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The Related Workplace Indicators to Health of Treatment Staff during the Pandemic in Hospitals Affiliated with Mashhad University of Medical Sciences, Iran

Shapour Badiee Aval[1], Seyed Javad Hosseini[2], Javad Mahmoudi Fathabadi[3], Maryam Yaghoobi[4], Golnaz Sabouri[5], Zeinab Sadat Hosseini[6], Mohammadhasan Ezzati[3], Zohreh Rokni[7], Sedigheh Mohammadnezhad Ostad[7], Homa Sotvan[8], Mohsen Shirazi Mehrabad[9], *Mahdieh Farhanji[10]

1.Department of Complementary and Chinese Medicine, School of Persian and Complementary Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.
2. Assistant Professor, Department of Medical Biotechnology & Nanotechnology School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.
3.Deputy of Treatment, Mashhad University of Medical Sciences, and Mashhad, Iran.
4.Clinical Research and Development Center, Deputy of Treatment, Mashhad University of Medical Sciences, Mashhad, Iran. - Department of Epidemiology, Faculty of Public Health, Iran University of Medical Sciences, Tehran, Iran.
5.Clinical Research and Development Center, Deputy of Treatment, Mashhad University of Medical Sciences, Mashhad, Iran.
6.Faculty of Medicine Islamic Azad University of Mashhad, Mashhad, Iran.
7.Imam Reza Hospital. Mashhad University of Medical Sciences, Mashhad, Iran.
8.Shariatie Hospital, Mashhad University of Medical Sciences, Mashhad, Iran.
9.Master of Science in information science and knowledge, school of paramedical sciences, Mashhad University of Medical Sciences, Mashhad, Iran.
10. Nursing Student, Department of Nursing, Faculty of Nursing and Midwifery, Mashhad Medical Sciences, Islamic Azad University, Mashhad, Iran.

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ABSTRACT

Introduction:
In the conditions of disease crisis, workplace indicators play an important role in improving the provision of medical services. This study aimed to evaluate an association between workplace indicators and the health of treatment staff during pandemics in hospitals affiliated with Mashhad University of Medical Sciences.

Materials and Methods:
This cross-sectional study was conducted on healthcare workers with covid-19 infection during the pandemic in hospitals affiliated with Mashhad University of Medical sciences. The data collection tool was the standard "quality of work-life" questionnaire. The validity of this questionnaire was obtained at 0.85. Data were analyzed using analytic statistical tests (chi-square) and descriptive (mean and standard deviation) and using SPSS version 16.

Results:
A total of 442 treatment staff participated in this study, and 230 (52.1%) were women. The mean age was 29.2±9.2 years. The average work history, the average working hours per week, and the average workplace indicators scores were 7.22±10.47, 46.49±12.67, and 109.11±75.46, respectively. The mean quality of work-life score was in the moderate range. There was a statistical association between the mean quality of work-life score with working hours and workplace unit ($p<0.001$). There was no statistical relation between other variables and to quality of work-life score ($p>0.05$).

Conclusion:
The results indicated that improving workplace indicators is effective in the health of treatment staff and the provision of health services.

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* ***Corresponding author:*** *Nursing Student, Department of Nursing, Faculty of Nursing and Midwifery, Mashhad Medical Sciences, Islamic Azad University, Mashhad, Iran. E-mail: mahdie.far78@gmail.com*

Introduction

Today, novel diseases spread with the development of technology. The dangers of which threaten human societies (1). Healthcare departments are important organizations in the country that play a decisive role in preventing, treating, and controlling disease during crises, pandemics, and epidemics (2,3).

