

General Health Status and its Related Factors of Medical Staff during the COVID-19 Pandemic: A Cross-Sectional Study in the Hospital

Sayed Vahid Esmaeili¹, Ehsanollah Habibi², Habibollah Dehghan², Fatemeh Paridokht¹

¹Department of Occupational Health and Safety Engineering, Student Research Committee, School of Health, Isfahan University of Medical Sciences, Isfahan, Iran,

²Department of Occupational Health and Safety Engineering, School of Health, Isfahan University of Medical Sciences, Isfahan, Iran

Abstract

Aim: This study aimed to verify the general health status and its related factors of medical staff during the COVID-19 pandemic in Daran Shahid Rajaei Hospital. **Materials and Methods:** This cross-sectional study was performed by census method on 168 medical staff in Shahid Rajaei Hospital in Daran city during the COVID-19 pandemic. Data were gathered by applying a questionnaire, containing demographic information and a 28-item standard General Health Questionnaire. Eventually, data analysis was performed by Spearman correlation tests and the Mann-Whitney U and Kruskal–Wallis H tests, using the SPSS software V.26. **Results:** The results of the study revealed that the general health score, among the individuals, was at a healthy level with a mean of 20.77 ± 11.8 . Spearman correlation test represented a significant interdependency between age and general health and its connected factors, Somatic Symptoms Scale, and depression symptoms scale ($P < 0.05$) ($R = -0.226$, $R = -0.174$, $R = -0.168$). In addition, a significant correlation was found between the depression symptoms scale and work experience ($P = 0.005$) ($R = -0.214$). Based on the results of the Kruskal–Wallis H tests, a statistically significant difference was found between the employment status and the general health ($P = 0.04$) as well as the depression symptoms scale ($P = 0.019$). **Conclusion:** In this study, the most vital factors affecting both job efficiency and general health were the variables of age, work experience, and type of employment. Furthermore, the subscales of somatic symptoms and depression symptoms were identified as the most effective subscales on general health.

Keywords: COVID-19, general health, Goldberg general health questionnaire, medical staff

INTRODUCTION

An unknown disease arose in Wuhan, China, in late December 2019. The World Health Organization (WHO) called it coronavirus 2019 (COVID-19).^[1] It is the third most dangerous virus in the 21st century and poses a serious threat to general health.^[2] COVID-19 has been responsible for the deaths of more than two and a half million people worldwide.^[3] The initial COVID-19 contagion is through aerosol and close contact with people, for this reason, it endangers people, especially the medical staff.^[4]

The COVID-19 epidemic could significantly affect the mental health of health-care workers (HCWs) at the forefront of the crisis.^[5] The prevalence of mental disorders in them leads to dysfunction, sleep problems, decreased motivation, fear, worry, and anxiety; as a result,

they are not interested enough to perform their tasks satisfactorily.^[6,7] According to the International Council of Nurses, about 6% of COVID-19-approved cases were HCWs worldwide.^[8] According to the WHO, one in four medical staff is depressed and anxious, and one in three suffers from insomnia during COVID-19.^[9] In addition, according to the WHO report, as of March 10, 2020,

Address for correspondence: Mrs. Fatemeh Paridokht, Master Student, Department of Occupational Health Engineering, Student Research Committee, School of Health, Isfahan University of Medical Sciences, Isfahan, Iran.
E-mail: Paridokht6379@gmail.com

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Esmaeili SV, Habibi E, Dehghan H, Paridokht F. General health status and its related factors of medical staff during the COVID-19 pandemic: A cross-sectional study in the hospital. *Int J Env Health Eng* 2023;12:8.

Received: 02-11-2021, **Accepted:** 21-07-2022, **Published:** 31-05-2023

Access this article online

Quick Response Code:



Website:
www.ijehe.org

DOI:
10.4103/ijehe.ijehe_37_21

113,702 people worldwide have been confirmed to be infected with COVID-19 and 4012 people have died, of which 7161 cases have been confirmed in Iran and 237 people have died.^[10]

