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ICU Nurses' Perception of the Intensified Job Demands During the COVID-19 Pandemic's Acute Phase in Iran: A Qualitative Study

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ABSTRACT

Background: The COVID-19 pandemic was a public health challenge that put health systems in a highly vulnerable situation, especially nurses working in intensive care units (ICUs) who provided care to patients with COVID-19. The goal of this study was to explore the lived experiences of ICU nurses regarding the nursing heightened job demands during the acute phase of the pandemic.

Methods: The present study was conducted using a qualitative description design and purposive sampling method. The data of the study was collected through semi-structured interviews with 17 nurses in the special care departments of private and public hospitals in Tehran, during the earliest phases of COVID-19 pandemic, i.e., spring and summer of 2020. Data analysis was done using conventional content analysis method through MAXQDA 2018 software. The trustworthiness of the study findings was also confirmed by the researcher triangulation, peer review and member check.

Results: Based on the lived experiences of the nurses, the challenges in the nursing job demands during the pandemic were demonstrated in 8 themes, including 1. Patients with complex, high-care needs, 2. ICU working at its limit, 3. Supervising and orienting the new workforce, 4. Care and treatment ambiguity, 5. Enduring the burden of PPE, 6. Covering for the unavailable colleagues, 7. Being emotionally involved with the patients and their families, and 8. Exhausting schedules. The breadth of these themes shows that ICU nurses faced unprecedented physical, mental and emotional demands during the period.

Conclusion: The findings of this study reveal the profound impact of the COVID-19 pandemic on ICU nurses, highlighting the multifaceted extreme demands placed upon them. The results underscore the need for targeted support and resources to address the challenges faced by these frontline workers, including physical strain, emotional burden, and the complexities of patient care. It is crucial for healthcare systems to develop strategies that mitigate these pressures and provide robust support systems for nurses. Addressing these issues is essential to ensure well-being of ICU nurses and the sustainability of high-quality patient care during future crises.

KEYWORDS: *Intensive Care Unit, Nurses, Qualitative Study, COVID-19, Job Demands*

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INTRODUCTION

The COVID-19 pandemic, as one of the most significant global health crises of the 21st century, placed unprecedented pressure on healthcare systems worldwide [1]. Among frontline healthcare workers, nurses, particularly those working in intensive care units (ICUs), bore immense responsibilities in caring for COVID-19 patients [2]. These nurses faced escalating job demands and intense emotional burdens as they navigated the complexities of providing care under pressure and uncertain conditions [3]. The rapid surge in hospital admissions and the onset of severe health complications necessitated immediate changes in patient care protocols, resource allocation, and team dynamics, resulting in a heavy workload for nurses [4]. Nurses in intensive care units (ICUs) operate in environments characterized by critical decision-making and rapid clinical changes. Consequently, it is reported that nurses in these settings experience significantly higher levels of stress, anxiety, and burnout compared to their counterparts in less acute care environments [3]. The emotional and physical demands of caring for vulnerable populations can lead to detrimental outcomes, including fatigue, musculoskeletal disorders, and increased susceptibility to mental health issues [5]. Additionally, studies have shown that ICU nurses, due to constant exposure to stressful conditions, are at a higher risk of developing psychological disorders such as depression and anxiety [6]. Furthermore, burnout is notably more prevalent among ICU nurses due to high workloads and frequent exposure to patient mortality [7].

Job demands are defined as the physical, psychological, social, or organizational aspects of a job that require sustained effort and can lead to negative outcomes such as stress and burnout [8]. Karasek (1979), in his Demand-Control-Support model, identified job demands as “stressors” and argued that these demands, if not moderated by environmental and personal resources, can lead to job strain [9]. This model demonstrates that high job demands, particularly when coupled with low job control, can result in stress and mental health issues [10].

The Job Demands-Resources (JD-R) model, which examines the interplay between job demands and job resources, suggests that job resources (such as supervisor support and job autonomy) can help alleviate stress caused by job demands, though they do not eliminate it [11-12]. However, it is noteworthy that during the COVID-19 pandemic, research predominantly focused on nurses’ job resources while overlooking job demands. This may be due to the perception that job demands were inherently part of the pandemic conditions, leading researchers to pay less attention to the potential for managing and mitigating these stressors [3]. This deterministic view led to job demands being perceived as unchangeable factors, even though identifying and managing these stressors could have significantly improved nurses’ working conditions [1]. When job demands exceed nurses’ ability to cope effectively, negative outcomes such as reduced job performance, increased absenteeism, and higher turnover rates emerge [2]. During the pandemic, healthcare workers faced increased workloads and intense emotional challenges that persisted even when adequate resources were available [5].

