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The relationship between professional commitment and medical error tendency in nurses; A cross-sectional study

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Abstract

This study was conducted to examine the potential relationship between the degree of professional commitment and the tendency to medical errors among nurses. This research surveyed 248 nurses in a state hospital in Gaziantep, Turkey, using a cross-sectional, correlational design between September and November 2019. The collection of data was executed through the utilization of the Descriptive Features Form, the Medical Error Tendency Scale (METSN), and the Nursing Professional Commitment Scale (NPCS). Among participants, 60.5% reported not witnessing medical errors, and 78.2% reported not making errors. Nurses' professional commitment was above average, and their medical error tendency was low. Although a positive correlation was found between NPCS and METSN scores ($r=0.17$, $p=0.005$), higher scores on the METSN scale indicate lower medical error tendency. Therefore, this positive statistical correlation reflects a negative association between professional commitment and the tendency to make medical errors. Higher professional commitment is associated with a lower tendency toward medical errors. Educational programs, supportive activities, and legal regulations are recommended to strengthen professional commitment and decrease error risk.

Keywords: Professional commitment, medical error tendency, nursing, malpractice

Introduction

A profession is generally defined as a field of work that requires specialized knowledge, skills, and competencies acquired through formal education and guided by specific duties, responsibilities, and ethical principles [1,2]. Within this framework, professional commitment is considered a core characteristic of professional identity and practice. Povalko highlights that elements such as specialized knowledge, societal service, ethical standards, and commitment to the profession are essential for a job to be classified as a profession [3]. Several studies similarly emphasize that professional commitment constitutes a key criterion influencing both professional identity and performance in healthcare settings [4]. The nursing profession, which in the past was a field where knowledge and skills were developed through experience and traditional methods, has now evolved into a professional occupation practiced in light of scientific data [5]. Nursing is not a profession that can be practiced solely for economic gain without commitment to the profession [6]. Professional

commitment represents a combination of belief in professional principles, willingness to work diligently, persistence in the career, and appreciation of the inherent value of the profession [7]. In this context, the commitment of nurses to their profession is important as they are professionals who assess the current condition of the individual they care for, make decisions to meet their needs, plan initiatives, and implement them [8]. Insufficient professional dedication and limited competence among nurses may heighten their risk of committing medical errors and harming patients [9,10]. The World Health Organization (WHO) defines a medical error as an action or inaction that exposes the patient to potential harm [11]. Each year, a significant number of people are negatively affected and harmed due to medical errors they experience [12].

In addition to their primary roles in direct patient care, nurses' active involvement in the diagnosis and treatment process, along with challenging working conditions, can increase the potential for medical errors. Furthermore, it is a well-known fact

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that nursing services provided with a holistic and humanistic approach can prevent medical errors caused by other healthcare professionals [13,14]. It is important to prevent or minimize the social, psychological, and economic problems caused by medical errors. In this context, it is necessary to identify the factors that cause nurses to make medical errors and to conduct studies on this issue. With the increasing need for healthcare services, the need for nursing services is also increasing day by day. Nurses' motivation and job satisfaction are decreasing due to reasons such as insufficient number of nurses, excessive workload, unfavorable working conditions, long working hours, fatigue, and too many dependent, semi-dependent, and independent roles [15,16]. Parallel to this, their level of commitment to the profession is also decreasing, and the risk of medical error tendency is increasing [9,10].

Despite growing global interest in patient safety, there are limited studies examining the relationship between nurses' professional commitment and medical error tendencies. Existing studies mostly address these concepts separately, leading to fragmented evidence and an inability to understand the decisive role of professional commitment on error behaviors. This study is one of the few that simultaneously examines both variables and tests their relationship using an integrated analytical approach. It thus fills an important gap in the literature and sheds light on the development of clinical practices and patient safety initiatives by offering unique contributions to nursing science.

The research questions are as follows:

1. What is the level of nurses' commitment to their profession?
2. What is the level of nurses' tendency to make medical errors?
3. How does the level of professional commitment among nurses relate to their tendency to make medical errors?