Studies during the COVID-19 pandemic on the health of medical staff show different results. The results of a study conducted in Chinese hospitals on HCWs reported 50.4% of depression symptoms, 44.60% of stress symptoms, 34% of insomnia signs, and also 71.5% of anxiety indications.^[11] Furthermore, the results of the study performed by Sirati Nir *et al.* illustrate that the level of stress among people working in the medical sector, such as doctors and nurses, is 57.4% higher than in nontherapeutic jobs.^[12] The results of a meta-analysis on HCWs during the COVID-19 pandemic represented the following percentages for the prevalence of anxiety, depression, stress, posttraumatic stress syndrome, insomnia, anxiety, and burnout, respectively, 34.4%, 31.8%, 40.3%, 11.4%, 27.8%, 46.1%, and 37.4%.^[13] It is worth mentioning that about 50% of the people who died because of COVID-19, were health workers who had some close contact with COVID-19 patients in the hospital.^[14]

Maintaining mental and physical health is very crucial, and improving its quantity and quality can be effective in promoting health services and enhancing community health centers.^[15] The results of studies have shown that the prevalence of corona in Iran is also high in some time periods.^[16] The ever-increasing death toll and infection rate with coronavirus among nurses can cause stress in their colleagues, so it is essential to pay attention to their mental health because mental disorders can weaken the immune system, and as a result, it may lead to the coronavirus infection, especially among the nurses, with a history of mental disorders.^[14] In the study of Dastyar and Karimianakolaki, the results indicate that exposure to patients with COVID-19 can lead to decreased general health and thus increased medication error.^[17] During the COVID-19 pandemic, due to the lethality of this virus, its rapid transmission, and its unknownness, it is expected that the medical staff will be more affected by the nature of their job hence the present study is of great importance.

Regarding the prevalence of COVID-19 disease and also the importance of health among the medical staff, since they are experiencing the highest exposure to stressful conditions such as deaths, illnesses, and high workload, and also the importance of the continuous presence of medical staff in the health-care system, the present study aimed to determine the general health status of medical staff and its related factors during the COVID-19 pandemic in Shahid Rajaei Hospital to prevent physical and mental disorders and promote the health status in medical staff.

MATERIALS AND METHODS

This analytical cross-sectional study was conducted to determine the general health status of the medical staff in Shahid Rajaei Hospital in Daran city in 2021 during the COVID-19 pandemic. One hundred and sixty-eight medical

staff from different wards of the hospital participated in the present study, and the census method was used.

In the present study, the data were collected in four shifts of the morning, evening, night, and rotation continuously and self-report by the medical staff for 3 months (from February to April 2021). To conduct the study, first, the objectives of the study were explained to each person face-to-face, then, the necessary training and instructions on how to complete the questionnaire and the aims of the study were provided. Then, the questionnaires were given to the medical staff of different departments in person. The contact number was also included in the questionnaire to clear up any ambiguities.

Inclusion criteria were having complete satisfaction to participate in the research and also have work experience for at least 1 year in the hospital wards. The exclusion criteria were the participants reluctant to participate in the study.

The tools used for collecting the data were questionnaire measuring and correlated characteristics, including the Demographic Information Questionnaire, which has been provided for age, gender, marital status, work experience, employment status, education level, work shift, and job position, and the Persian versions of the General Health Questionnaire (GHQ-28).

General Health Questionnaire

This questionnaire includes 28 questions in four scales; each scale has seven questions. Questions 1–6 and 19 are related to the scale of somatic symptoms; questions 7–13 are related to the scale of anxiety and sleep disorders; questions 20–25 and 28 are related to the scale of social dysfunction; and questions 14–18 and 26–27 are related to the scale of depression symptoms. The questionnaire scoring method is based on the Likert scale, and each of the questions has four options: 0, 1, 2, or 3, so the total score will vary from 0 to 84, and the higher the individual score is, the lower the mental health they have, and the other way round. Therefore, GH levels at different cutoff points can be interpreted as high (score 0 to 21), acceptable (score 22–42), moderate (score 43–64), and low (score 65–84).

