

# Occupational Stress Assessment of Health Care Workers (HCWs) Facing COVID-19 Patients in Iran

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## Research Article

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# Abstract

**Background:** The health care workers (HCWs) in medical sectors are among the vital assets of any country during the emergence of crises such as pandemic prevalence caused by COVID-19. Therefore, maintaining the health of this group of staffs is necessary not only to save lives of patients, but also to control prevalence of diseases. People at the frontline of fighting COVID-19 are at higher risk for mental health problems, including stress, anxiety, depression, and insomnia. The main objective of this study is to study the status of job stress in the three occupational groups of nurses, physicians and hospital cleaning crew facing corona patients in Iran hospitals.

**Methods:** This cross-sectional descriptive analytical study is performed on 290 medical staff (nurses, physicians and cleaning crew) facing COVID-19 patients working in different hospitals in Iran in 2020. Demographic information form and Job Stress Questionnaire (HSE tool indicator) were used to collect data. The HSE questionnaire has 35 questions and 7 areas, which was developed in the 1990s by the UK Health and Safety Institute to measure job stress.

**Results:** 59% of the participants in this study were male. 62% of participants in this study were married. Participants often had work experience between 3 to 10 years. 66% of the participants were in the age range of 20 to 30 years. Percent of participants' shift work satisfaction was 67%. Also, according to the results of the present study, 87% of nurses, 79% of cleaning crew and 67% of physicians had a partial to high levels of stress that, on average, 77.5% of the HCWs participating in this study had at least a small amount of stress.

**Conclusions:** The prevalence of COVID-19 has a great impact on the level of job stress in the HCWs of Iranian hospitals. Factors such as high workload, low response time at the peak of hospital visits, lack of adequate support for top managers of all job groups equally, lack of access to adequate personal protective equipment, unpreparedness of managers and staff to respond to the critical and emergency conditions on stress incidence were effective on the present study.

## 1. Introduction

COVID-19 is an acute respiratory disease (pneumonia) caused by the Corona virus that was first identified in Wuhan, China. According to the World Health Organization (WHO), the disease is caused by the SARS-COV-2 virus, and the resulting pandemic poses a serious threat to the health of the global community. According to the available evidence, human-to-human transmission of COVID-19 is possible through respiratory droplets containing the viral aerosol as well as contact with surfaces [1–3]. In Iran, with the identification of two cases in February 2020, the outbreak of COVID-19 was announced for the first time. Not knowing the disease, lack of effective drugs for the treatment and severe effects of the disease on some patients led to a wave of stress and emotional reactions in Iranian society [4].

According to studies, different groups of people, including children, the elderly and those with special medical conditions (such as pregnant women) are more susceptible to the disease [5]. However, health care workers such as physicians, nurses, and other frontline health care workers are an important part of the population who may become infected through work and job confrontation [3, 6]. The health care workers occupied in medical sections is one of the vital assets of any country in the event of a crisis such as COVID-19. Therefore, maintaining the health and safety of this group of people is important not only to save the lives of patients but also to control the spread of the disease [7]. HCWs are one of the high-risk groups of facing this infectious disease. In addition to exposure to this pathogen, these individuals face other occupational hazards, including long working hours, fatigue, mental

burnout induced by workload, skin blemishes, stress, and other physical and psychological injuries [8]. Different quantitative studies conducted in Iran and around the world show that the frontline health care workers against COVID-19 are at higher risk for mental health-related problems such as stress, anxiety, depression and insomnia [9, 10].