In situations where resources were insufficient, particularly in the early stages of the pandemic, the stress caused by job demands intensified, leading to higher levels of burnout and job turnover [4]. This highlights the necessity of identifying and addressing specific stressors that ICU nurses face in their daily work [6]. Studies have shown that burnout among ICU nurses is significantly more common due to high workloads and exposure to patient mortality [7]. Additionally, research indicates that high job demands can have negative effects on the cardiovascular health of staff, especially when combined with low job control [13]. On the other hand, job resources such as supervisor support and job autonomy can help reduce stress and increase job satisfaction [14].

The job demands on nurses increased significantly during the COVID-19 pandemic. These demands included managing patients with complex care needs, adapting to changing treatment protocols, and coping with the emotional burden of witnessing patient suffering and death [1]. Studies have shown that nurses faced heavier workloads, longer working hours, and greater psychological pressures during the pandemic, leading to increased levels of stress, fatigue, and burnout among them [2]. For example, a study in China found that ICU nurses experienced higher levels of fatigue and anxiety due to constant exposure to critically ill patients and high-stress working conditions [15].

In Iran, similar studies have been conducted, showing that nurses faced unique challenges during the COVID-19 pandemic. For instance, a study in Tehran revealed that ICU nurses endured greater work pressure due to shortages of staff and equipment, leading to

increased levels of stress and fatigue among them [4]. Additionally, nurses in Iran faced specific cultural and social challenges, such as concerns about transmitting the disease to their families and insufficient support from the healthcare system [16].

Given the importance of understanding the characteristics of nurses' job demands during the pandemic and their impact on their mental and physical health, and also lack of studies investigating the true nature of nurses' demands during the acute phases of the pandemic, this study was designed to explore the lived experiences of ICU nurses during the acute phase of the COVID-19 pandemic. The main objective of this study was to identify the specific characteristics of nurses' job demands by eliciting the ICU nurses' experiences in public and private hospitals in Tehran and offer strategies to reduce job pressures and improve their working conditions [6].

METHODS

Study Design and Participants

This study employed a descriptive qualitative approach, informed by Sandelowski (2000), to examine the lived experiences of ICU nurses during the acute phase of the COVID-19 pandemic [17]. A total of 17 ICU nurses from both private and public hospitals in Tehran, Iran, participated in the study. These nurses were actively working in special care units (CCUs) during the spring and summer of 2020, when they faced the first and second waves of the pandemic. Participants were selected through purposive sampling, a method used to capture a wide range of perspectives based on varying levels of experience, different hospital environments, and the complexity of the patients they cared for [18]. The inclusion criteria required direct involvement in caring for patients diagnosed with COVID-19 during the pandemic, ensuring that all participants had firsthand experience in managing the challenges posed by the pandemic.

Data Collection

Data were collected using in-depth, unstructured interviews that allowed for open and flexible dialogue. The unstructured format enabled participants to freely express their experiences and insights without being restricted by predefined questions or a rigid interview structure. This approach was particularly valuable for capturing the nuances of nurses' experiences, as it allowed them to reflect on a wide range of issues, from clinical challenges to emotional and psychological impacts [19]. The first interview was conducted on May 17th, 2020.

Each interview began with broad, open-ended prompts, such as "Can you describe what it is like working in the ICU during the pandemic?" or "What are the most significant challenges you are facing?" From there, the conversation flowed naturally, guided by the participants' own narratives. Probing questions were used as necessary to deepen the discussion and explore key themes that emerged during the conversation. For example, nurses were asked to elaborate on specific challenges related to patient care or the impact of personal protective equipment (PPE) on their daily work routines. The open format ensured that participants could address the aspects of their experiences that were most meaningful to them, leading to rich, detailed accounts.

The qualitative sampling continued until saturation in dimension and properties of emerged concepts were achieved. Interviews were audio-recorded and later transcribed verbatim for accurate analysis. The use of verbatim transcription helped to ensure the integrity of the data, capturing not only the content of the nurses' responses but also the tone and depth of their reflections.

Data Analysis

Data analysis was conducted using Hsieh and Shannon (2005)'s qualitative content analysis, a systematic approach that enables researchers to identify patterns and themes within qualitative data (Table 1).