Furthermore, in this study, a cutoff point of 23 (sensitivity of 71.3%, specificity of 90.6%, and overall classification error of 11.7%) for the whole and a cutoff point of 6 for each scale were used to compare the general health among the medical staff. According to this method, people who score higher than 6 in each scale and score higher than 23 in all of the four scales indicate the presence of specific symptoms of a disease or an injury. According to the GHQ-28, the final score that people get is in one of two areas: a healthy score (no or minimal disorder with a total score of 0 to 23) or an unhealthy score (one of three areas of mild, moderate, or severe illness with the full score of more than 23).^[19] The 28-question version of this questionnaire has the highest validity, sensitivity, and specificity compared to other versions of this questionnaire.^[18] In the study of Rashidi *et al.*, the reliability of GHQ-28 was measured with a Cronbach's alpha coefficient of 0.88.^[19] According to the GHQ-28, those with

a score of 23 or lower are considered healthy and those with a score of 24 or higher are suspected of having the disorder.^[20]

Statistical analysis

After collecting the data, the data were entered into SPSS software version 26 (Armonk, NY, USA: IBM Crop) for performing the required statistical analyses. The researcher evaluated the demographic characteristics using descriptive analysis (mean, standard deviation, frequency, and percentage). In addition, the Mann-Whitney U test (for continuous variables), Kruskal–Wallis H test, and Spearman correlation coefficient were used to identify the relationship between demographic characteristics and general health, and the significance level was set at <0.05 . Normality of the data was also tested through Kolmogorov–Smirnov test.

RESULTS

Totally 200 questionnaires, including demographic information and general health, were distributed among the medical staff working at different hospital wards, out of which 168 questionnaires were received that the response rate was 84% (168 out of 200). The Participant's age was 2259 years, and their mean age was 33.6 ± 8.3 years. The participants also had work experience ranging from 1 to 35 years; the mean work experience was 8.8 ± 8.2 [Table 1].

According to the results of the study, the general health score of all subjects was 20.77 ± 11.8 , which indicates that the study population in the field of general health has no disturbance, or in other words, the general health score is fitting. Furthermore, individuals who had a mean score of over 6 on the scale of somatic symptoms and social dysfunction were in an unhealthy state. On the scale of anxiety and sleep disorders and depression symptoms, those who have a mean score of <6 are considered to be in healthy condition [Table 2]. As shown in table 3, most medical staff (72.6%) had high general health [Table 3].

A comparison of general health status and its subscales in different wards of the hospital showed that radiology and COVID-19 wards had higher mean scores than other wards and did not have good general health status [Figure 1].

Spearman correlation test showed a significant correlation between general health, physical symptom scale, and depression symptom scale with age ($P < 0.05$), but no significant correlation was found between the two scales of anxiety and sleep disorder symptoms, and social dysfunction with age in medical staff ($P > 0.05$). On the other hand, a significant correlation was observed between the general health and depression symptom scale and work experience ($P < 0.05$) [Table 4].

Moreover, the results of the Mann-Whitney U and Kruskal–Wallis H tests showed only a statistically significant difference between general health ($P = 0.040$) and the subscale of Depression Symptoms ($P = 0.019$) with type of employment, but there was no statistically significant difference between

Table 1: Background and demographic factors of the participants

Variable	Value, n (%)
Gender	
Male	49 (29.2)
Female	119 (70.8)
Marital status	
Single	68 (40.4)
Married	100 (59.6)
Education level	
Diploma of higher education	27 (16.1)
Bachelor's degree	131 (78)
Master's degree	5 (3)
M.D	3 (1.8)
Medical specialist	2 (1.2)
Work shift	
Morning	30 (17.9)
Evening	6 (3.6)
Night	1 (0.6)
Flexible	131 (78)
Type of employment	
Official	57 (33.9)
Contractual	48 (28.6)
Projective	63 (37.5)
Job position	
Managerial	16 (9.5)
Nonmanagerial	152 (90.5)

M.D: Doctor of medicine

Table 2: The mean scores of variables among the medical staff

Dimension	Mean \pm SD	Range
Somatic symptoms	6.33 \pm 3.96	0-18
Anxiety and sleep disorder	5.85 \pm 4.3	0-21
Social dysfunction	6 \pm 3.2	0-16
Depression symptoms	2.58 \pm 3.49	0-20
General health	20.77 \pm 11.8	2-27

SD: Standard deviation

Table 3: The levels scores of general health

Variable	Level	Frequency, n (%)	Cumulative percent
General health	High	122 (72.6)	72.6
	Acceptable	33 (19.6)	92.3
	Moderate	12 (7.1)	99.4
	Low	1 (0.6)	100.0
Total		168 (100.0)	

other demographic variables and general health and its subscales ($P > 0.05$) [Table 5].