The word stress has different meanings in different sciences. In psychology, stress means exposure to psychological pressures [11]. In the field of occupational health, stress is also known as job stress, which is a state of psychological and physical stress in the workplace and is due to high demand and needs of the workplace compared to the capabilities of the workforce (12). Stress is an integral part of all jobs, but it is mostly found in jobs that are closely related to health and death and life and requires more attention [13, 14]. Those involved in the medical and treatment professions are affected by various stressors in their work environment due to their responsibility to ensure the health and treatment of patients [15]. Stress causes several adverse symptoms such as insomnia, headache, fatigue, anxiety, gastrointestinal upset and decreased immunity, as well as increased family conflicts, decreased quality of work, interpersonal disorders and other negative effects [16, 17]. Medical staffs, especially those work in hospitals that provide primary care to patients with COVID-19, are not only at higher risk of infection but also more vulnerable to mental health. They may experience fear of spreading the virus to others, including their loved ones. An important lesson to be learned from previous experience, such as the prevalence of SARS, is the need for adequate psychological support from health care professionals [6]. Francesco Chirico et al. also stated that in medical centers due to high workload, lack of employed personnel, as well as direct exposure to the pathogen COVID-19 and also observing the death of patients without receiving support from relatives, the possibility of depression and burnout in staff employed in these centers is higher [18]. According to a study by Yaoyao Sun et al., conducted on mental health care staffs in hospitals, staff serving quarantine suspects had a higher risk of depression and anxiety, as well as staying away from home for more than 3 days was identified as a risk factor for aggravation of anxiety and stress [19]. In addition, in the study of Aliabadi et al., the stress factor was identified as an effective and aggravating factor of human error, the presence of which increases the likelihood of human error in the staff [20]. According to Lijun Kang et al., medical staff working in Wuhan hospitals in China due to occupational exposure to high risk of infection and inadequate and low protection against infection, high workload, frustration, exposure to patients with negative emotions, long distance from family and fatigue were under a lot of stress which led to mental health problems such as stress, anxiety, depressive symptoms, insomnia, denial, anger and fear. As a result of these psychological problems affects understanding and ability of decision making of the staff occupied in fighting COVID-19, as well as their general health. This study also states that maintaining the mental health of medical staff is effective in controlling the pandemic caused by the disease and their long-term health [21].

With all these conditions, considering the effect of mental health of medical staff in controlling the pandemic caused by Corona virus and the effect of high stress on the incidence of human error in the staff and considering that the mental health problems of medical staff during COVID-19 pandemic is less examined and also considering the fact that so far, no holistic study is done on job stress caused by this disease in these staff in Iran hospitals, the present study is designed to achieve the following three goals:

1. Determining the status of job stress in the nurses exposed to patients with COVID-19.
2. Determining the status of job stress in the cleaning crew exposed to patients with COVID-19.
3. Determining the status of job stress in the physicians exposed to patients with COVID-19.

## 2. Materials And Methods

## 2.1. Subjects and sampling method

This cross-sectional descriptive-analytical study was performed on 290 medical staff exposed to Covid-19 patients working in different hospitals in Iran in 2020. The medical staff included 180 nurses, 69 hospital cleaning crew and 41 physicians. Sampling method was done randomly. In this study, the shift of HCWs was as three times in the morning, three times in the evening and three times in the night. Inclusion criteria were willingness to participate in the research and work experience of at least one year. Also, people with less than one year of work experience and people taking anti-anxiety drugs were excluded from the study.

## 2.2. Study design

Before the experiment, the purpose of the study was fully explained to the subjects. The researchers refused to go to the hospital and talk to the treatment staff participating in the study in order to follow the Corona health protocols and prevent getting the Corona virus, and an electronic version of the questionnaire was sent to the participants. This electronic version was created by Google Forum software.

## 2.3. Data Collection Tools

Demographic information form and Job Stress Questionnaire (HSE tool indicator) were used to collect the data. The questionnaire has 35 questions and 7 areas, which was developed in the 1990s by the British Institute for Health and Safety to measure job stress. These seven areas are: 1. Role (correct perception of staff of their organization) with five questions; 2. Communication (increasing practice and positive traits to increase mass communication and reduce conflict and struggle in the workplace) with four questions; 3. Support for managers (the amount of support a person receives from their management and service institution) with five questions; 4. Colleague support (the amount of support a person receives from their colleagues) with four questions; 5. Control (the extent to which could be said that a person is on the way to do his job) with six questions; 6. Demand (including topics such as workload, characteristics and work environment) with eight questions; 7. Changes (how to organize and change the forces of an organization) with three questions. The questions of this questionnaire include a five-point Likert scale (never, rarely, sometimes, often and always) which is scored from 1 to 5, respectively [22]. A high score in this questionnaire indicates low and appropriate job stress and pressure, and a low score indicates a high level of stress. The final stress score according to this questionnaire is divided into 5 categories as follows: very partial stress (score 5), partial stress (score 4), moderate stress (score 3), high stress (score 2), very high stress (Score 1) [23]. Validity and reliability of the Persian version of HSE job stress was conducted in Marzabadi et al.'s study, the reliability of which, based on Cronbach's alpha coefficient was 78% [24].

