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The Need for Recovery Among Operating Room Nurses in Teaching Hospitals in Shiraz

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ABSTRACT

Background: Operating room nurses face high workloads, and their ability to recover effectively from work is crucial in preventing potential health issues. This study aimed to evaluate the need for recovery among operating room nurses and its association with demographic factors.

Methods: This cross-sectional study involved 302 operating room nurses working in general and orthopedic operating rooms across four teaching hospitals in Shiraz in 2021. Participants were selected using the census method. Data were collected using a demographics questionnaire and a standardized need-for-recovery scale. Data analysis was performed using SPSS 22 software.

Results: The mean (SD) need-for-recovery score among operating room nurses was 61.63 (27.10) out of 100. A high need for recovery was observed in 223 (75.6%) of the nurses. Correlation analysis revealed a weak negative relationship between the need for recovery and both age ($p < 0.001$, r = -0.240) and years of work experience ($p < 0.001$, r = -0.258).

Conclusion: The need for recovery among operating room nurses was found to be high. Increasing the number of operating room nurses and improving their working conditions could help reduce their workload. Additionally, providing training on effective coping strategies may help lower their need for recovery from work.

1. Introduction

One of the most significant factors influencing the physical and mental well-being of the workforce is the ability to recover from fatigue and stress after work (van der Starre et al., 2013). According to the effort-recovery model, work generates costs (efforts) that result in short-term emotional and cognitive symptoms. Recovery refers to the time required for an individual to return to a pre-stress state (Meijman & Mulder, 2013). Adequate recovery allows employees to begin the next day without residual symptoms (van Veldhoven & Broersen, 2003). Insufficient recovery from work can contribute to mental health issues, such as emotional exhaustion, which is the earliest dimension of burnout (Moriguchi et al., 2013). The need for recovery has been measured in various occupational groups, with some degree of need for recovery identified in all of them. For example, the need for recovery was reported at 55% among mine workers (Samadi et al., 2017) and 33% among office employees (van der Starre et al., 2013). Among healthcare professionals, higher levels of need for recovery have been reported, particularly among emergency department staff (scores of 70 and 81 out of 100), which is a cause for concern (Cottey et al., 2020). This is particularly concerning as

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healthcare workers face ongoing challenges from pandemics and epidemics, such as COVID-19 and dengue fever, highlighting the need for greater workplace support (Kalantari, 2024). Several studies have also found a relationship between employees' demographics, such as age, and their need for recovery scores (Mohren et al., 2010; van der Starre et al., 2013). The operating room is a complex environment where clinicians face numerous challenges (Göras et al., 2020). Operating room nurses, who play a critical role in providing safe and efficient care for surgical patients, are among the most stressed practitioners during the preoperative phase (Flood & Allen, 2012). Excessive workload and job stress can negatively impact the performance of operating room nurses and lead to health problems (Uğurlu et al., 2015). Fatigue is one of the potential consequences of the demanding work conditions faced by these nurses (Lee & Kim, 2012). To the best of our knowledge, no research has yet been conducted on the need for recovery among operating room nurses. This study aimed to assess the need for recovery in operating room nurses in teaching hospitals in Shiraz.

2. Materials and Methods

This cross-sectional study, conducted as part of a Ph.D. dissertation, included operating room nurses working as scrub and circulating nurses during the summer of 2021. The study focused on operating room nurses involved in general and orthopedic surgeries, which were selected randomly. Four hospitals with general and orthopedic surgical wards were included. The sample of operating room nurses was selected using the census method. The inclusion criterion was the willingness of the nurses to participate in the study. A total of 302 out of 316 operating room nurses agreed to participate. After obtaining the necessary permissions, the researchers visited the operating rooms during morning shifts. They explained the study's objectives to the nurses, emphasizing that participation was voluntary and that all data would remain confidential. All participants joined the study voluntarily and provided signed informed consent. The questionnaires were distributed to the operating room nurses and collected after two weeks. The data collection instruments included a demographics questionnaire and the Need for Recovery after Work Scale. The demographics questionnaire gathered information on participants' age, gender, work experience, marital status, and academic degree. The Need for Recovery Scale, the second instrument used, is part of the Experience and Evaluation of Work Questionnaire (VBBA), developed by van Veldhoven and Meijman between 1992 and 1994 (van Veldhoven, 1996; van Veldhoven & Meijman, 1994). This scale consists of 11 questions with "yes" or "no" answers. Each "yes" response is scored 9.09 points, except for question number four, where a "no" response is scored 9.09 points. The total score is calculated, with a score of 45 or higher indicating a high need for recovery (Kiss et al., 2008). The psychometric properties of the Persian version of the Need for Recovery Scale were validated in a previous study (Samadi et al., 2017). Statistical analysis was performed using SPSS software version 22. Descriptive statistics were used to report the need for recovery scores. As the data distribution was normal, the Pearson correlation coefficient, Independent Samples t-test, and one-way ANOVA were used to assess the relationship between the need for recovery scores and demographic variables. The significance level for all statistical tests was set at 0.05.