DISCUSSION

Health and its practical factors are some of the vital and influential components that can affect behavior, play individual and social roles, and improve organizational productivity.

This study showed that according to cutoff point 23, 86.3% of medical staff have a good general health status, which is not consistent with the research of Kheyri *et al.*, and Alipoor and Inanloo, performed on nurses.^[21,22] The reason for the difference with the study of Alipoor and Inanloo can be seen in the fact that only the intensive care unit has been evaluated, which is under more psychological pressure. In a study conducted by Hosseini-Almadvari and Nooreizadeh in 2022, the results show that 76.5% of emergency medical personnel have moderate-to-low general health.^[23]

Given that general health is affected by multiple factors and medical staff suffer from various health problems due to job pressures, differences in their health status could be predicted in different working conditions. Besides other variables that were assessed in this study, the situation of variables such as gender, marital status, and job status was studied in the individuals as well. The results of the present study did not reveal any statistically significant relationship between general health and the variables of gender, marital status, and job status, which

is not consistent with the results of Rahmani *et al.*'s study.^[24] Furthermore, in the study of Kermansaravi *et al.*, there was no significant relationship between gender and marital status with the areas of general health, which is in line with the results of this study.^[25] This result indicates that not only women but also men can suffer from health problems.^[26] It can also be explained that all people in the medical staff, regardless of gender, marital status, and job status, are under the same psychological pressure. Other studies have found conflicting results between general health and demographic variables. The results of a study conducted by Dadipoor *et al.* on nurses showed that there is a significant relationship between general

Table 4: Relationship between demographic variables with general health dimensions Spearman correlation test

Variables	Work experience		Age	
	<i>P</i>	<i>R</i>	<i>P</i>	<i>R</i>
Total general health	0.017	-0.183	0.003	-0.226
Somatic symptom	0.103	-0.126	0.024	-0.174
Anxiety and sleep disorder symptoms	0.158	-0.109	0.059	-0.146
Social dysfunction	0.522	-0.050	0.354	-0.072
Depression symptom	0.005	-0.214	0.003	-0.168

Significant effects (*P*<0.05) are marked in bold

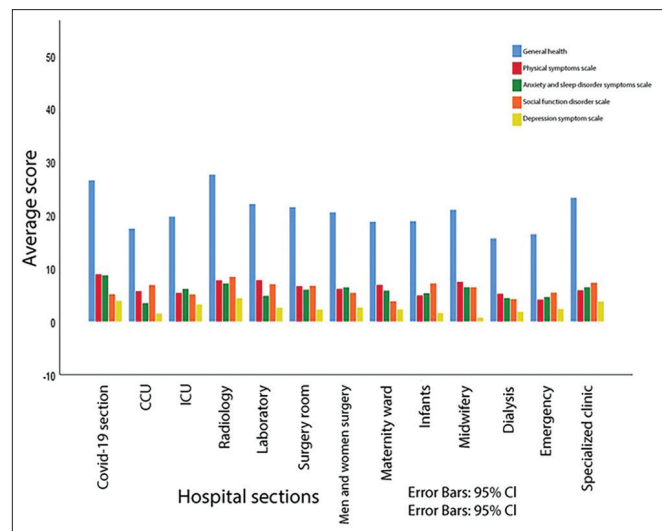


Figure 1: Mean general health score and its scales in different wards of the hospital

Table 5: Relationship between demographic variables with general health-Mann-Whitney *U*-test, Kruskal-Wallis *H*-test

Variable	Subgroup	General health (<i>P</i>)	Somatic symptoms (<i>P</i>)	Anxiety and sleep disorder (<i>P</i>)	Social dysfunction (<i>P</i>)	Depression symptoms (<i>P</i>)
Gender	Male	0.146	0.156	0.421	0.696	0.776
	Female					
Marital status	Single	0.128	0.214	0.367	0.952	0.057
	Married					
Education level	Diploma of higher education	0.093	0.086	0.070	0.139	0.204
	Bachelor's degree					
	Master's degree					
	M.D					
Work shift	Morning	0.076	0.385	0.090	0.400	0.443
	Evening					
	Night					
	Flexible					
Type of employment	Official	0.040	0.411	0.486	0.083	0.019
	Contractual					
	Projective					
Job position	Managerial	0.549	0.728	0.239	0.439	0.632
	Nonmanagerial					