Furthermore, the spaces of hospitals are much polluted. Hospital pollution is caused by healthcare workers and personnel being considered high-risk groups. Also, the work hour is 6-8 hours, and healthcare workers must observe protection proceedings and standard precautions per shift (hand hygiene, using a mask and gloves). In addition to performing therapeutic measures, healthcare workers are trying to prevent the contagion of disease and infection to other people (4-6). In this situation, healthcare personnel is more likely to get an infection due to high hospitalization, patient exposure, and high work pressure. So, this is important to attend to different aspects of this group. Investigating social and organizational factors affecting workplace safety is the best way to reduce the rate of occupational incidents and adventures (1). A workplace has a total of social and psychiatric indicators. If the workplace becomes healthier regarding indicators, the work will be done better. The physical and mental health of the personnel of treatment centers and hospitals, especially doctors and nurses, is of specific importance since it directly affects patients' health (7).

According to studies, "occupational stress" significantly contributes to unsafe acts by employees through reduced concentration, distraction, memory disorder, hesitation in doing affairs, and reduced decision-making ability. Occupational-safety tension is a type of occupational stress that refers to employees' perception that occupational safety conflicts with the performance of their daily tasks. Injuries may increase when employees feel they must compromise for safety to do their work effectively. However, high levels of occupational-safety tension are an opportunity for managers of organizations to do proceedings to make them safer in the workplace. Occupational-safety tension overlaps many concepts, including work tension, occupational demand, safety-production compatibility, and cost-effectiveness (1,8).

In Iran and the world, various studies have been conducted in the fields of work tension and stress or factors related to workplace indicators on the health of treatment staff (9-17). Currently, the new pandemic is spread in the world by a new coronavirus named SARS-COV-2. Also, World Health Organization (WHO) announced the outbreak of COVID-19 as a factor of public health emergency worldwide. This disease had more than 590 million cases and more than 6 million deaths by August 2022 (18).

So far, Information related to pathogenesis, virology, epidemiology, clinical symptoms, transmission methods, laboratory diagnosis, treatment, and prevention of this disease has been investigated. However, many unknowns exist yet (9-20).

The new disease imposes an extra workload and social, economic, and psychological burden on medical centers during pandemics and epidemics.

The broad participation of various organizations, increasing the level of awareness of people, observing health principles, prevention of disease, observing social distancing, and quarantine of patients will be effective in reducing the spread of disease and hospitalization. Also, this work reduces the healthcare burden and the workload of treatment personnel (9, 10). The workforce is the most valuable strategic resource of any organization. In order to provide efficient human resources, organizations assume many expenses in the field of training and empowering them. Therefore, protecting their health causes to advance the aims of the organization and reduces the extra costs (2,3,6).

Preserving human resources and material resources of the country and securing the health of personnel, in terms of paying attention to human capital and preventing the wastage of material resources, are extremely important.

These factors further reveal the necessity of the present study. This study aimed to investigate an association between

workplace indicators and healthcare workers' health during the pandemic in hospitals affiliated with Mashhad University of medical sciences. It is possible to make management plans and appropriate proceedings for occupational health and productivity of Workers, preservation of organization resources, and cost reduction.

Methods and Materials

This cross-sectional study was conducted on all healthcare workers of the hospitals affiliated with the Medical Sciences University who had clinical diagnostic criteria for COVID-19 as of march 1, 2019. In order to regard research ethics, the necessary permits were obtained before conducting the research. The participants entered the study with their consent and were assured that their questionnaire would be confidential.

The data collection tool was standard "quality of work-life" questionnaire designed and compiled by Ghasemzadeh et al. to evaluate the work-life quality of employees (21).

This questionnaire has 53 items. These items include human relations at the workplace (1-11 questions), occupation security (12-16 questions), occupation advancement (17-22 questions), Participation questions (23-26 questions), regard for human rights and dignity (27-30 questions), Balance between work and life (31-37 questions), work obligation (38-46 questions), Financial and welfare issues (47-53 questions).

A 1-5 Likert scale score (1: completely disagree, 2: disagree, 3: nearly agree. 4: agree, 5: completely agree) is used to score. A score of 53 and 87, 88 and 176, and more than 176 were considered low, moderate, and high work-life quality, respectively.