## 2.4. Statistical Analysis

Descriptive statistic indices (frequency, percentage, mean and standard deviation) were used to analyze the data, and independent t-test and analysis of variance were used to compare quantitative variables between two groups and for more than two groups, respectively. Data were analyzed using SPSS software version 20 at a significance level of less than ( $P \leq 0.05$ ).

## 3. Results

### 3.1 Demographic information

As mentioned above, the demographic information of the study population was obtained using the demographic information form (Table 1). The majority of participants in this study were male (59%). 62% of the participants in this study were married. Participants often had 3 to 10 years of work experience. 66% of the participants were in the age range of 20 to 30 years. 87% of them were employed and their shifts were mandatory and a small percentage voluntarily worked in medical centers. The percentage of participants satisfied with their work shifts was 67%.

Table 1  
Demographic information of the study sample (n = 290)

Variables		Frequency	Percentage
Gender	Male	173	59
	Female	117	41
Marital status	Single	113	38
	Married	177	62
Work experience	Less than 3 years	56	19
	3–5 years	82	28
	5–10 years	63	21
	10–20 years	50	17
	20–30 years	39	15
Age range	20–30 years	192	66
	31–40	69	23
	41–50	29	11
Shift work selection	Voluntary	38	13
	Obligatory	252	87
Shift work satisfaction	Yes	194	67
	No	96	33

## 3.2. Occupational stress assessment

According to the objectives explained above, job stress assessment in the present study in the three occupational groups of nurses, cleaning crew and physicians was performed as follows:

### 3.2.1. Occupational Stress assessments of nurses

The results of job stress assessment findings in nurses are shown in Table 2. The mean total score of the dimensions among nurses was obtained in the range between moderate to high stress level (2.31). 87% of nurses had low to high levels of job stress. There was a significant correlation between the mean total score of nurses and work experience (p-value = 0.013), type of work shift (p-value = 0.037) and job satisfaction (p-value = 0.013). According to statistical tests in nurses, there was no statistically significant correlation between the mean score of total dimensions of job stress with gender, age and marital status (p-value > 0.05). Also, a statistically significant

correlation was observed between manager support area and control area and role (p-value = 0.037 and p-value = 0.016). But there was no statistically significant correlation between manager support with communication score, demand and changes (p-value > 0.05). There was a significant correlation between the dimensions role and work experience (p-value = 0.043). There was a significant correlation between the dimensions of manager support and work experience (p-value = 0.0001) and type of work shift (p-value = 0.04). There was also a significant correlation between colleague support and marital status (p-value = 0.0001). There was a significant correlation between dimensions of control and demand with work experience and type of work shift (p-value = 0.0001).

Table 2  
Distribution of job stress score and its dimensions among nurses (n = 180)

Dimensions of job stress	Mean score	Standard deviation	p-value Gender	p-value Marital status	p-value Work experience	p-value Age range	p-value Shift work selection	p-value Shift work satisfaction
Role	2.13	0.618	0.059	0.43	0.43	0.32	0.132	0.38
Communications	2.36	0.873	0.0650	0.408	0.53	0.17	0.091	0.58
Manager support	2.43	0.744	0.411	0.32	0.0001	0.76	0.04	0.0001
Colleague support	2.96	0.496	0.064	0.0001	0.11	0.47	0.210	0.14
Control	2.12	0.522	0.608	0.245	0.0001	0.713	0.0001	0.0001
Demand	2.16	0.847	0.632	0.134	0.0001	0.132	0.0001	0.0001
Changes	2.02	0.675	0.637	0.065	0.74	0.42	0.42	0.69
Mean score of total dimensions	2.31	0.67	0.208	0.23	0.013	0.65	0.037	0.013

\* Significance level was considered as p-value < 0.05.