Material and Methods

Design

This research employed a cross-sectional, correlational design to examine the association between nurses' professional commitment and their tendency to make medical errors. The study was carried out between September 1 and November 1, 2019, in a training and research hospital located in the city center of Gaziantep. The hospital accommodates 610 beds and includes several specialized departments.

Sample

This research targeted 430 nurses employed at a public hospital in Gaziantep. The sample size was determined to be 204, with 95% confidence interval and 5% margin of error, using G*Power 3.1 program. However, the study attempted to reach all nurses. A total of 32 nurses working in outpatient clinics and 53 nurses employed in administrative units were excluded from the study because they were not directly involved in patient care. Additionally, 35 nurses were unavailable due to annual or sick leave, and 45 nurses declined to participate. Furthermore, 17 nurses who did not fully complete the data collection forms were excluded from the final analysis. The study sample comprised 248 nurses who satisfied the inclusion criteria and willingly took

part in the research. Based on the data obtained after the study, considering the correlation coefficient between professional commitment and the tendency to make medical errors, the study's power was determined to be 99.9% when calculated with $\alpha=0.05$ and a sample size of 248.

Inclusion criteria:

Actively working night and day shifts during the study period,
Not being on leave, sick leave, etc.
Voluntarily agreeing to participate in the study.

Exclusion criteria:

Being on leave or sick leave during the study period,
Refusing to participate in the study,
Incomplete completion of forms,
Working in outpatient clinics or administrative units.

Instruments

The "Descriptive Features Form", "Nursing Professional Commitment Scale (NPCS)," and "Medical Error Tendency Scale in Nursing (METSN)," were employed as instruments for data collection in the study.

Descriptive Features Form

The descriptive features form prepared by the researchers consists of 12 questions. The form prepared by researchers through a literature review.

Nursing Professional Commitment Scale (NPCS)

The NPCS, originally developed by Lu et al. (2000), includes 26 items distributed across three subscales. The total score ranges from 26 to 104, with higher scores reflecting stronger professional commitment [17]. The Turkish adaptation of the scale was validated and tested for reliability by Çetinkaya, Özmen, and Temel (2015), reporting a Cronbach's alpha of 0.90 [3]. In the original study, the Cronbach's alpha was 0.94. In the current research, the scale demonstrated a Cronbach's alpha of 0.67.

Medical Error Tendency Scale in Nursing (METSN)

Developed by Özata and Altunkan (2010), the METSN consists of 49 items rated on a 5-point Likert scale to assess nurses' tendency to medical errors [18]. An important feature of the scale is that total scores are interpreted in reverse: Higher METSN scores indicate a lower tendency for medical errors. Conversely, lower scores indicate a higher risk of errors. This feature is critical for the correct interpretation of all relationships reported in the study. The scale's original Cronbach's alpha was 0.95, and in this study, its internal consistency reliability was found to be 0.97.

Data collection

During data collection, participants were informed about the study's purpose and procedures, and written consent was obtained from those who agreed to participate. The questionnaires were distributed individually in sealed envelopes in the nurses' work units and collected in the same manner on the same day. Completion time for the forms was approximately 20–30 minutes.

Data analysis

Analysis was performed using SPSS version 22.0 software. Scale reliability was assessed using Cronbach's alpha coefficients, and descriptive data were summarized with frequencies, percentages, means, and standard deviations. To evaluate the distributional characteristics of the data, the Kolmogorov Smirnov and Shapiro Wilk tests, skewness-kurtosis values, and Q-Q plots were examined. Based on these distributional diagnostics, variables that met normality assumptions were analyzed using parametric tests (t-test, ANOVA), whereas variables that deviated from normality were analyzed with their non-parametric equivalents (Mann-Whitney U and Kruskal Wallis tests). Correlation analyses were performed using Pearson's or Spearman's correlation coefficients depending on distribution. For post-hoc comparisons, LSD and Tamhane's T2 tests were employed according to homogeneity of variances. A hierarchical multiple regression was conducted to examine predictors of medical error tendency. Control variables were entered in the first block, followed by total professional commitment in the second block. All regression assumptions; normality, linearity, homoscedasticity, independence of errors, and multicollinearity were checked. No violations were observed. A significance level of $p < 0.05$ was considered statistically meaningful.