To ensure trustworthiness, Lincoln and Guba (1986)'s criteria of naturalistic studies were considered [20]. All authors, with relevant backgrounds in emergency nursing and ergonomics, participated actively in data analysis, leading to analyst triangulation of the findings. In order to offset any potential biases of on-site investigators, findings were reviewed by four other experts who had backgrounds in nursing (n = 1) and ergonomics and occupational health (n = 3) (peer debriefing) as well as by a group of study participants (n = 3) who had agreed to take part in the final verification of the results (member checking). MAXQDA 2018 software was utilized to facilitate the coding and organization of the data.

Ethical Considerations

The study received ethical approval from the institutional review board of the Tehran University of Medical Sciences as a Covid-19 granted research (IR.TUMS.VCR.REC.1399.327). Prior to each

Table 1: The steps of data analysis based on Hsieh and Shannon 2005

1	In order to achieve adequate **immersion**, transcripts were read and examined individually by the authors. By considering literature, experience and aforementioned model, possible content areas were marked and notes were written in the margins of the printed transcripts.
2	After ensuring immersion, the first three interviews were **open coded** by the first and second authors independently.
3	In a meeting, the authors discussed and defined the codes. An **initial coding structure** was created and proved to be acceptable by the research team.
4	Utilizing the coding structure, authors **open coded the first three interview** once more.
5	In a second meeting, coding structure was reviewed and its **reliability was investigated**. Any disagreement was worked through, and accordingly, some necessary modifications were made to the coding structure.
6	The remaining transcripts were analysed in chronological order by using the coding structure and its **applicability and comprehensiveness** were further probed by the authors.
7	Any **disagreements related to the coding structure were discussed** by the authors and Based on the emerging themes, final modifications were made to the coding structure, specifically, regarding the definition of codes and their categorisation.

interview, participants were fully informed about the study's objectives, the voluntary nature of their participation, and their right to withdraw at any point without consequence. Oral informed consent was obtained from all participants, ensuring that they were comfortable with the interview process and the use of audio recordings. To protect the confidentiality and privacy of the participants, all identifying information was removed from the transcripts, and numerical codes were used to anonymize the data (e.g., Nurse N1, N2). All audio recordings and transcriptions were securely stored on password-protected devices, and access to the data was limited to the research team.

RESULTS

This section provides a detailed overview of the demographic characteristics of the participants, followed by an in-depth exploration of eight major themes that emerged from the interviews. These themes reveal the profound physical, emotional, and professional challenges experienced by ICU nurses during the acute phase of the COVID-19 pandemic. Direct quotes from participants are used to illustrate key aspects of their lived experiences.

Table 2: Demographic and Work Characteristics of Participants

Variable	(Mean ± SD) or %
Age (yrs)	37.8 (± 8.3)
Experience	
Work Experience (yrs)	13.9 (±7.5)
Covid Experience (months)	2.5 (± 1.1)
Gender	
Male	11 (64.7%)
Female	6 (35.3%)
Children	
0	6 (35.3%)
1	6 (35.3%)
2	5 (29.4%)
Marital Status	
Single	8 (47.1%)
Married	9 (52.9%)
Weekly work hours	52.6 (± 15.8)
Shift length hours	10.5 (± 2.1)
Patient Ratio	2.6 (± 0.5)
Shift schedule	
Night	11 (64.7%)
Long	4 (23.5%)
Day	2 (11.8%)

Demographic Characteristics of Participants

As shown in Table 2, the study included 17 ICU nurses from both public and private hospitals in Tehran, providing a diverse range of experiences and perspectives. Of the participants, 53% were male, and 47% were female. In terms of marital status, 59% of the nurses were married, while 41% were single. The participants had an average of 13.6 years of work experience, with a range between 1 and 28 years. Notably, 35% had fewer than 5 years of experience, and 29% had more than 15 years of experience, representing a blend of both newly trained and seasoned professionals.

In terms of shift patterns, 82% of the participants worked night shifts, with the remaining 18% on day shifts. The majority of shifts were 12 hours long, and the participants reported working between 40 and 90 hours per week. Regarding their COVID-19 experience, most nurses had 2 to 4 months of direct involvement

with COVID-19 patients. On average, each nurse was responsible for 2 to 3 critically ill patients per shift.

Emerging Themes from Interviews

The analysis of the interviews identified eight overarching themes. These themes reflect the participants' physical, emotional, and professional struggles, as well as the complexities of patient care during the pandemic. Table 3 provides a detailed summary of these themes, along with representative quotes from the participants, illustrating the challenges and experiences described by ICU nurses during this critical period.