By using Coronbach's alpha, Ghasemzadeh et al. obtained the reliability value of indicators of standard "quality of work-life" questionnaire for Human relations at the workplace, occupation security, occupation advancement, Participation questions, regard to human rights and dignity, Balance between work and life, work obligation, Financial and welfare issues were 0.89, 0.50, 0.76, 0.77, 0.65, 0.40, 0.71, 0.87, respectively. Ghasemzadeh et al. and PourKabirian estimated the validity of the questionnaire in two different studies, and it was obtained at 0.8 (21,22).

Also, we evaluated the validity of the questionnaire in this study, which was obtained at 0.85. Also, incomplete questionnaires were excluded from the study. Then, data analysis was performed by using SPSS version 16 and statistical tests according to the data (Percentage frequency, mean and standard deviation, and chi-square).

Results

This study was conducted on a total of 442 healthcare workers. Among the subjects, 230 (52.1%) of them were women.

The mean age was 29.2±9.2 years. In terms of the type of employment, 38.23% of the medical staff were official and contractual employees, 49.77% of them were contractual or corporate employees, and 11.99% of them were included in the plan of the Ministry of Health.

Also, treatment staff worked at different units, including 15.45% in the operation rooms, 9.31% in the intensive care unit (ICU), 8.8% in the COVID-19 unit, 49.3% in other general units, 5.45% in the nursing management unit, 2.5% in the laboratory, and 9.77% in the administrative units.

Furthermore, 396 (89.5%) healthcare workers had received the COVID-19 vaccine, 18 (4.08%) of them had received other vaccines in addition to the COVID-19 vaccine, and 28 (6.33%) participants had received no vaccine (Table 1).

The average work history, the average working hours per week, and the average workplace indicators scores were 7.22±10.47, 46.49±12.67, and 109.11± 75.46, respectively (Table 2).

The mean quality of work-life score was in the moderate range. There was a statistical association between the mean quality of work-life score with working hours and workplace unit ($p<0.001$). There was no statistical relation between other variables and the quality of work-life score ($p>0.05$).

Table 1: Frequency of demographic characteristics

Characteristics	**N (%)**	***P*-value**
Gender		
Male	212 (47.9)	>0.05
Female	230 (52.1)	
Unit		
operation room	68 (15.45)	<0.001
ICU*	41 (9.31)	
COVID-19	36 (8.8)	
other general units	217 (49.31)	
laboratory	11 (3.5)	
administrative	43 (9.77)	
nursing management	24 (5.45)	
Employment		
official and contractual	169 (38.32)	>0.05
Staff planning	53 (11.99)	
contractual	220 (49.77)	
Vaccination		
COVID-19 vaccine	396 (89.5)	>0.05
COVID-19 vaccine and other vaccines	18 (4.08)	
No vaccination	28 (6.33)	
total	442 (100)	
*ICU: Intensive care unit		

Table 2: The mean score of work-life quality indicators

Characteristics	**Mean ± Standard Deviation**
Human relations at workplace	18.57±27.10
occupation security	7.21±10.51
occupation advancement	8.68±11.11
Participation questions	5.57±6.98
regard of human rights and dignity	5.70±7.10
Balance between work and life	10.30±14.95
work obligation	14.46±20.56
Financial and welfare issues	9.03±10.76
Total	75.46±109.11

Discussion

The aim of this study was evaluation an association between indicators of the workplace and the health of healthcare workers duration pandemics in hospitals affiliated with Mashhad University of Medical Sciences. Our results indicated that the healthcare personnel had a moderate level of work-life quality. Abadi et al. and Negahdari et al. obtained univocal results with our study (23,24). According to the study by Mohammadi et al., the level of work-life quality of nurses is average (83.7%), and only 4.9% of them reported that the quality of their work-life is desirable (25). Another cross-sectional study reported that 41.9% of nurses had a moderate work-life quality, and only 10% had a high work-life quality (26). According to Maqsood et al., the work-life quality of intensive care unit (ICU) and emergency unit personnel was low during the COVID-19 pandemic. The study was performed on two groups of nurses who worked in COVID-19 units and

units without COVID-19 patients. In this study, both groups had a moderate work-life quality, but it was higher among nurses in units without COVID-19 patients than those in units of COVID-19 (27). This contradiction between studies may be related to the difference in the questionnaire, sample size, and analysis methods.