Ethical Aspects

Permission to use the scales was obtained from their authors via email. Ethical approval (Decision No: 2019-07/08, July 4, 2019) was granted by Cumhuriyet University, and institutional permission (August 27, 2019/32) was issued by the Gaziantep Provincial Health Directorate. The study was conducted in accordance with the Declaration of Helsinki, and written informed consent was obtained from nurses who voluntarily agreed to participate after being informed about the study.

Result

Table 1 summarizes the demographic and professional profiles of the nurses who participated in the study. Among the participants, 71.4% were female, 50.4% were married, and 77% held a college degree. The mean age was 29.16 ± 6.73 years. More than half of the nurses (60.5%) had between 1 and 5 years of professional experience, and their average tenure in the current unit was 3.45 ± 3.08 years (range: 1–18). Approximately one-third (32.7%) were employed in intensive care or operating room units. In terms of working hours, 54.4% worked eight-hour shifts, while 46.8% reported working mixed shifts. On average, nurses cared for 15.88 ± 10.20 patients per day (range: 1–60). Furthermore, 60.5% of the participants stated that they had not witnessed a medical error, and 78.2% reported never having made one.

When examining the total and subscale mean scores of the METSN in Table 2, medication and transfusion practices scored 4.49 ± 0.53 (min=1.78, max=5), hospital infections scored 4.48 ± 0.52 (min=2.83, max=5), patient monitoring and material safety 4.32 ± 0.55 (min=2.56, max=5), falls 4.41 ± 0.62 (min=1,

max=5), and communication 4.49 ± 0.60 (min=1, max=5). The scale item total score average was determined as 4.45 ± 0.48 (min=2.65, max=5). This value indicates a low tendency toward medical errors among the nurses. When the total and subscale scores of the NPCS were examined, willingness to make an effort was 36.19 ± 7.18 (min=13, max=52), maintaining professional membership 16.86 ± 5.71 (min=8, max=32), and belief in goals and values 15.58 ± 3.05 (min=5, max=20). The scale total score mean was determined as 68.67 ± 8.50 (min=42, max=104). When the data's normal distribution status was examined using the Shapiro Wilk test, it was seen that none of the data was suitable for normal distribution. Therefore, non-parametric tests were used in statistical evaluations.

As shown in Table 3, a statistically significant difference was observed between the total METSN scores and the mean scores of the medication and transfusion practices subscale according to nurses' educational status ($p < 0.05$). Post hoc analysis was conducted to identify the educational levels responsible for these differences. The higher mean score in the medication and transfusion practices subscale was associated with nurses who graduated from high school compared with those holding postgraduate degrees. Similarly, the difference in total METSN scores resulted from comparisons between high school and graduate nurses, and between bachelor's and graduate nurses, with both high school and bachelor's degree holders scoring higher than graduate nurses.

As shown in Table 4, no statistically significant differences were identified in the total or subscale scores of the NPCS based on nurses' demographic informations. ($p > 0.05$).

As demonstrated in Table 5, a statistically significant variation ($p < 0.05$) in the mean scores for the NPCS subscale "maintaining professional membership" based on the nurses' work unit. Due to a non-homogeneous data distribution, Tamhane's Test was employed for the post-hoc analysis to pinpoint the source of this variance. The analysis identified that the discrepancy originated from comparisons between the emergency department and both the internal medicine and surgical units. Specifically, emergency department nurses demonstrated higher mean scores on this subscale than their colleagues in the internal medicine and surgical departments. A statistically significant difference ($p < 0.05$) was also found in the "belief in goals and values" NPCS subscale scores when comparing nurses based on their experience with medical errors. The findings indicated that nurses who had witnessed a medical error in their work environment achieved higher mean scores than those who had not. Furthermore, Table 6 shows that a nurse's history of personally committing a medical error was a significant factor ($p < 0.05$) influencing METSN scores. This significance applied to both the total METSN mean scores and the mean scores of all its subscales. The results consistently showed that nurses who had not previously made a medical error had higher mean scores than those who reported having made an error in the past.