### 3.2.2. Occupational assessment of cleaning crew

Table 3 shows the results of the job stress assessment findings among the cleaning crew of corona sections. The mean score of total dimensions among the cleaning crew was 2.91 which was in the range between moderate and high stress level and also 79% of the participants had a slight to high stress level. There is a statistically significant correlation between the dimensions of the total job stress score and job satisfaction (p-value = 0.02). Also, a statistically significant correlation was observed between the areas of manager support and control, communication and demand (p-value = 0.011, P = 0.030 and P = 0.0001). Also, a statistically significant correlation was observed between control and demand (p-value = 0.0001). There was a statistically significant correlation between manager' support and colleague support (p-value = 0.0001). However, the study of statistical tests in the cleaning crew showed that there is no statistically significant correlation between the dimensions of the total job stress score with gender, age and marital status and work experience (P > 0.05). There was a significant correlation between communications and work experience (p-value = 0.0001). There was also a significant correlation between the dimension of manager support and type of work shift (p-value = 0.0001). In addition, there was a significant correlation between colleague support and work experience and the type of work shift (p-value = 0.0001). There was a significant correlation between control and age (p-value = 0.0001).

Table 3  
Distribution of job stress score and its dimensions among the cleaning crew group (n = 69)

Dimensions of job stress	Mean score	Standard deviation	p-value Gender	p-value Marital status	p-value Work experience	p-value Age range	p-value Shift work selection	p-value Shift work satisfaction
Role	3.14	0.25	0.059	0.081	0.564	0.087	0.065	0.47
Communication	2.76	0.77	0.65	0.341	0.0001	0.069	0.013	0.32
Manager support	2.02	0.34	0.45	0.128	0/065	0.032	0.0001	0.0001
Colleague support	3.87	0.96	0.765	0.087	0.0001	0.098	0.0001	0.0001
Control	2.99	0.82	0.451	0.47	0.39	0.0001	0.78	0.066
Demand	2.89	0.65	0.342	0.076	0.069	0.871	0.091	0.0001
Changes	2.98	0.3	0.231	0.613	0.0543	0.091	0.169	0.77
Mean score of total dimensions	2.95	0.58	0.43	0.067	0.107	0.453	0.0001	0.02

\* Significance level was considered as p-value < 0.05.

### 3.2.3. Occupational stress assessment of physicians

The results of job stress assessment findings in corona physicians can be seen in Table 4. The mean score of total dimensions among physicians was 3.53 which showed that the level of stress among physicians was between low and moderate stress levels. The results also showed that 69% of physicians had moderate to high levels of stress. There is a statistically significant correlation between the mean total score of dimensions in physicians with work experience and job satisfaction (p-value = 0.004 and p-value = 0.0001). However, according to the statistical study, there is no statistically significant correlation between the dimensions of job stress with gender, age and marital status (p-value > 0.05). Also, a statistically significant correlation was observed between control and demand dimensions (p-value = 0.0001). There was a statistically significant correlation between manager support and colleagues support (p-value = 0.0001). In addition, there was a significant correlation between the communication dimension and age (p-value = 0.0001). There was also a significant correlation between manager support and the type of work shift (p-value = 0.0001). There was a significant correlation between colleague support and marital status (p-value = 0.0001). In addition, a significant correlation was observed between control dimension and type of work shift (p-value = 0.0001). There was also a significant correlation between demand dimension and work experience (p-value = 0.0001).

Table 4  
Distribution of job stress score and its dimensions among physicians (n = 41)

Dimensions of job stress	Mean score	Standard deviation	p-value Gender	p-value Marital status	p-value Work experience	p-value Age range	p-value Shift work selection	p-value Shift work satisfaction
Role	3.56	0.89	0.059	0.67	0.47	0.34	0.091	0.57
Communication	3.16	0.87	0.0650	0.91	0.78	0.0001	0.083	0.081
Manager support	3.87	0.69	0.32	0.18	0.43	0.081	0.0001	0.0001
Colleague support	3.32	0.18	0.087	0.0001	0.39	0.18	0.068	0.072
Control	3.76	0.76	0.087	0.13	0.81	0.78	0.0001	0.0001
Demand	3.56	0.83	0.43	0.18	0.0001	0.54	0.08	0.0001
Changes	3.49	0.74	0.36	0.79	0.47	0.31	0.43	0.089
Mean score of total dimensions	3.53	0.7	0.19	0.91	0.04	0.38	0.0001	0.0001
* Significance level was considered as p-value < 0.05.								

