



Factors Contributing to Health-Related Quality of Life Among Frontline Healthcare Workers During the COVID-19 Pandemic: A Qualitative Study

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Abstract

Background: Epidemics or pandemics of infectious diseases impose significant work pressure on healthcare workers, making them susceptible to various mental and physical health issues that negatively impact their health-related quality of life (HRQOL). This qualitative study aimed to identify the contributing factors of HRQOL among healthcare workers during the COVID-19 pandemic.

Methods: The statistical population included physicians and nurses on the frontlines of the battle against COVID-19 disease. A total of 25 participants were selected via purposive sampling. Data were collected through semi-structured interviews and analyzed using MAXQDA Software (version 20).

Results: The analysis revealed four main themes contributed to HRQOL among healthcare workers including individual (physical and mental well-being), environmental (workplace and residence), organizational (organizational behaviors, communication, limited resources, and weaknesses), and social (social challenges and restrictions) factors.

Conclusion: Considering the effective factors, it is necessary for healthcare managers to assign human resources appropriate roles according to the number of clients and admitted patients. Moreover, programs should be implemented to promote physical exercise among healthcare workers to enhance their morale and physical strength.

Keywords: Health-related quality of life, COVID-19, Frontline healthcare workers

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Introduction

The rapid spread of COVID-19 led to an unprecedented increase in the responsibilities and workload of healthcare providers in different sections of healthcare all over the world (1,2). With more than 100 000 confirmed COVID-19 cases and a mortality rate of 6.4%, Iran ranked among the countries with the highest infection and mortality rates (3). Within less than one month, the spread rate was markedly high in all thirty-one provinces of the country. Healthcare workers play a crucial role in managing infectious diseases and preventing their spread, directly engaging in the treatment of emerging diseases (2,4,5).

At the onset of the COVID-19 pandemic, healthcare workers were under tremendous pressure due to the high risk of infection, a sudden increase in infection and mortality rates, shortages of personal protective equipment, self-isolation, long and challenging working hours, uncertainty about vaccines, and various stigmas (6-8).

It is important to note that this pandemic affected not only physical health but also mental and social functions as well as safety in the environment. Several studies have reported a noteworthy number of frontline healthcare workers with low health-related quality of life (HRQOL), characterized by depression, anxiety, stress, poor mental health, and insomnia, particularly among those working in COVID-19 hospital wards (9).

Research indicates that many healthcare workers experience sleep problems and sleep deprivation due to the various challenges posed by new infectious diseases (10). Like stress and depression, sleep issues can severely impact mental health and overall functionality (11). Insufficient sleep and its poor quality can serve as important preliminary symptoms of major complications affecting the mental and physical health of healthcare workers, ultimately influencing their HRQOL (12-14).

Given that the quality of life among healthcare workers is probably much worse than that of the general public,



who are not in direct contact with infected individuals, this study was conducted to identify factors contributing to HRQOL among frontline healthcare workers during the COVID-19 pandemic.

Methods

This study was conducted in 2022 to qualitatively explore the work-life experiences of healthcare workers during the COVID-19 pandemic.

Participants

The study participants were selected using purposive sampling in hospitals and comprehensive health services centers in Kerman province, Iran. Physicians and nurses who were most directly involved with the COVID-19 pandemic and had substantial experience and knowledge related to the pandemic in COVID-related medical wards were recruited. In total, 25 face-to-face interviews were conducted with 14 physicians and 11 nurses, comprising 8 men and 17 women. Additional interviewees were identified through snowball sampling and insights gained from interview analysis. Seventeen interviews were recorded and eight were transcribed. The transcripts were then sent to the interviewees for their review and editing. Oral consent was obtained from all participants, although six physicians and two head nurses refused to have their interviews recorded. Sampling and interviews continued until data saturation was achieved.

Conceptual framework

A semi-structured interview guide was developed for this study. To refine and expand the questions, three preliminary interviews were conducted to test the guide.

Data collection

In each interview, the purpose of the study was explained, and interviews were recorded using a tape recorder. Participants were free to choose their interview locations, and all interviews were conducted at their workplaces. No one other than the researchers and participants was present during the interviews. Moreover, field notes were taken during and/or after the interviews to get the most out of the interviews. Each interview lasted between 10 and 40 minutes.

Data analysis

Content analysis was used to analyze the qualitative data. This method allows for comparative, inductive, or combined qualitative analysis. Data assessment and codification were conducted via MAXQDA Software (version 20). A six-step process of qualitative data analysis was followed (15):

1. Familiarizing with the data: The transcribed interviews were carefully read and checked to understand the information provided.