Table 1. Demographic and professional characteristics of nurses

Features	n	%
Age(Year) (X ± SD)	29.16 ± 6.739 (min=18, max=49)	
Gender		
Male	71	28.6
Female	177	71.4
Marital Status		
Single	123	49.6
Married	125	50.4
Education Level		
High School	25	10.1
Associate Degree	20	8.1
Bachelor's Degree	191	77.0
Graduate Degree	12	4.8
Years of Experience in Profession		
<1	5	2.0
1-5	150	60.5
6-10	37	14.9
11-15	25	10.1
16-25	28	11.3
26 years and above	3	1.2
Department		
Internal Departments	68	27.4
Surgical Departments	50	20.2
Intensive Care-Operating Room	81	32.7
Emergency Department	49	19.8
Daily Working Hours		
8 Hours	135	54.4
16 Hours	43	17.3
24 Hours	70	28.2
Usual Shift		
Day (08-16)	75	30.2
Night (16-08)	57	23.0
Combined (08-16, 16-08, 08-08)	116	46.8
Witnessing Medical Error		
Yes	98	39.5
No	150	60.5
Previously Committing a Medical Error		
Yes	54	21.8
No	194	78.2

X: Mean, SD: Standard deviation, n: Sample size, %: Percentage

Table 2. METSN and NPCS total and subscales score distributions among nurses

METSN	Number of items	Min.	Max.	X± SD
Drugs and Transfusion Practices	18	1.78(1)*	5(5)*	4.49±0.53
Hospital Infection	12	2.83(1)*	5(5)*	4.48±0.52
Patient Monitoring and Material Safety	9	2.56(1)*	5(5)*	4.32±0.55
Falls	5	1(1)*	5(5)*	4.41±0.62
Communication	5	1(1)*	5(5)*	4.49±0.60
METSN Mean Total Score	49	2.65(1)*	5(5)*	4.45±0.48
NPCS				
Willingness to Make Effort	13	17(13)*	52(52)*	36.19±7.18
Maintaining Professional Membership	8	8(8)*	32(32)*	16.86±5.71
Belief in Goals and Values	5	5(5)*	20(20)*	15.584±3.05
NPCS Mean Total Score	26	42(26)*	104(104)*	68.67±8.50

Min.: Minimum, Max.: Maximum, X: Mean, SD: Standard deviation, *: Minimum and maximum mean scores that can be obtained on the scale

Table 3. METSN total scores and subscale mean scores according to nurses' demographic features

Features		Drugs and Transfusion Practices	Hospital Infection	Patient Monitoring and Material Safety	Falls	Communication	METSN
Demographic Features	n	X±SD	X±SD	X±SD	X±SD	X±SD	X±SD
Gender							
Male	71	4.57±0.49	4.52±0.49	4.43±0.49	4.48±0.53	4.52±0.57	4.52±0.44
Female	177	4.45±0.55	4.46±0.53	4.28±0.57	4.38±0.65	4.48±0.62	4.42±0.50
Test and Significance		MWU(Z)= -1.730 p= 0.084	MWU(Z)= -0.588 p= 0.556	MWU(Z)= -1.846 p=0.065	MWU(Z)= -0.782 p=0.434	MWU(Z)= -0.477 p=0.633	MWU(Z)= -1.361 p=0.174
Marital Status							
Single	123	4.46±0.55	4.45±0.53	4.28±0.54	4.43±0.55	4.50±0.54	4.43±0.47
Married	125	4.51±0.52	4.50±0.51	4.37±0.57	4.39±0.68	4.48±0.67	4.47±0.49
Test and Significance		MWU(Z)= -0.638 p= 0.523	MWU(Z)= -0.808 p= 0.419	MWU(Z)= -1.370 p=0.171	MWU(Z)= -0.179 p=0.858	MWU(Z)= -0.122 p=0.903	MWU(Z)= -0.849 p=0.427
Education Level							
High School	25	4.70±0.35	4.67±0.39	4.50±0.53	4.49±0.62	4.62±0.53	4.63±0.37
Associate Degree	20	4.51±0.44	4.48±0.48	4.32±0.58	4.49±0.58	4.55±0.52	4.47±0.45
Bachelor's Degree	191	4.47±0.56	4.47±0.54	4.33±0.55	4.43±0.58	4.50±0.58	4.45±0.50
Graduate Degree	12	4.27±0.54	4.26±0.48	3.99±0.56	3.87±1.05	4.05±1.09	4.15±0.45
Test and Significance		KW(X ²)= 8.230 p=0.041	KW(X ²)=6.024 p=0.110	KW(X ²)=6.095 p=0.107	KW(X ²)=6.036 p=0.110	KW(X ²)=5.082 p=0.166	KW(X ²)=8.415 p=0.038
Age (Year) (X ± SD) 29.16 ± 6.739 (min=18, max=49)							
Test and Significance		r= 0.085 p= 0.184	r= 0.072 p= 0.261	r= 0.117 p=0.066	r=0.082 p=0.196	r=0.087 p=0.171	r= -0.099 p=0.118