## 4. Discussion

The aim of this study was to assess job stress among medical staff exposed to covid-19 patients in different wards of Iran hospitals. For this aim, the demographic information form and the questionnaire of the British HSE indicator tool were used. In the present study, the mean total score of the dimensions obtained by nurses was 2.31, by cleaning crew 2.95, and by doctors 3.53 and the mean score obtained by all occupational groups in this study was 2.63 which indicates the level of stress between moderate to high levels in the medical staff participating in the study. In a study conducted by Hesam Akbari et al., the mean score obtained (final stress score) by the nurses was 3.17, which was in the range of partial to moderate stress [25]. It seems that the reason for the difference between the two studies is the effect of critical conditions caused by Covid-19 crisis such as lack of previous familiarity with the disease (newness), direct exposure to previously unexperienced infectious disease, and lack of access to adequate personal protective equipment for nurses in the present study.

Also, according to the results of the present study, 87% of nurses, 79% of the cleaning crew and 67% of physicians had partial to high stress levels, with a mean of 77.5% of the medical staff participating in this study had at least a partial amount of stress. This level of stress can be due to the high volume of work and the resulting high pressure on personnel compared to pre-pandemic conditions, direct exposure to the risks of Covid-19 and also the fear of transmitting the disease to them. In studies by Yanping Bao et al., Claudia Carmassi et al. and Jianbo Lai et al. they stated that those (medical staff) who work in the field of diagnosis, treatment, and care of corona patients, are facing a high risk of stress and spiritual and psychological problems caused by them; which are completely consistent with the results of the present study [26–28]. Also in the study and Lai et al. who examined the level of stress in the health care workers (HCWS) (including nurses and physicians) exposed to Covid-19 patients in Wuhan, China, about 71.5% of participants had partial to high stress levels. The results are similar to the results of the

present study [27]. Also, in the study performed on the frontline health care workers (FHCWs) of the fight against corona, it was stated that the level of stress in the occupational group of nurses was higher than that of physicians, which is consistent with the results of the present study [29]. In addition, in a study by Imran Khalid et al., which was performed on HCWs (including nurses, physicians, and respiratory therapists) exposed to MERS-CoV, stress was divided into four levels of very low (score 0), partial (score 1), and moderate (score 2) and very high (score 3), which the mean score of the participants in this study was about 2.43 (moderate to very high stress level) [30]. The mean stress score obtained by all job groups in the present study was 2.63 (moderate to high stress level), which shows a close similarity with the study of Khalid et al.

In the present study, the mean score of the total dimensions, in a way, indicates the level of job stress in job groups. In this study, in the group of nurses and physicians, there is a significant correlation between the mean total score of dimensions with work experience and job satisfaction and this correlation is a positive correlation in the sense that with increasing work experience and job satisfaction, the mean total score of dimensions increases and indicates a reduction in stress levels in them. Also in the cleaning crew, there is a significant positive correlation between the mean total score of dimensions and job satisfaction. Accordingly, in the study of Robert Kerr et al., which was conducted on job stress of jobs related to health and social services, a positive correlation was observed between the final score of the HSE questionnaire and job satisfaction [31]. Also in the study of JANE E. FERRIE et al., a positive correlation was observed between different parts of the HSE questionnaire (such as role and changes) and mental health [32].

In the present study, part of the mean total score of dimensions in stress expression according to the HSE questionnaire is affected by support (managers and Colleague). The results are consistent with a study by Kumars Eisapareh et al., which states that social support is effective in reducing stress [33].

In the present study, the mean total score of the dimensions of the physicians group was obtained as 3.53 which in comparison with the study by F. Cedrone et al. performed on neurophysiological technicians with a mean score of 3.74, are in the same range of stress (34). In the present study, the scores related to communication and role were 3.16 and 3.56, respectively. In the study by F. Cedrone et al., the scores related to these two dimensions were 4.01 and 4.35, respectively, where the difference is caused by the existence of stressful conditions, lack of familiarity with critical conditions induced by the pandemic, as well as lack of proper allocation of roles by higher managers in critical situations due to the outbreak of COVID-19 in the present study [34].