Significant effects (*P*<0.05) are marked in bold. M.D: Doctor of medicine

health and gender, which is not consistent with the findings of this study.^[27] According to the results obtained in the present study, there is a relationship between general health and education level and employment status, which is in line with the Hayati *et al.* study, conducted on the teaching hospital staff.^[28] In Rahmani *et al.*'s study, a significant relationship was found between the type of employment and general health, which is in line with the present study.^[24] In the study of Aghaeinejad *et al.*, general health has no significant relationship with the level of education,^[29] and this is contrary to the results of this study. In this regard, it can be considered a difference in the sample size and the statistical population, because Aghaeinejad *et al.* have only evaluated the operational staff working in emergency bases. In the Zolghadar and Rahimpour study, the results showed that there was no correlation between demographic characteristics and general health.^[30]

In a national survey, Kheyri *et al.* conducted a national survey of 5837 nursing staff in the country's teaching hospitals, the results of which showed a lack of significant relationship between general health and variables of marital status, shift work, age, and work experience. This is in line with the present study.^[21]

According to the results of the present study, subscales of somatic symptoms and social function were the most effective subscales on general health. On the other hand, subscales of anxiety/sleep disorders and depression symptoms had the lowest effect on general health among the medical staff. The study of Ames *et al.*, which was conducted in the COVID-19 pandemic, is consistent with the present study,^[31] but, in Kermansaravi *et al.*, the social function was the most appropriate scale.^[25] Furthermore, in the Mani *et al.* study, which was conducted with the title of mental health status during the COVID-19 pandemic in Fars Province, social function was reported to be the most influential factor.^[32] On the other hand, in the study of Chrzan-Rodak *et al.*, which was conducted to investigate the relationship between social qualifications and mental health in nurses, the lowest effect is related to the depression symptom scale, which is similar to the present study.^[33] In the study of Habibi *et al.*, similar to the present study, the most effective subscale is somatic symptoms, and the least effective is considered to be depression symptoms,^[34] but, the results of Khamisa *et al.*'s study depicted that 60% of poor general health condition was related to anxiety and insomnia,^[35] which is contrary to the findings of the present study. Furthermore, in the Dastyar and Karimiankakilaki study in 2022, somatic symptoms were recognized as the most effective in general health.^[17]

In addition to other variables that were studied in this research, work shift was studied as well, which according to the findings of the present study, there is not any significant relationship between general health and work shift, which is consistent with the results of Pourebrahimi *et al.*^[36] while in Inanloo and Alipour study, a noticeable relation was found between general health and work shift,^[22] that is contrary

to the results of the present study. Furthermore, in the study of Hojati *et al.*, the results indicate that insomnia leads to a decrease in general health.^[37] The average general health score in COVID-19 sections and radiology wards is higher than in other wards, and they are in an unhealthy condition.

Differences in the results of other studies with the present study indicate the importance and necessity of this research. One of the advantages of this study is that it was performed at the time of the early COVID-19 pandemic. Its cross-sectional nature, not observation of the various factor effects of the mental health of medical staff over time and unwilling of a number of medical staff of the hospital to participate were the limitations of this study. Also, due to the prevalence of cardiovascular disease, access to people who were exposed to coronary arteries was difficult. It is suggested that effective studies should be conducted as an intervention test to improve the general health of medical staff and assess the general health status after the corona pandemic in this hospital and compare it for future studies.

CONCLUSION

In this study, somatic symptoms and depression were also identified as the most influential subscales on general health. The variables of age, work experience, and type of employment were the most important factors affecting general health. According to study results, it is recommended to use strategies such as turning the contractual group of individuals into formal employment and providing appropriate facilities in the workplace for individuals to reduce workload and increase job satisfaction to enhance the general health status.

Acknowledgments

The authors of the article thank and appreciate the Isfahan University of Medical Sciences and the officials of Daran Shahid Rajaee Hospital.

Ethics code

IR.MUI.RESEARCH.REC.1399.545.