In our study, the workplace indicators' scores were significantly associated with the work hours per week and unit of service ($p<0.001$). Also, Maqsood et al. indicated that the mean score of work-life quality was low among personnel with excess work hours (28). In another study, the service unit and overtime hours had a significant association with some indicators of work-life quality (23). also, increased overtime hours had a positive effect on the level of quality of work-life (25). Nevertheless, the mean work and overtime hours in COVID-19 units were significantly higher than in units without COVID-19 infection. However, there was no significant association between work or overtime hours with work-life quality (27). Dehghannyieri et al. investigated a relationship between the quality of work-life and the nurses' productivity, concluding that non-nursing occupation had a significant relationship with the work-life quality (26). As reported by Arab et al., the quality of work-life of specialist doctors in hospitals affiliated with the Tehran university of medical sciences was low on average (29). In another study, doctors had a higher mean work-life quality score than other personnel (28). Nevertheless, there was no significant association between indicators of work-life quality and occupation variables in the present study ($p>0.05$). Also, we observed no significant association between the type of employment and the quality of work-life (0.05). Mohammadi et al. stated that the type of employment was significantly related to with work-life quality, and higher mean scores were related to official employment status (25). The probable reason for this result was that being employed and feeling of occupation security affect personnel's quality of work-life. Additionally, indicators of work-life quality, such as providing advancement opportunities and continuous security, among nurses in the unit without COVID-19 infection were higher. The difference in the type of workplace and occupation was mentioned as the reason for these results (29). In another study, only 34.8% of participants considered their workplace safe, and 3.3% stated that there is an opportunity for continuous advancement and security. Also, 39.3% of participants dissatisfied with a fair salary payment in the hospital (25). A study by Dargahi et al. indicated a significant association between the work-life quality of nurses and their monthly salary (30). However, there was a significant association between the quality of work-life and sufficient income only in nurses who cared for patients with Covid-19. However, no significant association was observed between income level and nurses' work-life quality in non-COVID-19 units (27). Also, in the present study, no significant association was observed between income level and work-life quality ($p>0.05$). In a study by Maqsood et al., participants over 40 and males had a higher mean score. In comparison, there was no relation between the education level and exposure to covid-19 patients with the quality of work-life (28). The possible reason for the difference between this study and our study can be due to sampling and cultural and social factors.

In previous studies, no significant relationship was observed between demographic characteristics such as weight, height, marital status, and quality of work-life (25,27,30). In our study, there was no significant relationship between work experience and quality of work-life ($p>0.05$), which correlates with the findings of Nikeghbal et al. (27).

Although Dargahi et al. reported a significant association between the quality of life and work experience of nurses (30). This study included some limitations. First, we used the questionnaire to collect data on the workload of personnel in different units, mental states, and concentration of them, are affect response. Second, the different perceptions of the questions and the variables of the quality of work-life due to the individual differences of treatment staff are out of the researcher's control.

Conclusion

According to the results of this study, improving the indicators of the workplace

can be effective in the health of healthcare workers and providing better health and treatment services to patients. Generally, hospital employees face more work pressure and various job tensions. This tension and anxiety reduce their productivity and their physical and mental health. Paying attention to obviating their needs in different aspects can increase hospital employees' quality of working life. Therefore, it is recommended that hospital managers prioritize these indicators, create opportunities for occupational advancement, participate more personnel in decision-making, periodically perform diagnostic tests and assess people's health to increase service quality, personnel productivity, and work-life quality. Also, the individual differences of participants caused their different understanding of the questionnaire and the indicators of work-life quality, which are out of the researcher's control.

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