e-ISSN:2687-2145

BANDIRMA ONYEDİ EYLÜL ÜNİVERSİTESİ SAĞLIK BİLİMLERİ VE ARAŞTIRMALARI DERGİSİ
BANU Journal of Health Science and Research

DOI: 10.46413/boneyusbad.1494699 ***Özgün Araştırma / Original Research***

The Relationship Between Nurses' Evaluation of Working Environments and Tendency to Medical Error

Hemşirelerin Çalışma Ortamlarını Değerlendirmeleri ile Tıbbi Hataya Eğilim Düzeyleri Arasındaki İlişki

Cihan Volkan KIZILKEÇİ [1] **Fatma ER** [2]

[1] *Nurse, Siverek Public Hospital, Şanlıurfa*

[2] *PhD, Assist. Prof., Inönü University, Faculty of Nursing, Malatya*

Sorumlu yazar / Corresponding author

Fatma ER

fatma.er@inonu.edu.tr

Geliş tarihi / Date of receipt: *03.06.2024*

Kabul tarihi / Date of acceptance: *27.05.2025*

Atıf / Citation: Kızılkeçi, C. V., Er, F. (2025). The relationship between nurses' evaluation of working environments and tendency to medical error. *BANÜ Sağlık Bilimleri ve Araştırmaları Dergisi*, *7*(2), 362-372. doi: 10.46413/ boneyusbad.1494699

* This manuscript was produced from the thesis titled "The Effect of Nurses' Evaluations of Their Work Environments on Their Levels of Tendency to Medical Errors", which was completed in 2023.

ABSTRACT

Aim: *The aim of this study is to determine the relationship between nurses' evaluations of their work environment and levels of tendency towards medical errors.*

Material and Method: *The population of this relational descriptive study consisted of nurses working in Sanlıurfa province a University Hospital. Since the study aimed to cover the entire population, no sample size was calculated and in the research, no any sample selection method was used. The research was completed with 219 nurses who participated in the research voluntarily. Data were collected using the "Personal Information Form", "Practice Environment Scale-Nursing Work Index" and the "Medical Error Tendency Scale in Nursing".*

Results: *The nurses' "Practice Environment Scale-Nursing Work Index" total mean score was calculated as 2.3 ± 0.57, suggesting that their attitudes towards work environment was moderate. In addition, the nurses' "Medical Error Tendency Scale" in Nursing total mean score was calculated as 227.86±28.66, suggesting that they had low medical error tendency. A weak positive relationship was found between the nurses' "Practice Environment Scale-Nurse Work Index" and "Medical Error Tendency Scale in Nursing" total mean scores.*

Conclusion: *The nurses' "Practice Environment Scale-Nursing Work Index" total mean score was calculated as 2.3 ± 0.57, suggesting that their attitudes towards work environment was moderate. In addition, the nurses' "Medical Error Tendency Scale" in Nursing total mean score was calculated as 227.86±28.66, suggesting that they had low medical error tendency. A weak positive relationship was found between the nurses' "Practice Environment Scale-Nurse Work Index" and "Medical Error Tendency Scale in Nursing" total mean scores.*

Keywords*: Nurses, Medical error tendency, work environment*

ÖZET

Amaç: *Bu araştırmanın amacı, hemşirelerin çalışma ortamlarını değerlendirmeleri ile tıbbi hataya eğilim düzeyleri arasındaki ilişkiyi belirlemektir.*

Gereç ve Yöntem*: İlişkisel tanımlayıcı türde yapılan bu araştırmanın evrenini, Şanlıurfa ilinde bir Üniversite Hastanesi'nde çalışan hemşireler oluşturmaktadır. Araştırmada evrenin tamamına ulaşılması amaçlandığından, örneklem büyüklüğü hesaplanmadı ve herhangi bir örneklem seçim yöntemi kullanılmadı. Araştırmaya gönüllü olarak katılan 219 hemşire ile araştırma tamamlandı. Veriler, "Kişisel Bilgi Formu", "Hemşirelik İş İndeksi-Hemşirelik Çalışma Ortamını Değerlendirme Ölçeği" ve "Tıbbi Hataya Eğilim Ölçeği" ile toplandı.*

Bulgular: *Araştırmaya katılan hemşirelerin "Hemşirelik İş İndeksi Ölçeği" toplam puan ortalaması 2.3 ± 0.57 olarak hesaplanmış ve hemşirelerin çalışma ortamına yönelik değerlendirmeleri orta düzeyde saptandı. "Tıbbi Hataya Eğilim Ölçeği" toplam puan ortalaması 227.86 ± 28.66 olarak hesaplanmış ve hemşirelerin tıbbi hataya eğilim düzeylerinin düşük olduğu belirlendi. "Hemşirelik İş İndeksi-Hemşirelik Çalışma Ortamını Değerlendirme Ölçeği" ile "Tıbbi Hataya Eğilim Ölçeği" arasında pozitif yönde zayıf düzeyde önemli bir ilişki bulundu.*