2. Creating primary codes: After reviewing the texts, key points related to the research topic and objectives were identified and categorized.
3. Searching for selected codes: Overlapping codes were summarized in a code set.
4. Forming subthemes: The codes were grouped and categorized under subthemes.
5. Defining and naming main themes: The subcategories were organized into four main themes including individual, environmental, organizational, and social factors.
6. Report preparation: The final report was prepared based on the analysis.

Trustworthiness

To ensure trustworthiness in this qualitative study, the four criteria proposed by Guba and Lincoln including credibility, confirmability, dependability, and transferability were utilized (16). Several data collection methods such as writing, interviews, and observations were used to enhance credibility. Peer reviews of the interviews and consensus on the extracted codes and categories were conducted. To increase confirmability, participants were provided with the interview transcripts to confirm that the themes reflected their statements. To check the dependability of the research process, the interviews, coding, themes, and subthemes were reviewed by experienced qualitative researchers. To enhance the transferability of the findings, a clear description of the data collection and analysis procedures was provided.

Results

Table 1 presents demographic data from a sample of 25 respondents, highlighting various characteristics. In terms of education, the majority held advanced degrees, with 36% having a master's degree and another 36% possessing specialized doctorates, while 8% had bachelor's degrees. The gender distribution reveals that 68% of respondents were female and 32% were male. Regarding marital status, a significant 92% were married, compared to 8% who were single. Moreover, 72% of respondents worked in inpatient settings, while 28% were in outpatient departments. All respondents resided in urban areas, indicating no rural representation. In terms of occupation, 44% were nurses and 56% were physicians. Finally, the workplace distribution included the comprehensive health services centers (20%), Shafa hospital (40%), and Afzalipour hospital (40%), reflecting a diverse yet concentrated employment landscape.

The findings showed a wide range of factors contributed to HRQOL, which included 39 identified codes categorized into four main themes and ten subthemes (Table 2).

Individual factors

One of the significant themes identified as a factor

Table 1. Demographic characteristics of the participants

Variable	Frequency (Percent)
Education level	
Associate's degree	0 (0)
Bachelor's degree	2 (8)
Master's degree	9 (36)
Professional doctorate	5 (20)
PhD/doctorate	9 (36)
Total	25 (100)
Gender	
Female	17 (68)
Male	8 (32)
Total	25 (100)
Marital status	
Single	2 (8)
Married	23 (92)
Total	25 (100)
Work department	
Outpatient	7 (28)
Inpatient	18 (72)
Total	25 (100)
Residence location	
Rural	0 (0)
Urban	25 (100)
Total	25 (100)
Occupation	
Nurse	11 (44)
Physician	14 (56)
Total	25 (100)
Workplace	
Comprehensive health services centers	5 (20)
Shafa hospital	10 (40)
Afzalipour hospital	10 (40)
Total	25 (100)

contributing to HRQOL among healthcare workers was individual factors, categorized into two subthemes including physical and mental well-being.

Physical well-being

The findings showed that changes in individuals' physical activity and behaviors due to the COVID-19 pandemic affected their quality of life. The identified subthemes included reduced physical activity and exercise, changes in diet, alterations in sleep patterns, and contracting COVID-19 and coping with its complications.

As an interviewee noted, *"At the beginning of the pandemic, there was fear among people, especially medical personnel, which made them lose motivation for exercise and avoid going to the gym. Due to the lack of sufficient information about the disease and how it was transmitted,*

Table 2. Themes, subthemes, and codes identified

Themes	Subthemes	Codes
Individual factors	Physical well-being	Decrease in physical activity and exercise Changes in diet Alterations in sleep pattern Contracting COVID-19 and coping with complications
	Mental well-being	Obsessive thinking Fear of transmitting the disease to family members Fear of being infected
Environmental factors	Workplace	Direct contact with the patients Misconduct by the patient and their relatives Increased workload Shortage of information about the disease Using personal protective equipment Death of the patients and relatives
	Residence	Being away from family and not being able to protect them Discrimination among organizations Shopping online
Organizational factors	Organizational behaviors	Lack of coordination and supervision Inadequate protection of personnel Discriminatory treatment Unprofessional organizational behavior Weakness in and failure of the enforcement of laws and regulations Irregular shifts and mandatory overtime
	Communication	Lack of communication between the managers and personnel The attitude of the managers and officials Poor communication among colleagues
	Limited resources	Lack of resting and leisure space Shortage in human resources Shortage in equipment and resources
	Weaknesses	Insufficient salary and benefits Lack of adequate rest and vacation Poor management Lack of job security Workplace safety and hygiene
Social factors	Social challenges	Stigmatization Spread of misconceptions People's negative attitude toward healthcare workers
	Social restrictions	Decrease in social interactions Closing of public places and decrease in public interactions Lack of vacation and travel and going into a kind of isolation

they were afraid of going out and consequently, physical activity and exercise decreased" (Physician No. 15).

