

Relationship Between Perceived Excessive Workload and Medical Error Tendency Among Intensive Care Nurses

Yoğun Bakım Hemşirelerinde Algılanan Aşırı İş Yüğü ile Tıbbi Hata Eğilimi Arasındaki İlişki

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Abstract

Objective: The aim of this study is to examine the relationship between excessive workloads among nurses in intensive care units and their tendencies toward medical errors, as well as the factors influencing this relationship.

Materials and Methods: This study is a cross-sectional, descriptive, and correlational study. The study sample consists of nurses (n:105) working in intensive care units at a university teaching and research hospital. The data collection instruments used were a professional and personal information form, the Excessive Workload Scale, and the Medical Errors Tendency Scale in Nursing (METSIN).

Results: 96.2% of intensive care nurses are women, 61.9% are married, and their average age is 34.42 ± 7.73 . 69.5% of the nurses work in Level 3 intensive care units. Intensive care nurses reported that the top three causes of medical errors were long shift duration (88.4%), misunderstanding of physicians' orders (64.0%), and communication problems within the team (56.5%). The mean score on The Excessive Workload Scale of intensive care nurses was 40.02 ± 7.68 , and the mean score on The Medical Error Tendency Scale in Nursing was 231.11 ± 14.98 . No correlation was found between the mean scores on The Excessive Workload Scale and the Medical Error Tendency Scale in Nursing ($p>0.05$).

Conclusion: Although nurses' average excessive workload scores are high, their tendency to make medical errors is low. In this context, it is recommended that the factors associated with medical errors be identified using qualitative research methods.

Keywords: Intensive care nurse, intensive care unit, medical error, workload

Öz

Amaç: Çalışmanın amacı, yoğun bakımda çalışan hemşirelerin iş yükleri ile tıbbi hata eğilimleri arasındaki ilişkiyi ve etkili faktörleri incelemektir.

Materyal ve Metot: Bu çalışma kesitsel tanımlayıcı ve ilişkisel türde bir araştırmadır. Çalışmanın örneklemini, bir üniversite eğitim ve araştırma hastanesinde yoğun bakım ünitelerinde çalışan hemşireler (n=105) oluşturmaktadır. Veri toplama araçları olarak mesleki ve kişisel bilgi formu, Aşırı İş Yüğü Ölçeği ve Hemşirelikte Tıbbi Hata Eğilimi Ölçeği (HTHEÖ) kullanılmıştır.

Bulgular: Yoğun bakım hemşirelerinin %96,2'si kadın, %61,9'u evli ve yaş ortalaması $34,42 \pm 7,73$ 'tür. Hemşirelerin %69,5'i 3. basamak yoğun bakımda görev yapmaktadır. Yoğun bakım hemşireleri, tıbbi hataların nedenlerinde ilk üç sırada uzun çalışma saatleri (%88,4), hekim istemlerinin yanlış anlaşılması (%64,0) ve ekip içi iletişim sorunları (%56,5) olduğunu belirtmişlerdir. Yoğun bakım hemşirelerinde Aşırı İş Yüğü Ölçeği puan ortalaması $40,02 \pm 7,68$ ve Hemşirelerin Tıbbi Hata Eğilimi Ölçeği puan ortalaması $231,11 \pm 14,98$ 'dir. Aşırı İş Yüğü Ölçeği ile Hemşirelikte Tıbbi Hata Eğilimi Ölçeği puan ortalamaları arasında bir ilişki bulunmamıştır ($p>0,05$).

Sonuç: Hemşirelerin aşırı iş yükü puan ortalamaları yüksek olmasına rağmen, tıbbi hata eğilimleri düşüktür. Bu kapsamda tıbbi hataya neden olan ilişkili faktörlerin nitel araştırma teknikleri ile ortaya çıkarılması önerilmektedir.