Sonuç: *Hemşirelerin çalışma ortamlarını değerlendirmelerinin orta düzeyde, tıbbi hataya eğilimlerinin ise düşük düzeyde olduğu ve çalışma ortamı değerlendirmeleri olumlu yönde artıkça tıbbi hata yapma eğilimlerinin azaldığı belirlendi.*

Anahtar kelimeler: *Hemşireler, Tıbbi hataya eğilim, Çalışma ortamı*

INTRODUCTION

In today's world, the work environments where people spend a significant part of their lives have a substantial impact on individuals not only economically but also socially, mentally, and physically (Kocaman, Yürümezoğlu, Türkmen, Göktepe and İntepeler, 2017; Er & Sökmen, 2018). In this context, the work environment significantly influences employees' attitudes toward work and job outcomes (Kocaman et al., 2017; Er & Sökmen, 2018).

Healthcare professionals working in hospitals, including nurses, provide services in shift systems, intensive working hours, and challenging work environments that encompass life-threatening situations. This situation can adversely affect their physical and mental health and lead to undesirable outcomes such as medical errors (Aksoy & Polat, 2013; Şahin & Özdemir, 2015). Due to these errors, unwanted consequences such as short or long-term disabilities, interruptions in treatments, and even death can occur. Medical errors, a continuously increasing problem in the healthcare sector, are globally prevalent and are associated with adverse conditions in the work environment (Zhang et al., 2014; Kocaman et al., 2017).

Medical error is defined as an unexpected situation in which the application planned by the healthcare professional does not result as intended (Cebeci, Gürsoy & Tekingündüz, 2012; Er & Altuntaş, 2016; Sivrikaya & Kara, 2019). As nurses directly contact with patients, are the first personnel being consulted by patients for many problems, and are responsible for diverse dependent-independent tasks, their risk of making medical errors significantly increases (Cebeci et al., 2012; Şahin & Özdemir, 2015). Studies have indicated that the working conditions of nurses are related to patient outcomes such as length of stay and mortality, as well as nurse job outcomes such as job satisfaction, and retention in the institution (Heinen et al., 2013; Kocaman et al., 2017). In studies conducted in Turkey, nurses have generally reported insufficient to moderate levels of job satisfaction, retention, and turnover rates in the healthcare institutions where they work (Yürümezoğlu & Kocaman, 2016; Samur & İntepeler, 2017). According to a report by the World Health Organization, in many countries, predominantly in European Union countries, 8% to 12% of hospitalizations occur due to undesired situations such as medical errors (WHO, 2021).

The exact level of medical errors in Turkey has not been fully determined, but it is considered to be at a similar level to other countries worldwide (Cebeci et al., 2012; Er & Altuntaş, 2016). A study on tendencies toward medical errors found that 5.8% of nurses were involved in medical errors (Sivrikaya & Kara, 2019). Er and Altuntaş (2016) indicated that 13.7% of nurses had made a medical error in their professional life. “In Turkey, the Ministry of Health” has been using the Safety Reporting System (SRS) for error reporting since 2016. According to the 2016 SRS report, 75% of reported errors involved nurses. This result is thought to be due to the higher numerical representation of nurses and their more diligent reporting practices (SRS, 2022).

An insufficient number of studies have been conducted on this issue in Turkey, as evidenced by the literature reviews. Therefore, this study will contribute to the literature and suggests that the working conditions of nurses may influence their tendency toward medical errors.

MATERIALS AND METHODS

Study Aim and Type

This relational descriptive study was conducted to determine the relationship between nurses’ evaluations of their work environments and their tendencies towards medical error.

Research Questions

1. What is the level of nurses’ evaluation work environment?

2. What is the level of nurses' tendency toward medical errors?

3. Is there a difference between nurses' evaluations of their professional and descriptive characteristics and their work environment?

4. Is there a difference between nurses' descriptive and professional characteristics and their levels of tendency to medical errors?

5. Is there a relationship between nurses' evaluations of their work environments and tendency to toward medical errors?

Study Population and Sample

The population of the study consists of nurses working in inpatient and outpatient units providing general diagnosis-treatment and care services in Şanlıurfa province a University Hospital (N=450). Since the study aimed to cover the entire population, no sample size was

calculated and in the research, no any sample selection method was used. The research was completed with 219 nurses who volunteered to participate in the research. As a result of the post hoc power analysis conducted at the end of the research; the power of the research was found to be 0.99 with 5% type I error and 95% ability to represent the population.

Data Collection Tools

Data were collected using a "Personal Information Form", the "Practice Environment Scale-Nursing Work Index", and the "Medical Error Tendency Scale in Nursing".

Personal Information Form: This form was prepared by the researcher and includes questions related to the nurses' socio-demographic and work characteristics.