3. Results and Discussion

Table 1 shows the demographics of the studied operating room nurses.

Table 1. Demographic characteristics of the studied operating room nurses

Variable	Category	Mean (SD*) / n (%)
Age (years)	-	30.84 (6.92)
Work experience (years)	-	7.62 (6.70)
Gender	Men	71 (24)
	Women	224 (76)
Educational degree	Associate's degree	28 (9.5)
	Bachelor's degree	247 (83.7)
	Master of science	20 (6.8)

* Standard Deviation

The mean (SD) score of need for recovery in operating room nurses was 61.63 (27.10) out of 100. Notably, 223 (75.6%) of the operating room nurses reported scores exceeding 45%, which was considered high. Table 2 shows the need for recovery scores based on gender and educational degrees. The values were compared by independent sample t-test and one-way ANOVA, respectively.

Table 2. The need for recovery scores based on gender and educational degree

Variable	Category	NFR score Mean (SD)	*P-value*	T-F Value
Gender	Male	62.65 (26.61)	0.188	0.049
	Female	58.38 (28.52)		
Educational degree	Associate's degree	53.89 (32.25)	0.247	0.064
	Bachelor's degree	62.01 (28.33)		
	Master of science	67.72 (27.89)		

The results of the t-test indicated no significant relationship between the need for recovery scores and gender ($p = 0.188$, T-F = 0.049). Additionally, the ANOVA test results showed no significant difference in the need for recovery scores among operating room nurses with different educational degrees ($p = 0.247$, T-F = 0.064). Table 3 illustrates the percentage of 'yes' responses to each item on the need for recovery scale. The items concerning difficulties in relaxing after workdays and feelings of exhaustion received the highest percentages of affirmative responses. The assessment of the correlation between age and the need for recovery score revealed a weak negative relationship ($p <$

0.001, r = -0.240). Similarly, a weak negative correlation was found between years of work experience and the need for recovery score ($p < 0.001$, r = -0.258).

Table 3. Distribution of answers to the need for recovery items

Item	"Yes" answers (percent)	"No" answers (percent)
1. I find it difficult to relax at the end of a working day.	240 (81.4)	55 (18.6)
2. By the end of the working day, I feel really worn out.	106 (35.9)	189 (64.1)
3. Because of my job, at the end of the working day, I feel rather exhausted.	237 (80.3)	58 (19.7)
4. After the evening meal, I generally feel in good shape.	210 (71.2)	75 (28.8)
5. In general, I only start to feel relaxed on the second non-working day.	143 (48.5)	152 (51.5)
6. I find it difficult to concentrate in my free time after work.	110 (37.3)	185 (62.7)
7. I cannot really show any interest in other people when I have just come home myself.	211 (71.5)	84 (28.5)
8. Generally, I need more than an hour before I feel completely recuperated after work.	190 (64.4)	105 (35.6)
9. When I get home from work, I need to be left in peace for a while.	216 (73.2)	79 (26.8)
10. Often, after a day's work, I feel so tired that I cannot get involved in other activities.	175 (59.3)	120 (40.7)
11. A feeling of tiredness prevents me from doing my work as well as I normally would during the last part of the working day.	161 (54.6)	134 (45.4)