Anahtar Kelimeler: İş yükü, yoğun bakım hemşireleri, yoğun bakım ünitesi, tıbbi hata

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INTRODUCTION

Intensive care units (ICUs) are clinical settings that differ in terms of patient care, are equipped with state-of-the-art technology, and are staffed by a multidisciplinary team that continuously monitors patients' vital signs.¹ Intensive care nurses are healthcare professionals responsible for assessing patient-centered care and life-threatening conditions, continuously monitoring patients, establishing therapeutic relationships with patients and their families, and implementing preventive, curative, and rehabilitative interventions.² In a system where healthcare services continue uninterrupted, nurses—who make up the majority of the workforce—face a higher risk of making medical errors than other professional groups due to the nature of their duties.³⁻⁵ Medical error is defined as errors encountered in the healthcare setting by healthcare professionals from various disciplines, often in a multifaceted manner, that may be related to practice or the system and leave the healthcare professional vulnerable.⁶ Medical practices in nursing often involve medication errors, hospital-acquired infections, falls, communication problems, and improper use of medical equipment.⁷ As of March 21, 2016, 74,383 medical error reports were submitted to the Safety Reporting System (SRS) in Türkiye.⁸ It is acknowledged that the root causes of medical errors can be attributed to a number of factors, including extended shift schedules, fatigue, lack of knowledge, sleep deprivation, inattention, communication difficulties, institutional policies, administrative structure, failure to assign staff according to their competencies, insufficient or malfunctioning equipment, deficiencies in decision-support systems, burnout, increased workload due to staff shortages, and drug name similarity.^{7,9}

The principal aim of this study is to analyse the relationship between excessive workload and the tendency for medical errors among nurses working in ICUs and to examine the factors influencing this process

MATERIALS AND METHODS

Ethics Committee Approval: This study was approved by the Izmir Bakırçay University Non-Interventional Clinical Ethics Committee (Date: 25.03.2021, decision no:232). All procedures complied strictly with the ethical principles of the Declaration of Helsinki. Participants were provided with comprehensive information about the study, and written and verbal consent was obtained.

Study population and Sample: The population of this descriptive and correlational study consists of nurses working in the ICUs of a public hospital. No sampling method was applied, and all eligible nurses were invited to participate. There are a total of 122 intensive care nurses working in the hospital's ICUs, and 86% of them (n=105) were reached. Due to the COVID-19 pandemic at the time the data was collected, 5 nurses were on sick leave, 8 were assigned to different units, and 4 declined to participate; therefore, the study was conducted with 105 participants.

Data Collection Tools: A personal questionnaire was prepared based on a literature review.^{10,11} The questionnaire consisted of 16 items assessing the participants' demographic, social, and occupational characteristics. The Medical Error Tendency Scale in Nursing (METSN) was developed in 2010 by Özata and Altunkan,¹² to measure the propensity for medical errors among nurses directly involved in patient care. The score assigned to each item is used as the basis for evaluation. A higher total scale score indicates that the nurse has a low tendency to make medical errors. The value of Cronbach's alpha is 0.954, which indicates it is highly reliable. The minimum score on the METSN scale is 49, and the maximum score is 245. The METSN's Cronbach's alpha value was 0.82 in this research.

The Excessive Workload Scale, developed by Peterson and colleagues¹³ in 1995, was administered by Derya¹⁴, and the Cronbach's alpha was 0.86. The scale assesses participants' experiences of workload, disharmony, and loss of control in their work. As the participant's score on the scale increases, it indicates that the individual perceives a heavy workload and is unable to tolerate the job. The minimum score on the Excessive Workload Scale is 11, and the maximum score is 55. The value of the Excessive Workload Scale's Cronbach's alpha was 0.84 in this study.

Data Collection: The researchers obtained the research data through face-to-face interviews based on self-reports from nurses working in ICUs.

Statistical Analysis: Data were analysed using SPSS software (version 22.0). The findings were assessed at a significance level of $p < 0.05$ and within a 95% confidence interval. A normality test was used to assess whether the data were normally distributed. To compare the means of two independent, normally distributed variables, an independent t-test was used. To compare the means of two independent variables that do not follow a normal

distribution, the Mann-Whitney U test was used. The Pearson correlation test was also used to examine the relationship between the mean scores of two independent variables.

RESULTS

Ninety-six point two per cent of nurses working in intensive care are female, 61.9% are married, 78.1% hold bachelor's degrees, and the average age is 34.42 ± 7.73 . 69.5% of nurses work in level 3 ICUs, and 30.5% have been working for 1-5 years (Table 1).

Table 1. Descriptive characteristics of participants (n:105).