Practice Environment Scale-Nursing Work Index (PES-NWI): *The* scale was developed by Lake in the United States in 2002 (Lake, 2002) and adapted to Turkish by Türkmen et al. (Türkmen, Badır, Balcı and Topçu, 2011). It consists of 31 items and 5 subscales: "Nurse Participation in Hospital Affairs", "Nursing Foundations for Quality of Care," "Nurse Manager Ability, Leadership, and Support of Nurses", "Staffing and Resource Adequacy" and "Collegial Nurse–Physician Relations." A higher scale score indicates positive attitudes toward the working environment (Türkmen et al., 2011). The Cronbach's Alpha coefficient was 0.95 for the total scale, and ranged from 0.74 to 0.89 for the subscales (Türkmen et al., 2011). In this study, was found as 0.95 for the total scale the Cronbach Alpha coefficient of the scale sub-dimensions were found to be "Nurse Participation in Hospital Affairs" 0.89, "Nursing Foundations for Quality of Care," 0.86, "Nurse Manager Ability, Leadership, and Support of Nurses" 0.84, "Staffing and Resource Adequacy" 0.81 and "Collegial Nurse–Physician Relations" 0.74.

Medical Error Tendency Scale in Nursing (METSN): The scale was developed by Özata and Altunkan (2010) to measure nurses' levels of tendency to make medical errors. It consists of 49 items and 5 subscales: "Medication and Transfusion Practices," "Falling," "Hospital Infections," "Patient Monitoring/Material Safety," and "Communication" (Özata & Altunkan, 2010). The lowest and highest scores on the scale are 49 and 245, respectively. A higher scale score indicates a lower tendency of making medical errors, vice versa. The Cronbach's Alpha coefficient for the total scale is 0.95 (Özata & Altunkan, 2010). In this study was determined as 0.98 for the total scale the Cronbach Alpha coefficient of the scale sub-dimensions was determined as 0.97 for "Medication and Transfusion Practices", 0.89 for "Falling", 0.97 for "Hospital Infections", 0.95 for "Patient Monitoring/Material Safety" and 0.93 for "Communication".

Data Collection

The data were collected between September 2020 and January 2021 through face-to-face interviews with nurses in the hospitals where the study was conducted. After being informed about the research the data collection tools were distributed to nurses who agreed to participate in the study. Since it was the COVID-19 pandemic period when the data was collected, the researcher took the necessary precautions in terms of infection control while collecting the data. Within the scope of COVID-19 measures, necessary precautions such as masks, distance and hygiene rules were taken. In addition, nurses were informed and consent was obtained before the study.

Ethical Consideration

Ethical approval to conduct the study was obtained from the university non-interventional clinical research ethics board (Date: 28.07.2020 and Approval Number: 2020/982). Permission to use the scales in the study was obtained by e-mail from the owners of the scales. Written permission was also obtained from a university hospital to conduct the study.

Data Analysis

The "SPSS 25 (Statistical Program in Social Sciences) package program" was used for the analysis of research data. Non-parametric test methods were used for analysis, as the variables were not normally distributed. The "Mann-Whitney U" test was used for comparisons between independent binary groups, and the "Kruskal-Wallis" test was used for comparisons between multiple groups. The Spearman's Rank Correlation Coefficient was used to determine the relationship between independent variables.

RESULTS

In the study, 54.8% of the nurses were male, 58% were single, and 43.8% had bachelor's degree. Additionally, 94.5% hold the position of staff

nurse, and 48.9% worked in specialized units (such as dialysis, emergency, operating room, intensive care, etc.). The average age of the nurses was 27.13 ± 5.99 years, the average weekly working hours were 46.09 ± 9.67, the average years of experience in nursing were 5.93 ± 5.58, and the average years of working at the current hospital were 4 ± 3.61. In addition, 85.4% of the nurses reported to have not made a medical error before (Table 1).

Table 1. The Breakdown of Nurses' Descriptive and Professional Characteristics (n=219)

Descriptive and Professional Characteristics	n	%
Gender		
Female	99	45.2
Male	120	54.8
Marital Status		
Married	92	42.0
Single	127	58.0
Education Level		
Medical career college	87	39.7
Associate's degree	25	11.4
Bachelor's degree	96	43.8
Master's degree	11	5.0
Position		
Nurse	207	94.5
Clinic Head Nurse	12	5.5
Working Unit		
Internal Diseases Clinic	66	30.1
Surgical Clinic	46	21.0
Special Unit (Intensive care, operating room, emergency, dialysis, etc.)	107	48.9
Previous Medical Error Status		
Yes	32	14.6
No	187	85.4
	X ± SD	
Age	27.13 ± 5.99	
Weekly Working Hours	46.09 ± 9.67	
Work Experience	5.93 ± 5.58	
Work Experience in the Current Hospital	4 ± 3.61	

The nurses' PES-NWI total mean score was 2.3 ± 0.57. As their PES-NWI scores increased, their perceived work environment also increased, and their perceived work environment was moderate. In addition, the nurses' METSN total mean score was 227.86 ± 28.66. As their METSN mean score increased, their tendency to make medical errors decreased, or vice versa; and their tendency to make medical errors was low (Table 2).