Another participant shared, *"We did not have enough time to eat, and wearing protective clothing and exhaustion made us care less about eating"* (Nurse No. 3).

The prolonged duration of the pandemic, increase in the number of admissions, heightened communicability of the virus, fear of transmission in public places, closing of sports centers, and reduced physical activity prevented healthcare workers from alleviating the resulting mental pressure, leading to a tremendous workload.

Mental well-being

In addition to physical factors, mental factors also contributed to the mental and psychological aspects of HRQOL.

One participant stated, *"After two years of the pandemic, we suffered from mental and physical obsessions"* (Nurse No. 9).

Another commented, *"I think the most effective factor influencing my quality of life was the fear, anxiety, and stress that I experienced in this period, which led to physical fatigue and weakness"* (Physician No. 17).

It can be concluded that the fear of contracting the virus was more pronounced among healthcare workers than among others, as they worked closely with patients in COVID-19 wards. This ceaseless fear and anxiety had adverse consequences that affected healthcare workers' performance, both in their daily lives and family relationships, leading to various mental health challenges.

Environmental factors

The second main theme was environmental factors, categorized into two subthemes including workplace and residence.

Workplace

This subtheme encompassed factors that individuals faced in their workplace which impacted their quality of life.

The first identified factor was direct contact with patients. One interviewee explained, *"Due to the nature of our work, we were exposed to the disease, so we avoided socializing and limited our contact with family and friends. Also, the massive workload and absence of any vacation reduced our social activities"* (Physician No. 2).

Another physician shared, *"Because of the high number of cases and the death of many young patients with no underlying conditions, we experienced stress, anxiety, and fear, which caused us to gradually lose liveliness and energy. Also, the possibility of contracting the virus and transmitting it to our families added to the existing stress"* (Physician No. 1).

It is worth mentioning that the longstanding weaknesses in human resource management in the country's healthcare system became more apparent during the

pandemic, and the shortage of physicians and nurses further intensified the pressure on healthcare personnel.

Residence

This subtheme refers to factors outside of work that affected individuals' physical, emotional, and mental well-being. Some interviewees believed that being away from family and the inability to provide them with sufficient protection contributed to a decline in their quality of life. One physician stated, *"No leave from work and not being able to see family and friends for several months, facing patients with negative feelings, and the tremendous workload reduced our liveliness and happiness"* (Physician No. 2).

Discrimination among different organizations was another factor affecting the quality of life of healthcare workers. One nurse mentioned, *"All institutions were closed and their employees telecommuted and enjoyed increased salaries and benefits. However, despite our increased workload, we had no vacation, which hurt us mentally"* (Nurse No. 7).

Online shopping was another factor pointed out by one participant, *"The social restrictions led to online shopping for everything, such as groceries and home appliances, which reduced people's presence in society. Also, social activities that could elevate morale were limited to indoor spaces, which in turn changed living conditions and practically reduced happiness, liveliness, and morale"* (Physician No. 2).

Organizational factors

Organizational factors emerged as the third main theme extracted from the interviews, referring to the factors related to organizations that contribute to the HRQOL among healthcare workers. This theme was categorized into four subthemes including organizational behaviors, communication, limited resources, and weaknesses.

Organizational behaviors

Organizational behaviors pertain to the way the managers and policymakers at medical centers interact with healthcare workers. It seems that the high number of admissions in hospitals and medical centers and the absence of a codified plan to combat the disease led to crises. Consequently, the decisions by managers and officials fostered organizational behaviors that created challenging environments for healthcare workers and, in the long term, affected their quality of life.

One physician noted, *"Lack of intra-organizational coordination and planning as a result of insufficient medical human resources and long working hours, created stress, anxiety, and depression"* (Physician No. 1).

A nurse commented, *"The tremendous workload, mandatory overtime, shortage of time, and having to deal with the public's treatment of us medical workers have*

reduced our social activity" (Nurse No. 6).

Another physician stated, *"The management's inappropriate treatment of personnel and the absence of meritocracy, which led to the employment of inexperienced and poorly-educated individuals in organizational positions, along with discriminatory behavior, decreased personnel motivation and job satisfaction"* (Physician No. 15).

Communication

Before the pandemic, the studied healthcare workers enjoyed positive intra-organizational relationships with their managers and colleagues; however, these dynamics changed after the outbreak. This shift limited intra-organizational relations, and in some cases, severed them entirely. The findings showed that these changes adversely affected the HRQOL of the studied population.