Characteristics	Data
Age, Mean $\pm$ SD	34.42 $\pm$ 7.73
Sleep (hours), Mean $\pm$ SD	6.91 $\pm$ 1.23
Age, n (%)	
22-39 age	70 (66.7)
40-57 age	35 (33.3)
Gender, n (%)	
Female	101 (96.2)
Male	4 (3.8)
Marital Status, n (%)	
Married	65 (61.9)
Single	40 (38.1)
Education, n (%)	
High school	14 (13.4)
Bachelor's	82 (78.1)
Postgraduate	9 (8.6)
Chronic disease, n (%)	
Yes	20 (19.0)
No	85 (81.0)
Having a child, n (%)	
Yes	55 (52.4)
No	50 (47.6)
Intensive care, n (%)	
2. Stage	30 (30.5)
3. Stage	73 (69.5)
Working years in intensive care, n (%)	
0-1 year	17 (16.2)
1-5 years	32 (30.5)
5-10 years	26 (24.8)
10 years and above	30 (28.6)
Number of patients receiving care, n (%)	
2-3 patients	76 (72.4)
4-6 patients	29 (27.6)
Total	105 (100)

SD: Standard Deviation.

37.1% of the nurses participating in the study had made medical errors, and 82.9% had reported their own. The nurses' observations generally indicate that 57.1% of medical errors in ICUs are unreported. The leading factors increasing the tendency for medical errors in ICUs were long shift duration (88.4%), followed by misunderstanding of physicians' orders (64.0%), and communication problems within the team (56.5%) (Table 2).

Table 2. Nurses' experiences of medical errors (n:105).

Experiences of medical errors	n (%)
Have you ever made a medical error during your career?	
Yes	39 (37.1)
No	66 (62.9)
"If you made a medical error, would you report it?"	
Yes	87 (82.9)
No	18 (17.1)
Do you think people report it when others make medical errors?	
Yes	45 (42.9)
No	60 (57.1)
Circumstances that increase the tendency for medical errors	
*Long shift duration	Yes 84 (88.4)
*Misunderstanding of physician's orders	Yes 55 (64.0)
*Communication problems within the team	Yes 48 (56.5)
*Lack of communication between patient and the nurse	Yes 29 (41.4)
*Similarity of medications	Yes 27 (37.5)
*Inadequate record keeping	Yes 26 (34.2)
*Insufficient protocols and procedures	Yes 18 (26.5)
*Inadequate personal protective equipment	Yes 18 (25.7)
*Insufficient Professional training	Yes 13 (19.4)

*: Multiple options have been selected.

The total mean score of the METSN was 231.11 ± 14.98 ; based on the scale evaluation, it was determined that intensive care nurses' propensity for medical errors was at a "low level." The mean score on the Excessive Workload Scale for intensive care nurses was 40.02 ± 7.68 (Table 3).

Table 3. Mean scores of the excessive workload scale, the METSN total, and sub-scales of the METSN.

Scales	Item Numbers	Mean $\pm$ SD	(Min-Max)	Cronbach Alpha
Excessive Workload Scale	11	40.02 $\pm$ 7.68	(20-55)	0.86
The METSN Total	49	231.11 $\pm$ 14.98	(191-245)	0.82
The METSN's sub-scales	18	85.21 $\pm$ 5.07	(68-90)	0.84
Medication and transfusion practices sub-scale				
Hospital Infection Sub-scale	12	57.52 $\pm$ 6.35	(47-60)	0.73
Patient Monitoring and Material Safety Sub-scale	9	40.81 $\pm$ 3.78	(30-45)	0.85
Falls sub-scale	5	23.62 $\pm$ 1.76	(17-25)	0.87
Communication sub-scale	5	23.92 $\pm$ 1.80	(17-25)	0.88

SD: Standard Deviation; Min-Max: Minimum-Maximum.

There was a statistically significant difference in the mean excessive workload scale scores among intensive care nurses by gender ($p=0.032$); there were no statistically significant differences in the mean scores on the Excessive Workload Scale and The METSN based on marital status ($p=0.864$) ($p=0.396$), education level ($p=0.158$) ($p=0.695$) (Table 4). According to the number of patients cared for by nurses, there is a statistically significant difference in the mean scores for the medication and transfusion practice sub-scale ($p=0.042$) and the communication sub-scale ($p=0.034$). The mean scores on the "Medication and Transfusion Practice" and "Communication" subscales for nurses caring for 4–6 patients were statistically significantly lower than those for nurses caring for 2–3 patients, and these nurses were more prone to making medical errors. Intensive care nurses who commit medical error tendency scored significantly lower than those who do not commit medical error tendency on all subscales of the METSN—except for the Communication subscale—as well as on the total scale scores ($p<0.001$), and they exhibited a higher tendency to commit medical errors (Table 4).

Table 4. Comparison of mean scores on the METSN and the excessive workload scale by nurses' demographic characteristics.