This study aimed to assess the need for recovery among operating room nurses and its relationship with demographic factors. The findings revealed that the studied operating room nurses had a high need for recovery after work. The need for recovery scores exhibited a weak negative correlation with both age and years of work experience. The mean need for recovery score among operating room nurses was higher than the average level. This result aligns with studies conducted on hospital emergency department clinicians (Cottey et al., 2020; Graham et al., 2020). It appears that healthcare professionals face high work demands due to the nature of their jobs. However, our findings regarding the percentage of operating room nurses with a high workload contrast with those of Moriguchi et al. (2012), where only 33% of nurses reported a high workload. Studies on other occupational groups have reported lower need for recovery scores compared to our research (Samadi et al., 2017; van der Starre et al., 2013). This suggests that the higher need for recovery among operating room nurses may stem from the inherent demands of their work. Operating room nurses are directly responsible for the lives of surgical patients and must perform with precision to ensure patient safety. It could be said that a higher need for recovery after work in operating room nurses is because of the intensity of their work. They directly deal with surgical patients' lives, and they should act accurately to ensure safe performance and secure patient safety. Our results indicated that the need for recovery was negatively correlated with age and years of work experience. This suggests that older operating room nurses may be more aware of effective coping strategies, and their greater work experience may help them adapt better to their working conditions. This finding aligns with the notion that a high need for recovery often appears in the early years of employment and disproportionately affects younger workers (Mache et al., 2020). However, the negative correlation between the need for recovery and age/work experience contrasts with the findings of Mohren et al. (2010), who reported that the need for recovery increases until the age of 55 and Kiss et al. (2008), who concluded that older workers have a higher need for recovery. These differences may be attributed to the unique nature of operating room work compared to industrial settings. No significant difference in the need for recovery scores was observed between male and female operating room nurses. This result is consistent with the findings of Sluiter et al. (2003) in their study of hospital nurses. This similarity suggests that gender is not a key factor in determining the level of need for recovery. Similarly, no significant difference was found in the need for recovery scores among operating room nurses with different educational degrees. Since the duties of operating room nurses are similar across educational levels, this result seems reasonable. We did not find any prior research addressing the role of educational degrees on the need for recovery, indicating that other variables may be more influential. Work-related factors such as job demands, working hours, and schedules have been shown to play a more significant role in increasing the need for recovery. Additionally, opportunities for recovery and the quality of work are important predictors of the need for recovery. A high need for recovery can lead to health problems (Sluiter et al., 2003), which may contribute to job burnout among healthcare staff. Therefore, it is crucial to prevent the accumulation of fatigue. First, the perceived workload of operating room nurses should be reduced. Increasing the number of nurses per surgery could be beneficial, as it would facilitate the implementation of work-rest cycles, as previously recommended (Samadi et al., 2017). Reducing working hours and improving working conditions are additional solutions to prevent fatigue. Educating operating room nurses, particularly younger ones, in non-technical skills such as stress management and teamwork could help them better manage their workload. A previous study has shown improvements in behavior following such interventions (Kalantari et al., 2021). This study has one limitation. As a cross-sectional study, it cannot establish definitive cause-and-effect relationships between variables.

4. Conclusion

The need for recovery among the studied operating room nurses was high, which is likely due to the inherent demands

of their job rather than demographic factors. Reducing the need for recovery is essential to maintaining the health and well-being of operating room nurses. Increasing the number of nurses per shift, improving working conditions in operating rooms, and providing training on coping strategies-particularly for younger nurses-can help alleviate exhaustion and lower their need for recovery from work.

Authors' Contributions

Zahra Zamanian: Conceptualization; Supervision; Approving final version of the manuscript. **Reza Kalantari:** Conceptualization; Supervision; Writing the original draft; Approving the final version of the manuscript. **Hamed Parnikh:** Data collection; Methodology; Approving the final version of the manuscript. **Zahra Movahednia:** Data collection; Methodology; Approving the final version of the manuscript. **Zahra Chegeni:** Data analysis; Approving the final version of the manuscript. **Zaynab Eram:** Data analysis; Approving the final version of the manuscript.

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Conflicts of Interest

The authors declare no conflicts of interest.

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Ethical considerations

This study was conducted in accordance with the Helsinki Declaration. Before starting data collection, the researchers gained the necessary permissions, including ethics committee approval (IR.SUMS.REC.1398.1300).

Using artificial intelligence

The artificial intelligence was not used in this study.

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