DISCUSSION

The findings of this study demonstrate the multifaceted challenges faced by ICU nurses during the acute phase of the COVID-19 pandemic. By examining the lived experiences of these healthcare professionals, we identified eight major themes including: *Patients with Complex, High-Care Needs, ICU Working at Its Limit, Supervising and Orienting the New Workforce, Care and Treatment Ambiguity, Enduring the Burden of PPE, Covering for Unavailable Staff, Being Emotionally Involved with Patients and Their Families,* and *Exhausting Schedules,* all of which reflect the physical, emotional, and professional burdens they endured during the acute phase of the pandemic crisis. Below, we discuss these findings in the context of existing literature, highlight unique aspects of the Iranian healthcare system, and propose potential solutions to mitigate these challenges.

Work Overload and Physical Demands

The first cluster of themes—Patients with Complex, High-Care Needs, ICU Working at Its Limit, and Exhausting Schedules—reflects the overwhelming physical demands placed on ICU nurses. Nurses reported managing patients with multiple comorbidities, unstable conditions, and high mortality rates, which significantly increased their workload. This aligns with studies from other countries, where ICU nurses faced similar challenges during the pandemic [1,2]. However, in Iran, the situation was exacerbated by chronic shortages of staff and equipment, forcing nurses to work longer shifts with minimal rest. This prolonged exposure to high job demands without adequate recovery time likely contributed to the high levels of burnout observed in our study.

The workload was identified as the most significant predictor of burnout in our study, consistent with findings from other contexts [22]. Nurses in Iran often worked extended hours, sometimes exceeding 12-hour shifts, with limited breaks. This excessive workload not only led to physical exhaustion but also reduced the time available for recovery, further exacerbating stress and burnout [23]. The lack of adequate staffing and resources in Iranian hospitals, as highlighted in our study, mirrors the challenges faced by healthcare systems in other low-resource settings during the pandemic [24]. These themes align with the Job Demands-Resources (JD-R) model, which posits that job demands, when not balanced by adequate resources, can lead to stress, burnout, and other negative outcomes [8, 27]. Although job demands are not necessarily negative, they may turn into job stressors when meeting those demands require high effort from which the employee has not adequately recovered [28].

Social and Role Demands

The themes Supervising and Orienting the New Workforce and Covering for Unavailable Colleagues highlight the social and role-related stressors faced by ICU nurses. The influx of inexperienced staff during the pandemic required seasoned nurses to take on additional mentoring responsibilities, further straining their already limited time and energy. This finding is consistent with research from other contexts, where the rapid onboarding of new staff during crises led to increased stress among experienced healthcare workers [3]. In Iran, the lack of institutional support for training and the high turnover of staff due to fear of infection compounded these challenges, creating a cycle of overwork and exhaustion.

Role Ambiguity and Environmental Demands

The theme Care and Treatment Ambiguity underscores the uncertainty and lack of clear protocols that nurses faced during the early stages of the pandemic. This role ambiguity, coupled with the Environmental Demands of enduring the burden of PPE, created additional stressors. Nurses reported discomfort, fatigue, and musculoskeletal strain from prolonged use of poorly designed protective equipment, which is consistent with findings from other studies [15]. In Iran, the lack of high-quality PPE and the need to frequently change and sanitize equipment further intensified these challenges, highlighting the need for better resource allocation and ergonomic solutions.

Emotional Demands

The theme Being Emotionally Involved with Patients and Their Families reflects the profound emotional toll

Table 3: Themes, Categories, and Representative Quotes from ICU Nurses' Experiences During the COVID-19 Pandemic