n: Sample size, X: Mean, SD: Standard deviation, MWU (Z): Mann–Whitney U test (Z value), KW (χ^2): Kruskal–Wallis test (chi-square value), r: Effect size, p<.05 was considered statistically significant., Min.: Minimum, Max.: Maximum

Table 4. NPSC total scores and subscale mean scores according to nurses' demographic features

Features		Willingness to Make Effort	Maintaining Professional Membership	Belief in Goals and Values	NPSC
Demographic Features	n	X±SD	X±SD	X±SD	X±SD
Gender					
Male	71	37.22± 8.46	17.54± 6.51	15.40±3.27	70.18±9.26
Female	177	35.77±6.57	16.53±5.37	15.65±2.97	68.05±8.10
Test and Significance		MWU(Z)= -1.406 p= 0.160	MWU(Z)= -1.242 p= 0.214	MWU(Z)= -0.343 p=0.732	MWU(Z)= -1.740 p=0.082
Marital Status					
Single	123	36.13± 7.70	17.00± 5.95	15.53±2.95	68.78±8.17
Married	125	36.25±6.65	16.64± 5.51	15.63±3.16	68.53±8.81
Test and Significance		MWU(Z)= -0.316 p= 0.752	MWU(Z)= -0.331 p= 0.741	MWU(Z)= -0.696 p=0.486	MWU(Z)= -0.216 p=0.829
Education Level					
High School	25	38.52±7.86	15.64±6.05	16.20±2.74	70.92±10.46
Associate Degree	20	35.05±6.56	18.50±4.89	15.45±3.20	69.00±8.08
Bachelor's Degree	191	36.03±7.23	16.69±5.78	15.49±3.10	68.21±8.38
Graduate Degree	12	35.92± 5.65	18.67± 5.14	16.00±2.98	70.58±5.76
Test and Significance		KW(X ²)= 2.585 p=0.406	KW(X ²)=4.613 p=0.202	KW(X ²)=1.123 p=0.771	KW(X ²)=2.438 p=0.487
Age (Year) (X ± SD) 29.16 ± 6.739 (min=18, max=49)					
Test and Significance		r= -0.003 p= 0.957	r= 0.037 p= 0.560	r=-0.027 p=0.672	r= -0.013 p=0.844

Min.: Minimum, Max.: Maximum, X: Mean, SD: Standard deviation, *: Minimum and maximum mean scores that can be obtained on the scale

Table 5. NPCS total scores and subscale mean scores according to nurses' professional features