One physician remarked, *"During the pandemic, mismanagement, lack of coordination among managers and employees, and failure of management to involve personnel in decisions that concerned them created job dissatisfaction"* (Physician No. 2).

A nurse expressed, *"Having no outside relations and interactions made my colleagues and me experience isolation both at home and at work, which negatively impacted our happiness and liveliness"* (Nurse No. 13).

Limited resources

Another subtheme related to organizational factors was resource limitations. The absence of leisure spaces in hospitals, the failure to create environments where personnel could distance themselves from stressful work conditions, and the shortage of human resources and equipment were the most important identified factors.

A nurse stated, *"The lack of a space for relaxation and exercise in the hospital adversely affected the physical, mental, and functional status of the personnel and their job satisfaction"* (Nurse No. 9).

A physician added, *"Limited hospital and medical resources and equipment added to our workload; for example, in the beginning, we had no equipment except masks, which we had to buy ourselves and reuse several times a day. These circumstances caused us physical and mental problems"* (Physician No. 11).

Weaknesses

Organizational weaknesses in managing medical centers, such as insufficient salaries and benefits, lack of vacations or adequate rest, management deficiencies, and inadequate job security were identified as factors that diminished healthcare workers' motivation, energy, and desire to work, thus impacting their HRQOL.

One nurse remarked, *"Unfair and insufficient pay, especially the promised COVID bonus that was paid only once for five months, reduced our motivation"* (Nurse No. 3).

Most healthcare workers believed that the lack of

vacation and rest contributed to their exhaustion and frustration. A physician stated, *"Regarding the organizational aspect, the lack of vacation during a time when other organizations offered their personnel leaves, vacations, and telecommuting affected our mental health"* (Physician No. 24).

Another physician shared, *"In an environment where we were always threatened and stigmatized by patients and their relatives, and treated inappropriately by managers, with no meritocracy or promotion, I lost motivation and desire to work"* (Physician No. 15).

The last factor identified in this subtheme was environmental health and immunity in the workplace. One interviewee highlighted, *"The patients insisted on being admitted, and as the number of admissions increased, the workplace, which lacked sufficient medical and protective equipment, became increasingly unhygienic and unsafe. This led to heightened stress, anxiety, and concern among us"* (Nurse No. 4).

Social factors

The fourth main theme identified was social factors affecting the HRQOL among healthcare workers. Social factors encompass the behavioral patterns through which individuals adjust their social relations and interactions, including social challenges and restrictions.

Social challenges

Social challenges refer to the behaviors and rumors healthcare workers were subjected to during the pandemic. The factors included social stigmatization and the spread of misconceptions and negative opinions among people about the healthcare workforce.

A nurse stated, *"Being stigmatized by patients' relatives as the agents of disease transmission made us reduce our social interactions"* (Nurse No. 19).

The next factor was the spread of social misconceptions during the pandemic. One physician commented, *"Some physicians did not believe in wearing masks, while certain practitioners of traditional medicine gave prescriptions without scientific basis, and some people followed them. This is why we faced a surge in the number of infected cases and extra workload"* (Physician No. 16).

Social restrictions

Social restrictions included limitations on intra-city and inter-city travel, traffic, and business operations, which adversely affected the healthcare workers' quality of life.

Some interviewees believed that the reduced social interactions affected their quality of life: *"My mental health got worse because I had fewer social relations and activities. Psychologically, I felt bad. Most activities and communications became virtual, leading to some bad behaviors and attitudes; then physical, mental, and social complications and problems followed"* (Physician No. 23).

The last item in this subtheme was the absence of vacations and travel. One physician stated, *"The lack of vacation and leisure and entertainment programs for physicians, not even by the organization, and social restrictions and distancing lowered my morale."* (Physician No. 23).

Discussion

The results of this study showed various factors contributed to the HRQOL among medical and healthcare workers in Kerman, Iran during the COVID-19 pandemic. The main themes identified were individual, environmental, organizational, and social factors.

Two subthemes emerged under individual factors including mental and physical well-being. In studies addressing individual factors, several relevant subjects were identified. Amerio et al noted sleep disorders as a significant individual factor impacting the mental and physical health of physicians during the COVID-19 pandemic (17). Stojanov et al found that participants experienced reduced sleep quality and were concerned about contracting the COVID-19 virus or transmitting it to their family members (18).

A significant complication related to the pandemic was mental obsession. In this regard, Abba-Aji et al concluded that obsessive-compulsive symptoms increased during the pandemic, adversely affecting individuals' mental health and quality of life (19). Similarly, Al Hassani and Mufaddel found a notable rise in obsessive-compulsive disorders during this period (20), further supporting the findings of the present study.