Table 2. "Practice Environment Scale-Nursing Work Index" and "Medical Error Tendency Scale in Nursing" Average Scores

Scales and Sub-dimensions	Min-Max	X ± SD
Nursing Work Index (Total)	1-4	2.3 ± 0.57
Nurse Participation in Hospital Affairs	1-4	2.2 ± 0.65
Nursing Foundations for Quality of Care	1-4	2.39 ± 0.58
Nurse Manager Ability, Leadership, and Support of Nurses	1-4	2.21 ± 0.71
Staffing and Resource Adequacy	1-4	2.17 ± 0.7
Collegial Nurse–Physician Relations	1-4	2.57 ± 0.68
Medical Error Tendency Scale in Nursing (Total)	93-245	227.86 ± 28.66
Medication and Transfusion Practices	27-90	84.98 ± 9.51
Falling	12-60	55.82 ± 7.96
Hospital Infections	9-45	41.23 ± 6.49
Patient Monitoring/Material Safety	11-25	22.76 ± 3.41
Communication"	5-25	23.07 ± 3.71

A statistically significant difference was found the nurses' PES-NWI mean scores according to gender, marital status, education level and previous medical error status ($p<0.05$, Table 3). There was statistically significant a weak negative correlation between the nurses' PES-NWI total mean scores with age, years of nursing work experience. However, statistically significant a weak positive correlation between the nurses' PES-NWI total mean scores with weekly working hours.

Table 3. Comparison of "Practice Environment Scale-Nursing work Index" Average Score According to Nurses' Descriptive and Professional Characteristics (n=219)

Characteristics	**PES-NWI (Total Score) Mean ± SD**	**Test and p value**
Gender		
Female	2.19 ± 0.53	MWU=4689.500
Male	2.39 ± 0.59	**p=0.007***
Marital Status		
Married	2.09 ± 0.57	MWU=4108.000
Single	2.40 ± 0.56	**p= 0.000***
Education Level		
Medical career college	2.46 ± 0.6	
Associate's degree	2.21 ± 0.54	
Bachelor's degree	2.2 ± 0.53	KWX^2 =10.102
Master's degree	3.09 ± 0.46	**p=0.018***
Position		
Nurse	2.31 ± 0.57	MWU=882.500
Clinic Head Nurse	2.01 ± 0.42	p=0.092
Working unit		
Internal Diseases Clinic	2.21 ± 0.62	
Surgical Clinic	2.34 ± 0.57	
Special Unit (Intensive care, operating room, emergency, dialysis, etc.)	2.33 ± 0.54	KWX^2 =2.025 p= 0.363
Previous Medical Error Status		
Yes	2.07 ± 0.47	MWU=2165.000
No	2.33 ± 0.58	**p=0.013***
		Test and p value
Age		r= -0.226 **p=0.001***
Weekly Working Hours		r= 0.245 **p=0.032***
Work Experience		r= -0.219 **p=0.001***
Work Experience in the Current Hospital		r= -0.118 p=0.082

p<0.05*, MWU= Mann-Whitney U Test, KWX^2 = Kurskal Wallis Ki-Kare Test

A statistically significant was found the nurses' METSN mean scores according to marital status and previous medical error status ($p<0.05$, Table 4). There was statistically significant a weak negative correlation between the nurses' METSN total mean scores with age, years of nursing work experience and years of working at the same hospital ($p<0.05$). A weak positive correlation was found between the nurses' weekly working hours and METSN total mean score.

In addition there was statistically significant a weak positive correlation between the nurses' PES-NWI and METSN total mean scores ($p<0.05$, Table 5).

Table 4. Comparison of "Medical Error Tendency Scale in Nursing" Average Score According to Nurses' Descriptive and Professional Characteristics (n=219)

Characteristics	METSN (Total Score) Mean ± SD	Test and p value
Gender		
Female	229.59 ± 23.06	MWU=5753.00
Male	226.44 ± 32.59	p=0.675
Marital Status		
Married	224.04 ± 27.07	MWU=4653.500
Single	230.63 ± 29.56	**p= 0.007***
Education Level		
Medical career college	235.02 ± 16.42	
Associate's degree	212.48 ± 50.91	
Bachelor's degree	224.82 ± 28.44	KWX^2 =4.489
Master's degree	232.73 ± 23.15	p=0.213
Position		
Nurse	228.08 ± 28.61	MWU=1170.000
Chief nurse	224.17 ± 30.59	p=0.724
Working unit		
Internal Diseases Clinic	226.06 ± 33.66	
Surgical Clinic	236.05 ± 13.44	
Special Unit	225.26 ± 29.61	KWX^2 =4.052
		p= 0.132
Previous Medical Error Status		
Yes	214.25 ± 32.2	MWU=1776.500
No	230.19 ± 27.43	**p=0.001***
		Test and p value
Age		r= -0.292 **p=0.004***
Weekly Working Hours		r= 0.208 **p=0.002***
Work Experience		r= -0.238 **p=0.042***
Work Experience in the Current Hospital		r= -0.277 **p=0.009***

p<0.05*

Table 5. The Relationship Between "Practice Environment Scale-Nursing Work Index Scale" and "Medical Error Tendency Scale"