Demographic characteristics		Medication and transfusion practices	Hospital Infections	Patient Monitoring and Material Safety	Falls	Communication	Medical Error Tendency Scale in Nursing (METSN)	Excessive Workload Scale
Gender	Female	85.42 $\pm$ 4.85	57.68 $\pm$ 6.36	40.87 $\pm$ 3.77	23.64 $\pm$ 1.76	23.98 $\pm$ 1.74	231.60 $\pm$ 14.73	40.43 $\pm$ 7.37
	Male	80.00 $\pm$ 8.36	53.50 $\pm$ 5.32	39.50 $\pm$ 4.35	23.25 $\pm$ 1.70	22.50 $\pm$ 3.00	218.75 $\pm$ 18.46	29.75 $\pm$ 9.21
	Statistic	*Z:1.675	*Z:1.462	*Z:0.797	*Z:724	*Z:1.025	*Z:1.483	**t:2.819
	p	0.094	0.144	0.425	0.469	0.305	0.138	0.032
Marital Status, Mean$\pm$ SD	Married	85.21 $\pm$ 5.25	57.75 $\pm$ 7.54	40.69 $\pm$ 3.64	23.56 $\pm$ 1.81	23.87 $\pm$ 1.90	231.10 $\pm$ 16.06	40.52 $\pm$ 6.88
	Single	85.22 $\pm$ 4.83	57.15 $\pm$ 3.75	41.02 $\pm$ 4.04	23.72 $\pm$ 1.67	24.00 $\pm$ 1.64	231.12 $\pm$ 13.24	39.22 $\pm$ 8.85
	Statistic	*Z:0.343	*Z:0.310	*Z:0.612	*Z:0.476	*Z:0.274	*Z:0.274	**t:0.840
	p	0.731	0.756	0.541	0.634	0.784	0.864	0.396
Education Level, Mean$\pm$ SD	High school	86.64 $\pm$ 5.22	58.00 $\pm$ 3.55	41.85 $\pm$ 3.91	24.14 $\pm$ 1.40	24.57 $\pm$ 0.93	235.21 $\pm$ 13.98	39.14 $\pm$ 6.54
	Bachelor's and Master's degrees	85.00 $\pm$ 5.04	57.45 $\pm$ 6.69	40.65 $\pm$ 3.76	23.54 $\pm$ 1.88	23.82 $\pm$ 1.88	230.48 $\pm$ 15.11	40.16 $\pm$ 7.86
	Statistic	*Z:1.610	*Z:1.237	*Z:1.308	*Z:1.102	*Z:1.410	*Z:1.728	*Z:0.392
	p	0.107	0.216	0.191	0.270	0.158	0.085	0.695
Intensive Care, Mean$\pm$ SD	2.Stage	86.62 $\pm$ 3.47	57.65 $\pm$ 3.02	40.78 $\pm$ 3.85	23.84 $\pm$ 1.56	24.06 $\pm$ 1.60	232.96 $\pm$ 11.11	40.00 $\pm$ 6.97
	3.Stage	84.60 $\pm$ 5.54	57.46 $\pm$ 7.37	40.83 $\pm$ 3.77	23.53 $\pm$ 1.84	23.86 $\pm$ 1.89	230.30 $\pm$ 16.40	40.04 $\pm$ 8.01
	Statistic	*Z:1.576	*Z:0.439	*Z:0.025	*Z:0.814	*Z:0.410	*Z:0.669	**t:0.025
	p	0.115	0.661	0.980	0.416	0.682	0.503	0.942
Number of Patient, Mean$\pm$ SD	2-3 patient	86.72 $\pm$ 3.39	56.85 $\pm$ 3.76	40.80 $\pm$ 3.79	23.56 $\pm$ 1.82	24.44 $\pm$ 1.08	229.59 $\pm$ 14.57	39.40 $\pm$ 7.58
	4-6 patient	84.64 $\pm$ 5.49	59.27 $\pm$ 3.76	40.86 $\pm$ 3.82	23.79 $\pm$ 1.61	23.72 $\pm$ 1.98	235.10 $\pm$ 15.58	41.65 $\pm$ 7.81
	Statistic	*Z:2.534	*Z:0.832	*Z:0.054	*Z:0.509	*Z:2.724	*Z:0.947	**t:1.346
	p	0.042	0.409	0.957	0.611	0.034	0.344	0.211
Sleep hour, Mean$\pm$ SD	4-6 hours	85.50 $\pm$ 5.16	57.28 $\pm$ 3.45	41.11 $\pm$ 3.63	23.66 $\pm$ 1.86	23.80 $\pm$ 2.06	231.38 $\pm$ 14.05	40.73 $\pm$ 8.38
	7-10 hours	85.03 $\pm$ 5.05	57.68 $\pm$ 7.73	40.61 $\pm$ 3.89	23.60 $\pm$ 1.69	24.00 $\pm$ 1.62	230.11 $\pm$ 15.68	39.55 $\pm$ 7.20
	Statistic	*Z:0.341	*Z:0.037	*Z:0.603	*Z:0.377	*Z:0.008	*Z:0.750	**t:0.771
	p	0.543	0.970	0.547	0.706	0.994	0.453	0.402
Occurrence of a medical error, Mean$\pm$ SD	Yes	83.82 $\pm$ 4.76	55.84 $\pm$ 3.94	39.25 $\pm$ 3.80	23.12 $\pm$ 2.05	23.69 $\pm$ 2.11	225.74 $\pm$ 13.21	40.10 $\pm$ 7.52
	No	86.04 $\pm$ 5.10	58.51 $\pm$ 7.26	41.74 $\pm$ 3.48	23.92 $\pm$ 1.50	24.06 $\pm$ 1.59	234.28 $\pm$ 15.16	39.98 $\pm$ 7.82
	Statistic	*Z:3.027	*Z:2.728	*Z:3.312	*Z:2.106	*Z:739	*Z:3.539	*Z:0.090
	p	0.002	0.006	0.001	0.035	0.739	0.0001	0.0929