The second identified group of factors was environmental factors. One of the problems that healthcare workers, especially in COVID-19-designated hospitals, faced was their direct contact with symptomatic patients. Araç and Dönmezgil pointed out that one of the contributing factors to anxiety among physicians was their close and long-term physical contact with patients (21). Therefore, as previously mentioned, anxiety itself is responsible for reducing the quality of life among people. Silva et al highlighted that the fear of contracting the virus through physical contact with the patient exacerbated anxiety among healthcare staff, negatively affecting their mental health and overall quality of life (22).

Another concern related to environmental factors was the increase in workload. Ebrahimi et al established an inverse relationship between heavy workload and quality of life among nurses (23). Zhou and Zhang also found that heavy workload negatively affected the mental health and quality of life of specialists (24), which aligns with the results of the present study. Thus, the conclusions from these studies indicate that heavy workload leads to exhaustion, stress, and occupational burnout, thereby reducing quality of life.

Other subjects related to environmental factors included

lack of information, being away from the family, death of relatives, issues surrounding protective equipment, and organizational problems. Hawash et al noted that these factors contributed to stress, ultimately reducing quality of life (25). Sharma et al believed that the quarantine and being away from the family could adversely affect mental health and quality of life among married nurses (26). Stojanov et al introduced the fear of death and the loss of close relatives as factors affecting the quality of life among healthcare professionals caring for patients with COVID-19 (18), confirming the results of the present study.

As the third main theme, organizational factors resulted from the unknown nature of the crisis and the unpreparedness of health organizations and the whole healthcare system to prevent and treat the disease. While not all factors identified in this study have been reported in similar studies, organizational problems consistently emerged as a major theme impacting the mental health and professional lives of different groups of people, especially healthcare workers.

Chirumbolo et al stated that job insecurity adversely affected individual behavior and life quality (27). Alshaabani et al also concluded that perceived organizational support positively influenced personnel commitment and participation (28). Increased participation opportunities lead to enhanced quality of life, underscoring a direct relationship between these two variables. Ebrahim et al concluded that effective leadership and management positively affect the quality of life among nurses and healthcare workers (29). The existing literature on organizational management suggests that improved working conditions foster enthusiasm and professionalism, which enhances organizational commitment and job satisfaction (30,31).

The last main theme identified contributing to HRQOL was social factors. Although previous studies have not specifically investigated the role of social factors, they identified underlying issues arising from these factors that affect quality of life. Radhakrishnan et al found that approximately 66.3% of their participants experienced stigmatization, with 57.7% reporting that their quality of life was affected by it (32). Søvdal et al urged healthcare leaders and policymakers to reduce stigma among healthcare workers and promote an organizational culture characterized by trust, respect, empathy, and equality (33). All these factors positively impact the quality of life among healthcare workers. A study in Wuhan, China, showed an inverse relationship between education level and mental health problems, concluding that individuals with higher education levels tended to seek out accurate information rather than relying on rumors and myths (34).

Conclusion

Given the range of factors contributing to the quality

of life among healthcare workers, it is essential for healthcare managers and policymakers, who are often on the frontlines of decision-making, to effectively address health crises and pandemics. This includes allocating human resources with appropriate levels of education to each unit considering the number of clients and admissions. Moreover, efforts should be made to boost healthcare workers' morale and physical strength by implementing programs that promote exercise and both physical and mental activities. Developing initiatives that focus on individual, organizational, environmental, and social factors will enhance efficiency during crises, play a crucial role in alleviating occupational burnout, and address issues of motivation and performance among personnel in challenging conditions. Ultimately, these measures will contribute to promoting the mental and physical well-being of healthcare workers.

The research population was limited to healthcare workers (physicians and nurses) working in medical wards or centers designated for treating COVID-19 inpatients in Kerman, Iran. Due to cultural and organizational differences, other contributing factors affecting HRQOL may be identified in different regions of the country, which could complement the findings of this study. Furthermore, some variables could not be controlled, such as the concurrent COVID-19 outbreak and the prevailing economic challenges in the country, which were noted by many participants and may have affected the conclusions drawn.

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Authors' Contribution

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Competing Interests

The authors declare that there are no conflicts of interest – real, perceived, financial, or otherwise – related to this study.

Ethical Approval

The ethical code IR.KMU.REC,1401,127 was issued by the Ethics Committee of Kerman University of Medical Sciences. Oral informed consent was obtained from all participating physicians

and nurses. Besides, data were collected by a trained researcher through semi-structured interviews.

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