Scales	"Medical Error Tendency Scale" (Total Score)	
Practice Environment Scale-Nursing Work Index Scale (Total Score)	**r**	0.258
	p	**0.020***

r:"Spearman Korelasyon Analysis"**, p<0.05***

DISCUSSION

In the study, the nurses' attitudes toward working environment was moderate. Türkmen et al. (2011) found the participants' PES-NWI total mean score above the average. Lake (2002) determined the perceived work environment of healthcare professionals as moderate. Various researchers have also indicated that nurses' perceived work environment are at a moderate level in their studies (Topçu et al., 2016; Ulusoy & Polatkan, 2016; Bitek & Akyol, 2017; Nantsupawat et al., 2017; Kökcü & Terzi, 2018; Alan, Polat, Şen and Yıldırım, 2021). Another a study found the nurses' perceived work environment slightly above the average (Erdağı & Özer, 2015). This difference may be due to many factors, such as the institutional differences in the environment in

which nurses work, their individual expectations, and being assigned tasks outside of their job descriptions.

In addition, the nurses' medical error tendency was low. In other studies, has been stated that similar results have been found (Cebeci et al., 2012; Karacabay et al. 2020; Sivrikaya and Kara, 2019). Contrary to these studies, Şahin and Özdemir (2015) in their study with 210 nurses, found that nurses had a high medical error tendency. This difference may be because of the professional experience of nurses in these studies.

The present study found a significant difference the nurses' PES-NWI mean scores according to gender, where the males had higher scores. Similarly, Ulusoy and Polatkan (2016) reported that male nurses had higher PES-NWI scores. Erdağı and Özer (2015) found no significant difference in the nurses' perceived work environment according to gender. Whereas in a study conducted by Lale, female nurses had higher PES-NWI mean scores than male nurses (Lale, 2019). This difference may be because of the difference in the gender distribution percentage of nurses in these studies.

This study determined a statistically significant difference the nurses' PES-NWI mean scores according to education level, where those graduated from health vocational high school had higher scores than undergraduate nurses. Similar results have been reported in other studies (Ulusoy & Polatkan, 2016; Lale, 2019; Özbey, 2019). Some studies found no significant difference between the nurses' PES-NWI mean scores according to education level (Erdağı & Özer 2015; Ulusoy & Polatkan 2016). The fact that nurses with bachelor's degree have higher expectations for work environment considering their education level may suggest that their perceived work environment is lower than those of health vocational high school graduates.

A statistically significant difference was found the nurses' PES-NWI mean scores according to their previous medical error experiences, where those who had not previously experienced medical errors had higher scores. Similar results have been reported in other studies (Simonetti, Aiken and Lake, 2019; Smith, Plover, McChesney and Lake, 2019). The fact that nurses have not made medical errors before may suggest that they exhibit a more positive attitude towards the profession, leading them to perceive their work environment more positively.

A statistically significant negative weak relationship was found between the nurses' PES-NWI mean scores with age. Similar results are observed in other studies (Erdağı & Özer, 2015; Smith et al., 2019). This result may be because as their age increases, nurses gain more professional experience, enabling them to perceive their work environment more objectively. However, Özbey and Ulusoy & Polatkan determined no significant difference in between the nurses' PES-NWI mean scores according to age (Ulusoy & Polatkan, 2016; Özbey, 2019).

In addition, a statistically significant difference was found between the nurses' METSN mean scores according to marital status, where single nurses had a lower tendency toward medical errors. Türe (2019) also determined that single nurses working in intensive care units had a lower tendency toward medical errors. However, some studies have reported no significant difference between the METSN scores of married and single nurses (Baştürk, 2019; Sivrikaya & Kara, 2019). This situation may be because the majority of single nurses in the hospital where the study was conducted is younger and have less professional experience, leading them to be more cautious and attentive.

A statistically significant difference was found between nurses' mean METSN scores according to their previous medical error status. Nurses who reported never having made a medical error had a lower tendency to make medical errors. Similar results have been reported in other studies, showing that nurses who have never made a medical error have a lower tendency to make a medical error. Similar results have been reported in other studies, indicating that nurses who have not committed medical errors previously tend to have lower tendencies toward medical errors (Baştürk, 2019; Konatake, 2020; Öncan, 2020). However, Kandemir and Yüksel (2020) found no significant difference between the nurses' METSN scores according to history of committing medical errors. This difference may be due to the different clinics where the nurses work and the different sample sizes.