Financial support and sponsorship

This study (scientific code 199396) was financially supported by the Isfahan University of Medical Sciences, Isfahan, Iran.

Conflict of interest

There are no conflicts of interest.

REFERENCES

1. He F, Deng Y, Li W. Coronavirus disease 2019: What we know? *J Med Virol* 2020;92:719-25.
2. Eyni S, Ebadi M, Hashemi Z. Corona anxiety in nurses: The predictive role of perceived social support and sense of coherence. *IJPCP* 2020;26:320-31.
3. Robinson E, Sutin AR, Daly M, Jones A. A systematic review and meta-analysis of longitudinal cohort studies comparing mental health before versus during the COVID-19 pandemic in 2020. *J Affect Disord* 2022;296:567-76.
4. Song X, Fu W, Liu X, Luo Z, Wang R, Zhou N, *et al.* Mental health status of medical staff in emergency departments during the Coronavirus

- disease 2019 epidemic in China. *Brain Behav Immun* 2020;88:60-5.
5. Pappa S, Ntella V, Giannakas T, Giannakoulis VG, Papoutsis E, Katsaounou P. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis. *Brain Behav Immun* 2020;88:901-7.
 6. Saberian M, Haji Aghajani S, Ghorbani R, Behnam B, Madah SJ. The mental health status of employees in Semnan University of Medical Sciences (1385). *Koomesh* 2007;8:85-92.
 7. Ma Y, Rosenheck R, He H. Psychological stress among health care professionals during the 2019 novel coronavirus disease outbreak: Cases from online consulting customers. *Intensive Crit Care Nurs* 2020;61:102905.
 8. Labrague LJ, de Los Santos JA. Fear of COVID-19, psychological distress, work satisfaction and turnover intention among frontline nurses. *J Nurs Manag* 2021;29:395-403.
 9. World Health Organization. Keep health workers safe to keep patients safe. Geneva: WHO; 2020. Available from: <https://www.who.int/news/item/17-09-2020-keep-health-workers-safe-to-keep-patients-safe-who>. [Last accessed on 2020 Nov 11].
 10. Ramphul K, Mejias SG. Coronavirus disease: A review of a new threat to public health. *Cureus* 2020;12:e7276.
 11. Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, *et al.* Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open* 2020;3:e203976.
 12. Sirati Nir M, Karimi L, Khalili R. The perceived stress level of health care and non-health care in exposed to COVID-19 pandemic. *IJPCP* 2020;26:294-305.
 13. Batra K, Singh TP, Sharma M, Batra R, Schvaneveldt N. Investigating the psychological impact of COVID-19 among healthcare workers: A meta-analysis. *Int J Environ Res Public Health* 2020;17:9096.
 14. Puradollah M, Ghasempour M. Necessity of attention to mental health of the front line nurses against COVID-19: A forgotten requirement. *Int J Community Based Nurs Midwifery* 2020;8:280-1.
 15. Fallahi V, Ahmadi S. The role of cognitive fusion and social intelligence in the prediction of general health of nurses in hospitals of Parsabad City, 2017: A short report. *JRUMS* 2019;17:1067-76.
 16. Nemati M, Ebrahimi B, Nemati F. Assessment of Iranian nurses' knowledge and anxiety toward COVID-19 during the current outbreak in Iran. *Arch Clin Infect Dis* 2020;15:e102848.
 17. Dastyar A, Karimiankolkolaki Z. Association of medication error occurrence with general health and anxiety caused by covid-19 disease in nurses of Imam Reza Hospital of Ahvaz in 2020: A descriptive study. *J Rafsanjan Univ Med Sci* 2022;20:1129-43.
 18. Ebrahimi AE, Mousavi SG, Bornamanesh AR, Yaghoubi M. Psychometric properties and factor structure of general health questionnaire 28 (GHQ-28) in Iranian psychiatric patients. *J Res Behav Sci* 2007;5:1129-43.
 19. Rashidi MA, Pourmajaf A, Kazemy M, Kaikhavani S. Evaluating general health status using Goldberg's general health questionnaire among the staff of Ilam University of Medical Sciences in 2015. *J Ilam Univ Med Sci* 2018;26:16-26.