SD: Standard Deviation, * Z: Mann-Whitney U test, **t: Independent t test.

No relationship was found between the mean METSN scores and the Excessive Workload Scale among nurses working in ICUs (Table 5).

Table 5. The Relationship Between the Excessive Workload Scale and the METSN Subscales and Total Score

Medical Error Tendency Scale in Nursing's Sub-Scales		Excessive Workload Scale
Medication and transfusion practices sub-scale	r	0.027
	p	0.783*
Hospital Infection Sub-scale	r	0.105
	p	0.287*
Patient Monitoring and Material Safety Sub-scale	r	-0.048
	p	0.628*
Falls sub-scale	r	-0.065
	p	0.508*
Communication sub-scale	r	-0.134
	p	0.174*
Medical Error Tendency Scale in Nursing (Total)	r	0.018
	p	0.857*

r: Pearson correlation analysis; *: $p > 0.05$.

DISCUSSION AND CONCLUSION

This study found that gender, marital status, education, ICU level, number of patients cared for, and sleep duration did not influence intensive care nurses' propensity to make medical errors. Whilst some studies have found no significant difference in the propensity for medical errors based on gender,^{15,16} one study identified a statistically significant difference between nurses' age, years of service in the profession, and years of service in intensive care, and their mean scores on the METSN.¹⁷ 37.1% of the nurses participating in the study had made medical errors. 53.1% of nurses working in different areas of hospitals (n=390) had previously made a medical error.⁷ In another study, the rate of medical errors was 54.2%.¹⁸ In a study involving paediatric nurses, it was found that 61% of nurses had encountered a medical error.¹⁹ This study found that the rate of medical errors among intensive care nurses was lower than that of nurses working in other departments. This may be explained by the fact that nursing care in ICUs is delivered using checklists as part of patient safety protocols.

In this study, the top three factors contributing to medical errors among intensive care nurses were: long shift duration (88.4%), misunderstanding of physicians' orders (64.0%), and communication problems within the team (56.5%). A study found a statistically significant association between working overtime and attitudes towards medical errors.¹¹ In a study conducted with intensive care nurses, it was found that 65 per cent of patients in ICUs on both night and day shifts were highly dependent, and that as the level of patient dependency increased, so did the workload; furthermore, the workload was found to be higher on night shifts than on day shifts. It was found that for a nurse caring for two patients in the high-dependency group during a 12-hour shift, the workload exceeded 12 hours.²⁰ In another study, it was found that 68.1 per cent of nurses had made medication administration errors in the past 12 months, and that these errors were attributable to factors such as insufficient work experience and night shifts.²¹ A further study found that the propensity for medical errors decreased as nurses' level of professionalism increased.²² For this reason, assigning nurses—particularly those who will work in intensive care units—to such units only after they have developed their clinical skills in other areas will be effective in reducing medical errors.