A statistically significant negative relationship was found between the nurses' medical error tendency and age, and their tendency to medical errors decreased with age. Similarly, Öncan (2020), in their study with pediatric nurses, stated that the tendency of nurses to make medical errors decreases as the average age increases. Kandemir

and Yüksel (2020) determined that the tendency of nurses over the age of 35 to make medical errors was significantly lower. It is considered that as the age of nurses increases, their professional experience, knowledge and skills also increase and their tendency to make medical errors decreases. On the other hand, some studies found no significant difference between the nurses' METSN mean scores according to age (Baştürk, 2019; Sivrikaya & Kara, 2019; Türe, 2019; Konatake, 2020; Koralay, 2021).

A statistically significant positive weak relationship was found between the nurses' METSN scores and weekly working hours. Cebeci et al. determined a statistically significant positive weak relationship between the nurses' working hours and medical error scores (Cebeci et al. 2012). The high working hours of nurses may cause carelessness due to physical and mental fatigue and may lead to an increase in their tendency to make medical errors. In some studies found no significant difference between the nurses' METSN scores and weekly working hours (Karacabay et al. 2020; Konatake, 2020; Koralay, 2021).

In the study, a statistically significant negative relationship was found between the nurses' tendency towards medical errors and years of work experience, where the tendency towards medical errors decreased as the years of work experience increased. Similarly, many studies in the literature show that the tendency of nurses to make medical errors decreased as their years of service increased (Türe 2019; Karacabay et al. 2020). On the other hand, Koralay (2021) reported that surgical nurses with less than one year of work experience had a lower tendency to make medical errors. The results of this study suggest that as nurses' years of experience increase, their professional experience, knowledge and skills increase and their tendency to make medical errors decreases.

A statistically significant positive weak relationship was found between the nurses' PES-NWI and METSN total mean scores. Lake et al. (2019) conducted a meta-analysis conducted comprising 17 articles with a total of 165,024 nurses from 21 samples and determined that better work environments lead to fewer negative nurse outcomes. Reem N. Al-Dossary in 2022, in their study on nurses in Saudi Arabian hospitals, emphasized that improving factors related to nursing work environment is essential to reduce negative patient outcomes (Al-Dossary, 2022). Mihdavi et al. (2020), in their study involving 570 nurses, highlighted the importance of focusing on specific dimensions of nursing work environment, such as nurse participation and progress. Additionally, Malinowska-Lipień et al. indicated that factors in the work environment, such as appropriate staffing, and professional autonomy, are significantly associated with positive work outcomes (Malinowska-Lipień, 2021).

In hospitals, nurses occupy a crucial position as they spend the most time with patients and contribute significantly to the active workforce. Nurses play a key role in planning patient care, ensuring accessible material safety, and facilitating effective communication. Therefore, the active participation and representation of nurses in management are considered essential to reduce various adverse situations, including medical errors. Effective communication between nurses and physicians, as well as nurse-nurse interactions, holds significant importance in the planning and implementation of patient treatment and care (Çelik Durmuş and Yıldırım, 2018). In this context, it is considered that both the effective communication and care/treatment planning practices among nurses and their positive interactions with physicians can lead to favorable patient outcomes and prevent the occurrence of adverse results such as medical errors.

Limitations of the Research

The results of the study are limited to the self-reports of the participating nurses. In addition, another limitation is that the data of this study was collected during the COVID-19 period and the research was conducted in a single center.

CONCLUSION

The study revealed that nurses had a moderate attitude of their work environment, and variables such as "gender, age, marital status, education level, previous medical error experience, weekly working hours, and years of experience" significantly influenced their perceived work environment.

The study also found that the nurses had a low tendency toward medical errors, and marital status, age, weekly working hours, history of committing medical error, years of work experience, and tenure in the same hospital were identified as factors affecting their tendency towards medical errors.

According to the results, there was "a weak positive correlation" between the nurses' evaluation work environments and tendency toward medical errors.

In line with these results, it is recommended that hospital management implement practices to positively enhance nurses' assessments of their work environments. Developing and implementing policies in this regard, as well as providing opportunities for nurses to participate in management and leadership development, are suggested. In addition, identifying factors influencing nurses' tendencies toward medical errors and increasing practices to reduce such tendencies based on the obtained data are also recommended.

Ethics Committe Approval

Ethics committee approval was received for this study from the İnönü University Ethics Committee (Date: 28.07.2020, and Approval Number: 2020/982).

Author Contributions

Idea/Concept: C.K., F.E.; Design: F.E.; Supervision/Consulting: F.E.; Analysis and/or Interpretation: C.K., F.E.; Literature Search: C.K., F.E.; Writing the Article: C.K., F.E.; Critical Review: C.K., F.E.

