well as the general population (31), but it demonstrated that 1st-degree relatives of healthcare workers have a significantly lower level of knowledge about COVID-19 than healthcare workers themselves, which shows the necessity of an effective educational program about COVID-19 for the family members of healthcare workers. The study interestingly showed that there is no statistically significant relation between education level and COVID-19 related knowledge. This probably means most of the target population is receiving acceptable knowledge about COVID-19 regardless of their education level (probably via social media and other public programs).

Interestingly, females showed a greater tendency to wear masks and avoid going to public places compared to males in this investigation. It also showed a significant positive correlation between age, knowledge, and practice scores. In other words, wearing masks, avoiding going to public places, and knowledge about COVID-19 were higher in older people. It also demonstrated that people without pre-existing psychiatric conditions are more optimistic about finally controlling the COVID-19 pandemic.

Recent studies have also shown the significant psychological impact of COVID-19 on people's lives. From a psychological point of view, while humans' living environment is changed, people begin to feel insecure and anxious. These can result in several psychological conditions such as phobia, anxiety, and depression (21). Asmundson et al showed that 1/3 of Canadian people are worried about COVID-19 infection, and 7% of them are extremely worried. Moreover, 33% of Canadian people were not sure whether the government is able to control the COVID-19 situation or not. Therefore, the same study shows that 66% of American people believe that COVID-19 is a serious condition; 56% are extremely anxious about it, and 26% think that the U.S government has not done enough actions to control the epidemic (32).

Here the study showed that Iranian healthcare workers and their 1st-degree relatives are mostly worried about the COVID-19 situation and suffer from a moderate COVID-19 phobia. The same psychological impact was seen in Chinese people when participants in the study done by Ren (33), said that COVID-19 had caused phobia and stigma about COVID-19 patients. Xi Liu et al in another Chinese study on 608 individuals showed that 10.1% of them suffer from COVID-19 phobia (34). §§§ Moreover, a Turkish study demonstrated that corona phobia was more severe in people who stayed at home rather than those who continued working during the pandemic (35). Interestingly in this study, 1st-degree relatives of healthcare staff had a more severe phobia than healthcare workers themselves. This can be explained by the tendency of 1st-degree relatives to stay at home in contrast to healthcare workers who must work during the pandemic. This is in line with the Turkish study. Another Turkish study by Cihan et al. showed that females suffer from more severe corona phobia than males (36), which is in line with our results.

Lima et al.'s study in Brazil (27) showed

that the phobia about SARS-CoV-2 infection had caused psychological consequences, which are more severe in the elderly and those with pre-existing psychiatric conditions. Similarly, the study showed that COVID-19 phobia is a lot more severe in those with pre-existing psychiatric conditions than healthy people.

In the COVID-19 knowledge area, some other recent studies have also shown similar results to this study. In the study done by Geldsetzer on people in the U.S and U.K, participants showed an acceptable level of knowledge about COVID-19, but they needed improvement in some areas, such as possible ways of prevention of COVID-19 (37). This investigation similarly showed that Iranian healthcare workers and their 1st-degree relatives have acceptable levels of knowledge about COVID-19, but some subgroups such as 1st-degree family members of healthcare staff need improvement.

Due to the cross-sectional design, the study has some limitations, such as the possibility of dishonesty in answering questionnaires (we tried to minimize this possibility by not asking participants for identity and assuring them about privacy and security of their information) and the small sample size as well. Furthermore, the cross-sectional study design used did not allow inferences on the temporal relationship between the variables. Therapeutic drugs were also not mentioned in this study.

Conclusions

Psychological disorders are a great problem during the COVID-19 outbreak. Both Iranian healthcare staff and their 1st-degree relatives are suffering from moderate COVID-19 phobia. Females are more concerned than males about COVID-19. Moreover, COVID-19 phobia is more severe in people with underlying psychiatric conditions than other people. COVID-19 phobia is a lot more severe among patients with pre-existing psychiatric conditions.

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Riassunto

Valutazione di Fobia, Conoscenze, Atteggiamenti e Comportamenti Relativamente all'Infezione da SARS-CoV-2: Indagine su Operatori Sanitari e loro Familiari entro il Primo Grado

Premessa. La fobia come disordine psicologico appare aggravarsi durante crisi sanitarie, come l'attuale pandemia di COVID-19. D'altra parte, se una popolazione diviene conscia della situazione, ciò può concorrere a ridurre la paura ad essa collegata.

Disegno dello studio. Si tratta di uno studio analitico trasversale, inteso a valutare la fobia collegata alla COVID-19. Ed a misurare conoscenze, atteggiamenti e comportamenti della popolazione degli operatori sanitari iraniani nei confronti della COVID-19.

Metodi. Nel presente studio, il questionario DSM-5, specifico per la fobia e adattato all'infezione da SARS-CoV-2, è stato utilizzato per valutare la fobia collegata al COVID-19. Inoltre, è stato usato anche un questionario KAP (dedicato cioè allo studio di conoscenza, atteggiamenti e comportamentj), adatto ad indagini connesse con il COVID-19.

Risultati. Lo score della fobia è risultato significativamente più elevato nei parenti di primo grado degli operatori sanitari (20.38±5.82) che negli operatori stessi (18.36±5.68, p=0.021). Le femmine mostravano una fobia significativamente più severa ((.27±5.41) dei maschi (17.72±5.35, p=0.001), e la fobia risultava significativamente più severa in coloro che avevano una patologia psichiatrica alle spalle rispetto a chi non l'aveva (p<0.05). I parenti di primo grado degli operatori sanitari erano caratterizzati da un livello di conoscenza circa l'infezione da SARS-CoV-2 significativamente minore (8.19±1.65) rispetto agli operatori stessi (9.08±1.28, p=0.001). Inoltre, l'età mostrava una correlazione significativamente positiva nei confronti di conoscenza e comportamento verso l'infezione da SARS-CoV-2.

Conclusioni. Sia il personale sanitario iraniano che i parenti di primo grado degli operatori stessi soffrono di una moderata fobia nei confronti della COVID-19, le femmine più dei maschi, e coloro che hanno precedenti

psichiatrici più di coloro che non ne hanno. Il livello di conoscenza degli operatori sanitari iraniani e dei loro parenti di primo grado è invece a livello accettabile, ma in alcune aree del Paese abbisogna di un miglioramento.

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