Features		Willingness to Make Effort	Maintaining Professional Membership	Belief in Goals and Values	NPCS
Professional Features	n	X±SD	X±SD	X±SD	X±SD
Years of Experience in Profession					
<1	5	41.20±8.17	17.60±8.02	16.60±2.41	75.40±12.10
1-5	150	35.93±7.31	16.73±5.89	15.59±2.97	68.35±8.20
6-10	37	36.68±6.93	17.05±5.52	15.86±2.35	69.59±6.71
11-15	25	34.76±6.23	18.04±4.98	15.68±3.72	68.48±9.45
16-25	28	36.64±7.39	15.93±5.50	14.61±3.77	67.18±10.22
26 years and above	3	42.67±4.62	15.67±7.23	18.33±1.15	76.67±6.03
Test and Significance		KW(X ²)= 5.627 p=0.344	KW(X ²)=2.163 p=0.826	KW(X ²)=5.287 p=0.382	KW(X ²)=6.135 p=0.293
Department					
		p= 0.752	p= 0.741	p=0.486	p=0.829
Internal Departments	68	36.97±6.51	15.84±5.23	16.04±2.70	68.85±8.71
Surgical Departments	50	37.14±6.98	16.08±6.09	16.24±2.75	69.46±8.18
Intensive Care Unit - Operating Room	81	36.20±7.37	16.77±5.74	15.21±3.10	68.17±8.30
Emergency Department	49	34.14±7.73	19.06±5.56	14.90±3.56	68.39±8.98
Test and Significance		KW(X ²)= 5.343 p=0.148	KW(X ²)=11.235 p=0.011	KW(X ²)=5.817 p=0.121	KW(X ²)=0.554 p=0.907
Years of Working in the Unit (X ± SD) 3.45 ± 3.581 (min=1, max= 18)					
Test and Significance		r= 0.037 p= 0.562	r= -0.018 p= 0.773	r= 0.064 p=0.317	r= 0.044 p=0.494
Daily Working Hours					
8 Hours	135	36.49±7.33	16.88±6.10	15.61±3.23	68.99±9.00
16 Hours	43	36.42±7.10	16.07±5.25	15.51±2.70	68.33±6.60
24 Hours	70	35.49±6.99	17.19±5.29	15.57±2.96	68.24±7.41
Test and Significance		KW(X ²)= 0.998 p=0.607	KW(X ²)=1.040 p=0.595	KW(X ²)=0.407 p=0.816	KW(X ²)=0.464 p=0.793
Usually Worked Shift					
Day(08-16)	75	36.23±6.85	16.91±5.42	15.64±3.31	68.77±8.73
Night (16-08)	57	35.84±7.08	16.91±5.91	15.51±2.84	68.51±9.24
Combined (08-16,16-08, 08-08)	116	36.34±7.49	16.73±5.87	15.59±3.01	68.66±8.01
Test and Significance		KW(X ²)= 0.045 p=0.978	KW(X ²)=0.038 p=0.981	KW(X ²)=0.616 p=0.735	KW(X ²)=0.489 p=0.783
Number of Patients Receiving Daily Care (X ± SD) 15.88± 15.203 (min=1, max=60)					
Test and Significance		r= -0.107 p= 0.094	r= 0.114 p= 0.074	r= 0.040 p=0.535	r= 0.034 p=0.591
Witnessing Medical Error					
Yes	98	36.26±6.74	16.90±5.02	16.13±2.92	69.30±7.48
No	150	36.14±7.47	16.77±6.15	15.22±3.09	68.24±9.08
Test and Significance		MWU(Z)= -0.282 p= 0.778	MWU(Z)= -0.380 p= 0.704	MWU(Z)= -2.615 p=0.009	MWU(Z)= -1.409 p=0.159
Previously Committing a Medical Error					
Yes	54	34.50±6.57	17.44±5.59	15.79±2.94	67.74±7.97
No	194	36.6±7.28	16.65±5.60	15.58±3.05	68.66±8.48
Test and Significance		MWU(Z)= 1.647 p= 0.100	MWU(Z)= -1.043 p= 0.297	MWU(Z)= -0.344 p=0.731	MWU(Z)= 0.902 p=0.367
n: Sample size, X: Mean, SD: Standard deviation, MWU (Z): Mann–Whitney U test (Z value), KW (χ^2): Kruskal–Wallis test (chi-square value), r: Effect size, p<0.05 was considered statistically significant.,Min.: Minimum, Max.: Maximum					