In the present study, the mean total score of the dimensions obtained by the nurses was 2.31, by the cleaning crew it was 2.95 and by the physicians it was 3.53, indicating a higher level of stress in nurses compared to the cleaning crew and physicians. Accordingly, the stress level of the cleaning crew is higher compared to doctors. In nurses, the lowest score is obtained for changes (2.02) and also the scores related to control (2.12), role (2.13) and demand (2.16) have low values. Although the score related to the dimension of manager support (2.43) has a higher value compared to other dimensions, but it is still at the red level (stress level between medium and high) and shows its effect on stress levels in job groups. So that in the cleaning crew, the lowest score obtained was related to the dimension of manager support (2.02), which had the main effect on the stress level of this job group. In the cleaning crew, the score obtained in the dimensions of communication (2.76), demand (2.89) and changes (2.98) also have lower values compared to other dimensions. In the physicians group, the lowest score obtained was related to the dimension of communication (3.16). Also, the scores related to changes (3.49) and role (3.56) and control (3.76) are at a low level. In the group of physicians, the highest score obtained is related to the manager support (3.87) and shows the high support of managers in the job group of physicians and one of the reasons for

obtaining a higher score and lower stress level of this job group compared with nurses and cleaning staff is manager support. Accordingly, in a study conducted by Khanam et al., the increase in government and manager support was identified as a factor in reducing the stress of coronavirus outbreaks at the frontline of the fight against the virus [29]. In addition, other previous studies confirm the effect of support, including manager, colleague, and even family support on staff stress and mental health levels [34–37].

One of the factors affecting the level of stress is demand dimension that nurses, cleaning crew and physicians have obtained scores of 2.16, 2.89, and 3.56, respectively. Demand is recognized as an aspect of the job that is difficult for an employee to achieve. These aspects can be named as workload, work response speed, and work environment conditions. One of the reasons for the low scores obtained by the job groups of the present study (especially nurses and cleaning crews) in this dimension and the result is high stress, were high workload and the need for high response speed and inappropriate working environment conditions compared to the conditions before Covid-19 pandemic. The results are consistent with previous studies performed on radiology staff [38, 39].

In the present study, there was a significant correlation between the mean dimension score and job satisfaction in all job groups and the results showed that job satisfaction has an effect on staff stress levels. In the study of Majid Bagheri Hosseinabadi et al., which was performed on nurses, a significant correlation was found between different dimensions of job stress (demand, control, support, etc.) and job satisfaction [40], which is consistent with the results of the present study.

The main advantage of the present study is the assessment of job stress caused by COVID-19 pandemic conditions for the first time in Iran, which was used to achieve this goal of the HSE questionnaire. The advantages of this questionnaire include low number of questions, use of appropriate dimensions for job stress assessment, standard job stress assessment and high level of validity and reliability. These features make this questionnaire a convenient tool for assessing staff conditions. Thus, this tool allows the researcher to quickly assess job stress in critical situations in order to help make subsequent decisions.

## 5. Conclusion

According to our findings, the prevalence of COVID-19 has had a significant effect on the level of job stress in the treatment of Iran hospitals. Factors such as high workload, low response time at the peak of hospital visits, lack of adequate support from top managers of all job groups equally, lack of access to adequate personal protective equipment, unpreparedness of managers and staff to respond to the critical and emergency situations influenced stress incidence in the present study. Due to the possibility of recurrence of COVID-19 peak and re-increase of involvement of medical staff, preparation of work environment conditions as well as staff to respond to corona emergencies (also due to the recent outbreak of a new type of coronavirus in the UK) is one of the requirements in medical centers. Finally, the results of this study can be used as a reference for further measures, including the implementation of interventions during the pandemic to reduce job stress and maintain work stability and increase the quality of life of medical staff.

## Abbreviations

COVID-19

Coronavirus Disease 2019; HCWs:Health Care Workers; WHO:World Health Organization; MERS-CoV:Middle East respiratory Syndrome Coronavirus; FHCWs:Frontline Health Care Workers

# Declarations

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## Authors' contributions

SZ: Conceived and designed the experiments; Contributed reagents, materials, analysis tools or data. MMD & SN: Performed the Study; collected the questionnaires. RE: Collected the questionnaires; wrote the paper. RK: Contributed reagents, materials, analysis tools or data; editing the final paper. DP: Analyzed and interpreted the data. The author(s) read and approved the final manuscript.

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## Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

## Ethics approval and consent to participate

This study was approved as a research project in the ethics committee of Kerman University of Medical Sciences with code number 1399.006 IR.KMU.REC and was performed in accordance with Declaration of Helsinki. In the present study all participants were above 18 years old and signed an informed consent form prior to taking part in the study.

## Consent for publication

Consent for publication was included in the consent to participate as stated above.

## Competing interests

The authors declare that they have no competing interests.

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