Peer-review

Externally peer-reviewed.

Conflict of Interest

The authors have no conflict of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

REFERENCES

Aksoy, N., Polat C. (2013). Job satisfaction and affecting factors of surgical unit nurses of three different hospitals in a province in Mediterranean Region. *Journal of Research and Development in Nursing*, 10(2): 45- 53.

Alan, H., Polat, Ş., Şen, T. H., Yıldırım, Ö. T. (2021). Evaluation of the working environment of the nurses working in a university hospital. *Journal of Health and Nursing Management*, 8(2): 203-213. doi:10.5222/SHYD.2021.92905

Al-Dossary, R. N. (2022). The effects of nursing work environment on patient safety in Saudi Arabian hospitals. *Frontiers in Medicine (Lausanne)*, 9:872091. doi: 10.3389/fmed.2022.872091

Baştürk, H. (2019). Determination of Medical Errors Tendency and the Factors Affecting of Nurses. *Institute of Health Sciences, Department of Nursing*, Master's Thesis. Celal Bayar University, Manisa.

Bitek, D. E., Akyol, A. (2017). The evaluation of relationsiıp between job satisfaction and perceptions relating to working environment of intensive care nurses. *Journal of Health and Nursing Management*, 21(1): 1-6.

Cebeci, F., Gürsoy, E., Tekingündüz, S. (2012). Determining the level of tendency in malpractice among nurses. *Journal of Anatolia Nursing and Health Sciences*, 15 (3): 188-196.

Çelik Durmuş, S., Yıldırım, A. (2018). Collaboration Amongst Nurses. *Journal of Health and Nursing Management*, 5(3): 210-216. doi:10.5222/SHYD.2018.210

Er, F., & Altuntaş, S. (2016). Determination of nurses' viewpoints about medical errors and their causes. *Journal of Health and Nursing Management*, 3(3): 132-139. doi: 10.5222/SHYD.2016.132

Er, F., Sökmen, S. (2018). Investigation of the working conditions of nurses in public hospitals on the basis of nurse-friendly hospital criteria. *International Journal of Nursing Sciences*, 5(2): 206-212. doi:10.1016/j.ijnss.2018.01.001

Erdağı, S., Özer, N. (2015). Examining practice environments, patient safety culture perceptions and burnout status of nurses working in surgical clinics. *Journal of Anatolia Nursing and Health Sciences*, 18(2): 94-106.

Heinen, M. M., Achterberg, T. V., Schwendimann, R., Zander, B., Matthews, A., Kózka, M., ... Schoonhoven, L. (2013). Nurses' intention to leave their profession: A cross sectional observational study in 10 European countries. International Journal of Nursing Studies, 50(2): 174-184. doi: 10.1016/j.ijnurstu.2012.09.019.

Kandemir, A., Yüksel, S. (2020). Determination of surgical nurses' attitudes and trends towards medical Errors. *Journal of Anatolia Nursing and Health Sciences*, 23(2): 287-297. doi: 10.17049/ataunihem.659960

Karacabay, K., Savcı, A., Çömez, S., Çelik, N. (2020). Determination of the relationship between workload perceptions and medical error tendencies of surgical nurses. *Mersin University Journal of Health Sciences*, 13(3): 404-417. doi:10.26559/mersinsbd.686481

Kocaman, G., Yürümezoğlu, H.A., Türkmen, E., Göktepe, N., İntepeler, Ş.S. (2017). The development of healthy work environment standards for nurses in Turkey. *Journal of Research and Development in Nursing*, 15(1): 30-38. doi:10.5222/HEAD.2018.030

Konatake O. (2020). The Relationsiıp Between Professional Commitment and Medical Error Tendency in Nurses. *Institute of Health*

Sciences, Department of Fundamentals *Nursing*, Master's Thesis. Cumhuriyet University, Sivas.

Koralay, G. (2021). Knowledge, Tendency, Attitudes and Opinions of Nurses Working in a Surgical Unit Regarding Medical Error: A Mixed Method Study. *Institute of Health Sciences, Surgical Nursing Program*. Doctoral Thesis, Hacettepe University, Ankara.

Kökcü D. Ö., Terzi B. (2018). Investigation of care nurses in the intensive work index-working environment and burnout levels. *Journal of Intensive Care Nursing*, 22(2): 66-72.

Lake, E. T. (2002). Development of the practice environment scale of the nursing work index. *Research Nursing & Health*, 25(3):176-188. doi: 10.1002/nur.10032

Lake, E. T., Sanders, J., Duan, R., Riman, K.A., Schoenauer, K.M., Chen, Y. (2019). A meta-analysis of the associations between the nurse work environment in hospitals and 4 sets of outcomes. *Medical Care*, 57(5): 353-361. doi: 10.1097/MLR.0000000000001109

Lale, M. B. (2019). Nurses' Attitudes Towards Work Environment and Their Clinical Governance Climate Levels. *Institute of Health Sciences, Department of Nursing*, Master's Thesis. Marmara University Istanbul.