 20. Noorbala AA, Bagheri Yazdi SA, Mohammad K. The validation of general health questionnaire-28 as a psychiatric screening tool. *Hakim Res J* 2009;11:47-53.
 21. Kheyri F, Seyedfatemi N, Oskouei F, Mardani-Hamoooleh M. Nurses' mental health in Iran: A national survey in teaching hospitals. *Sci J Kurdistan Univ Med Sci* 2017;22:91-100.
 22. Alipoor F, Inanloo M. The general health of the Intensive Care Unit nurses of the selected teaching hospitals affiliated to Iran University of Medical Sciences (2019). *Iran J Nurs* 2020;33:1-12.
 23. Hosseini-Almadvari SM, Nooreizadeh Z. An assessment of general health and related factors in Yazd's 115 emergency personnel in covid-19 pandemic. *J Zabol Med Sch* 2022;4:143-50.
 24. Rahmani K, Ebrahimi M, Abdi N. Evaluation of general health and sleep quality of nurses at training hospitals of Kurdistan University of Medical Sciences, 2018. *SJNMP* 2020;6:31-42.
 25. Najafi F, Kermansaravi F, Gangoozehi E. The relationship between general health and quality of work life of nurses working in Zahedan teaching hospitals. *Iran J Rehabil Res Nurs* 2018;4:53-9.
 26. Parhizkar A. Comparison of the general health level between the nurses working in the hospitals of Kurdistan University of Medical Sciences and Social Security Hospital in 2018-2019. *Sci J Kurdistan Univ Med Sci* 2020;25:87-98.
 27. Dadipoor S, Alavi A, Ghaffari M, Safari-Moradabadi A. Association between self-efficacy and general health: A cross-sectional study of the nursing population. *BMC Nurs* 2021;20:49.
 28. Hayati Y, Rahmani H, Arab M. Assessing general health of staff affiliated to Tehran University of Medical Sciences hospital and its related factors in 2014. *J Hosp* 2017;16:104-10.
 29. Moshtagh-Eshgh Z, Aghaeinejad AA, Shahsavani A, Koochaki GM, Chehregosha M, Kalantari S, *et al.* An assessment of general health of operational staff of pre-hospital emergency in Golestan province. *J Health Care* 2017;18:359-67.
 30. Zolghadr R, Rahimpour R. Evaluation of general health and mental health status of nurses in Larestan County, 2020. *J Health Care* 2021;23:145-55.
 31. Ames-Guerrero RJ, Barreda-Parra VA, Huamani-Cahua JC. Psychometric properties and factor invariance for the General Health Questionnaire (GHQ-28): Study in Peruvian population exposed to the COVID-19 pandemic. *medRxiv* 2020. doi: <https://doi.org/10.1101/2020.11.10.20229435>.
 32. Mani A, Estedlal AR, Kamali M, Ghaemi SZ, Zarei L, Shokrpour N, *et al.* Mental health status during COVID-19 pandemic in Fars Province, Iran: Timely measures. *BMC Public Health* 2020;20:1866.
 33. Chrzan-Rodak A, Ślusarska B, Nowicki G, Deluga A, Bartoszek A. Relationship between social competences and the sense of general mental health and intensity of stress among nurses. *Pomeranian J Life Sci* 2020;66:53-6.
 34. Mombeini M, Habibi E, Yadegarfar G, Ordudari Z, Noorouzi H, Koolivand Z. Association of maximum aerobic capacity with general health, occupational fatigue, and job satisfaction among female employees in Isfahan hospitals, Iran. *J Occupational Hygiene Engineering* 2018;5:61-9.
 35. Khamisa N, Peltzer K, Ilic D, Oldenburg B. Effect of personal and work stress on burnout, job satisfaction and general health of hospital nurses in South Africa. *Health SA Gesondheid* 2017;22:252-8.
 36. Pourebrahimi M, Memari A, Bamdad M, Hoseini Zarvijani SA, Fattah Moghaddam L. The relationship between the quality of working life and general health of nursing staff of Razi Psychiatric Center in Tehran. *Iran J Rehabil Res Nurs* 2019;5:43-9.
 37. Hojati H, Jalalmanesh S, Fesharaki M. Sleeplessness effect on the general health of hospitals nightshift nurses in Gorgan, Iran. *J Gorgan Univ Med Sci* 2009;3:70-5.