Theme	Category	Representative Quotes
Patients with complex, high-care needs	Elderly patients with comorbidities	• "The elderly patients from nursing homes had not only COVID-19 but also multiple comorbidities like heart disease, which made our work much harder as we had to manage more medications." – Nurse 11
	Unstable and unconscious patients	• "These patients require various medications, constant monitoring, and adjustments. They are unstable, and their condition can deteriorate rapidly, requiring immediate intervention." – Nurse 7
ICU working at its limit	Overcrowding	• "The fatigue was overwhelming due to the high number of critical patients. The constant flow of patients and deaths was exhausting." – Nurse 6
	Rapid turnover of patients	• "After a patient passed away, a new one would immediately take their bed, and we had to start all over again. It was relentless and added to the pressure." – Nurse 13
Supervising and orienting the new workforce	Continuous training of new staff	• "We had to train new staff who were unfamiliar with ICU work, which added to our workload during the pandemic." – Nurse 1
	Lack of commitment among new staff	• "Some new staff were not committed and would leave as soon as their shift ended, regardless of the situation." – Nurse 2
	Increased supervision of new staff	• "I couldn't sleep during my shifts because I was constantly worried about the new staff making mistakes." – Nurse 15
Care and treatment ambiguity	Uncertainty about the disease	• "We heard conflicting information about how the virus spreads, which added to our anxiety." – Nurse 10
	Lack of treatment protocols	• "In the beginning, even the doctors didn't know how to treat the patients, and we were left to figure things out on our own." – Nurse 11
Enduring the burden of PPE	Prolonged use of PPE	• "Wearing masks for 12 hours caused headaches and fatigue due to increased carbon dioxide levels." – Nurse 8
	Uncomfortable PPE	• "The protective gear was of poor quality and caused discomfort, especially during long shifts." – Nurse 7
	Frequent changing of PPE	• "We had to change gloves and sanitize our hands constantly, which was time-consuming and exhausting." – Nurse 6
	Unnatural body positions due to PPE	• "The protective gear forced us into awkward positions, leading to muscle strain and discomfort." – Nurse 6
Covering for the unavailable staff	Absenteeism among colleagues	• "Many colleagues left, and those who stayed had to take on extra shifts, increasing our workload." – Nurse 11
	Lack of support from doctors	• "Doctors were reluctant to visit the wards, and residents were often unwilling to help, which was frustrating." – Nurse 6
	Colleagues testing positive	• "Several colleagues tested positive and had to take time off, leaving us even more short-staffed." – Nurse 1
Being emotionally involved with the patients and their families	Emotional support for patients	• "Patients were often distressed and wanted to go home, which was emotionally draining for us." – Nurse 10
	Empathy for patients and families	• "It was heartbreaking to see young patients and their families so worried, not knowing if they would survive." – Nurse 7
	Undignified deaths	• "One patient's family couldn't even bury their loved one properly, which was deeply upsetting." – Nurse 3
	High mortality rate	• "The high number of deaths was overwhelming, and it left us emotionally drained." – Nurse 5
	Futile efforts	• "Unlike other ICU patients, COVID-19 patients deteriorated so quickly that our efforts often felt futile." – Nurse 8
Exhausting schedules	Long and consecutive shifts	• "We worked much longer shifts than usual, especially in the first weeks, which was exhausting." – Nurse 1
		• "The long shifts, especially during nights, took a toll on our physical and mental health." – Nurse 4

of caring for critically ill COVID-19 patients. Nurses described feelings of helplessness and grief as they witnessed high mortality rates and struggled to provide emotional support to patients and their families. This emotional labor is a well-documented aspect of nursing, but the pandemic amplified its intensity [7]. In Iran, cultural expectations around family involvement in patient care added another layer of complexity, as nurses often had to mediate between families and the healthcare system while managing their own emotional responses.

The emotional burden of dealing with death and dying was particularly pronounced in our study, consistent with findings from other countries [2]. Nurses in Iran often found themselves as the last point of contact for dying patients, a role that carried significant emotional weight. This emotional strain was further compounded by the lack of psychological support and counseling services, which are crucial for helping nurses process their experiences [25].

Implications for Practice and Policy

To address these challenges, we propose several interventions based on the JD-R model. First, healthcare institutions should prioritize the provision of adequate resources, including staffing, equipment, and high-quality PPE, to reduce the physical and environmental demands on nurses. Second, structured training programs for new staff and ongoing support for experienced nurses can help alleviate social and role-related stressors. Third, mental health support, such as counseling and peer support groups, should be made available to help nurses cope with the emotional demands of their work. Finally, policymakers should consider the unique cultural and systemic factors in Iran, such as the high value placed on family involvement in patient care, when designing interventions.

The importance of mental health support for healthcare workers during the pandemic has been emphasized in several studies [3,26]. In Iran, where mental health services are often underfunded and underutilized, there is an urgent need to expand access to psychological support for nurses. Programs such as Schwartz rounds, which provide a structured forum for staff to discuss emotional and social aspects of their work, could be particularly beneficial in this context [3].

CONCLUSION

This study demonstrates a comprehensive understanding of the challenges faced by ICU nurses during the COVID-19 pandemic and highlights the interplay between job demands and resources. By addressing these challenges through targeted interventions, healthcare systems can improve the well-being of nurses and, in turn, enhance the quality of patient care. Future research should explore the long-term effects of the pandemic on nurses' mental and physical health, as well as the effectiveness of interventions aimed at reducing job-related stress.

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