Malinowska-Lipień, I., Micek, A., Gabryś, T., Kózka, M,. Gajda, K., Gniadek, A., … Squires, A. (2021). Impact of the work environment on patients' safety as perceived by nurses in Poland- A Cross-Sectional Study. *Internetional Journal of Environmental Research and Public Health*, 18(22): 12057. doi: 10.3390/ijerph182212057

Mihdawi, M., Al-Amer, R., Darwish, R., Randall, S., Afaneh ,T. (2020). The influence of nursing work environment on patient safety. *Workplace Health & Safety*, 68(8): 384-390. doi: 10.1177/2165079920901533

Nantsupawat, A., Kunaviktikul, W., Nantsupawat, R., Wichaikhum, O.A., Thienthong, H., Poghosyan, L. (2017). Effects of nurse work environment on job dissatisfaction, burnout, intention to leave. *International Nursing Review*, 64(1): 91-98. doi: 10.1111/inr.12342

Öncan, N. (2020). Investigate the relationship between burnout levels and tendency to make malpractice among pediatric nurses working in Izmir. *Institute of Health Sciences, Department of Nursing*, Master's Thesis. Celal Bayar University, Manisa.

Özata, M., Altunkan, H. (2010). Development of malpractice trend scale in nursing and validity and reliablity analysis. Editor: Kırılmaz, H. II. Proceedings of the International Congress on Performance and Quality in Health. Ankara: Ministry of Health Publications. 415-431.

Özbey, F. (2019). The Relationship Between Work Environment Characteristics and Nurses' Job Performance and Patients' Care Satisfaction. *Istanbul University Cerrahpasa Institute of Graduate Studies, Nursing Management* Master Thesis, Istanbul.

Samur, M., & İntepeler Ş.S. (2017). Factors influencing nurses' perceptions of occupational safety. *Archives of Environmental & Occupation Health*, 72(1): 45-52. doi: 10.1080/19338244.2016.1156045

Simonetti, M., Aiken, L H., Lake, E. T. (2019). Nursing in Chilean Hospitals: A research agenda to inform health policies and improve patient outcomes. *Hispanic Health Care International*, 17(2): 79-88. doi: 10.1177/1540415318819475

Smith, J. G., Plover, C.M., McChesney, M.C., Lake, E.T. (2019). Rural hospital nursing skill mix and work environment associated with frequency of adverse events. *SAGE Open Nursing*, 14(5): 2-5. doi: 10.1177/2377960819848246

Sivrikaya, K. S., Kara Ş. A. (2019). Determination the tendency of the nurses to make medical mistake. *Balıkesir Health Sciences Journal*, 8(1): 7-14.

Şahin, A. Z., Özdemir, K. F. (2015). Examination of the tendency for nursing malpractice and affecting factors. *Journal of Research and Development in Nursing*, 12(3): 210-214. doi:10.5222/HEAD.2015.210

Topçu, I., Türkmen, E., Badır, A., Göktepe, N., Miral, M., Albayrak, S., … Özcan, D. (2016). Relationship between nurses' practice environments and nursing outcomes in Turkey. *International Nursing Review*, 63(2): 242-249. doi: 10.1111/inr.12247

T.R. Ministry of Health Security Reporting System. (2022). https://grs.saglik.gov.tr (Accessed Date: September 1, 2022).

Türe, F. (2019). The effect of problem solving skills on medical error tendence of nurses working in intensive care ünits. *Institute of Health Sciences, Department of Nursing*, Master's Thesis. Istanbul Medipol University, Istanbul.

Türkmen, E., Badır, A., Balcı, S., Topçu, S.A. (2011). The adaptation of the practice environment scale of the nursing work index into Turkish: Reliability and Validity Study. *Journal of Research and Development in Nursing*, 5-20.

Ulusoy, H., Polatkan, R. (2016). Assessment of the nurses' work environment using the nursing work index scale. *Cumhuriyet Medical Journal*, 38(4): 246–257. doi: 10.7197/cmj.v38i3.5000196868

WHO, (2021). Patient Safety. http://www.euro.who.int/en/health-topics/Healthsystems/patient-safety/data-and-statistics (Accessed Date: January 15, 2021).

Yürümezoğlu, A.H., Kocaman, G. (2016). Predictors of nurses' intentions to leave the organisation and the profession in Turkey. *Journal of Nursing Management*, 24(2):235-243. doi: 10.1111/jonm.12305

Zhang, L. F., You, L. M., Liu, K., Zheng, J., Fang, J. B., Lu, M. M., … Bu, X. Q. (2014). The association of Chinese hospital work environment with nurse burnout, job satisfaction, and intention to leave. *Nursing Outlook*, 62(2): 128-137. doi: 10.1016/j.outlook.2013.10.010