In this study, 'communication problems within the team' emerged as the third leading cause of medical errors. The International Patient Safety Goals (IPSGs) have six goals. The second of the six goals is 'Improve effective communication.'²³ Furthermore, the WHO has set out strategic objectives in its "Global Patient Safety Action Plan 2021–2030" with the aim of improving patient safety. These goals include ensuring a continuous flow of information to improve care processes.²⁴ In this study, the mean score on The METSN was (231.11±14.98). This mean score is higher than those reported in studies involving nurses in different fields (223.63±12.83),¹⁰ (227.12±15.06),¹⁹ (224.88± 19.65),²⁵ (229.29±15.32),²⁶ (230.30±15.59),²⁷ that is, the tendency to make medical errors is lower. A large-scale score indicates that the propensity for medical errors is lower than in other areas. This suggests that the lower propensity for medical errors among intensive care nurses, as well as among those working in other areas, is attributable to established protocols that ensure patient safety. There is a statistically significant difference in the mean scores on the 'Medication and transfusion practice' and 'Communication' sub-scales, depending on the number of patients nurses care for ($p < 0.05$). Nurses caring for 4–6 patients have statistically

significantly lower mean scores on the 'Medication and transfusion practice' and 'Communication' sub-scales compared with nurses caring for 2–3 patients ($p < 0.05$), and are more prone to making medical errors. These sentences "According to the results of Turkey's National Safety Reporting System (GRS), an assessment of medical errors reveals that they are ranked as follows: laboratory errors in first place, surgical errors in second place, and medication errors in third place. Incorrect dosage orders rank first among the ten most common medication errors (15.94 per cent). This type of medical error is followed by incorrect medication orders (10.69 per cent) and incorrect medication preparation (6.89 per cent).²⁸ The fact that treatments in UCUs are predominantly intravenous, combined with the similarity in the colours and labelling of ampoules, can lead to medication errors. Reducing the number of patients per nurse in ICUs is a key measure to both improve the quality of care and prevent medical errors.²⁰ In a study conducted with surgical intensive care nurses in Türkiye, a moderate negative correlation (0.381) was found between alarm fatigue and the tendency for medical error.²⁹ Intensive care nurses who committed medical errors scored statistically significantly lower than those who did not commit medical errors on all sub-scales of the METSN, with the exception of the Communication sub-scale, and on the mean total scale scores ($p < 0.01$); consequently, they exhibited a higher tendency to commit medical errors. Nurses who commit medical errors pose a risk of recurrence. In this context, there is a need for evidence-based methods within healthcare organizations to prevent medical errors. Research into patient safety and medical errors has shown a significant increase since 2004, reaching its peak in 2021.³⁰ A review article examined 464 studies and found that ready-to-use syringes, nurse training programmes and protocol-based programme design were the most effective methods for reducing medication administration errors by nurses.³¹ A study conducted in Finland found that the effectiveness of nurse managers in the workplace is linked to nurses' job satisfaction, patient satisfaction, and medical errors; the study emphasized that nurse managers should focus on enhancing patient-centered care and patient safety.³²

This study found no association between intensive care nurses' workload and their propensity for medical errors ($p > 0.05$). In a study conducted with nurses ($n: 215$) working at a hospital in Istanbul, no association was found between their workload and their propensity for medical errors.³³ In this study, the mean scores on the excessive workload scale for female intensive care nurses were found to be statistically significantly higher than those for male nurses. The fact that male nurses have a lower workload in ICUs than female nurses may lead to a lower propensity for medical errors. A study conducted in five public hospitals ($n: 289$) found that male and single nurses were less prone to making medical errors.¹⁷ No relationship was found between shift type and perceived nursing workload in ICUs.³⁴

There are two limitations to this study. First of all, judgments about causality cannot be drawn from the descriptive and correlational design. Second, the results' generalization is constrained by the single-center design.

In conclusion, this study found no correlation between nurses' workload and their propensity to make medical error tendency. A qualitative research design will be effective in identifying factors that have not been recognized to date and that increase the likelihood of a tendency toward medical errors.

Ethics Committee Approval: This study was approved by the Izmir Bakırçay University Non-Interventional Clinical Ethics Committee (Date: 25.03.2021, decision no:232). All procedures complied strictly with the ethical principles of the Declaration of Helsinki. Participants were provided with comprehensive information about the study, and written and verbal consent was obtained.

Conflict of Interest: No conflict of interest was declared by the authors.

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