Table 6. METSN total scores and subscale mean scores according to nurses' professional features

Features		Drugs and Transfusion Practices	Hospital Infection	Patient Monitoring and Material Safety	Falls	Communication	METSN
Professional Features	n	X±SD	X±SD	X±SD	X±SD	X±SD	X±SD
Years of Experience in Profession							
<1	5	4.03±0.83	4.12±0.86	4.47±0.45	4.32±0.94	4.68±0.41	4.23±0.68
1-5	150	4.44±0.56	4.45±0.52	4.27±0.55	4.39±0.58	4.46±0.58	4.41±0.49
6-10	37	4.59±0.43	4.55±0.51	4.53±0.51	4.59±0.49	4.63±0.51	4.57±0.43
11-15	25	4.58±0.48	4.56±0.38	4.38±0.49	4.50±0.43	4.52±0.52	4.52±0.40
16-25	28	4.61±0.46	4.57±0.58	4.28±0.69	4.26±0.96	4.39±0.92	4.48±0.53
26 years and above	3	4.56±0.68	4.50±0.87	4.41±0.65	4.53±0.81	4.67±0.58	4.52±0.72
Test and Significance		KW(X ²)= 5.360 p=0.374	KW(X ²)=4.318 p=0.505	KW(X ²)=6.125 p=0.294	KW(X ²)=4.638 p=0.462	KW(X ²)=3.585 p=0.611	KW(X ²)=5.006 p=0.415
Department							
Internal Departments	68	4.55±0.46	4.53±0.47	4.37±0.52	4.41±0.56	4.54±0.53	4.50±0.43
Surgical Departments	50	4.41±0.59	4.42±0.54	4.18±0.57	4.38±0.59	4.52±0.52	4.38±0.48
Intensive Care Unit - Operating Room	81	4.51±0.54	4.52±0.50	4.33±0.56	4.49±0.66	4.49±0.69	4.47±0.49
Emergency Department	49	4.47±0.58	4.41±0.60	4.41±0.56	4.32±0.66	4.42±0.63	4.43±0.53
Test and Significance		KW(X ²)=1.892 p=0.595	KW(X ²)=1.608 p=0.657	KW(X ²)=4.973 p=0.174	KW(X ²)=2.823 p=0.420	KW(X ²)=0.661 p=0.882	KW(X ²)=1.753 p=0.625
Years of Working in the Unit (X ± SD) 3.45 ± 3.581 (min=1, max= 18)							
Test and Significance		r= 0.037 p= 0.564	r= 0.027 p= 0.672	r= 0.009 p=0.887	r= -0.037 p=0.558	r= -0.026 p= 0.680	r= 0.010 p=0.874
Daily Working Hours							
8 Hours	135	4.44±0.58	4.46±0.53	4.30±0.60	4.39±0.65	4.45±0.66	4.42±0.51
16 Hours	43	4.50±0.57	4.44±0.55	4.31±0.54	4.33±0.65	4.45±0.60	4.43±0.51
24 Hours	70	4.58±0.40	4.56±0.47	4.40±0.47	4.51±0.54	4.60±0.48	4.54±0.40
Test and Significance		KW(X ²)= 1.337 p=0.512	KW(X ²)=1.685 p=0.431	KW(X ²)=1.101 p=0.577	KW(X ²)=2.090 p=0.352	KW(X ²)=1.944 p=0.378	KW(X ²)=1.681 p=0.431
Usually Worked Shift							
Day(08-16)	75	4.45±0.50	4.47±0.49	4.31±0.56	4.39±0.67	4.45±0.68	4.42±0.46
Night (16-08)	57	4.60±0.48	4.53±0.48	4.35±0.53	4.47±0.54	4.58±0.50	4.52±0.46
Combined (08-16,16-08, 08-08)	116	4.46±0.59	4.47±0.56	4.33±0.57	4.40±0.62	4.48±0.60	4.44±0.52
Test and Significance		KW(X ²)= 2.454 p=0.293	KW(X ²)=0.282 p=0.868	KW(X ²)=0.218 p=0.897	KW(X ²)=0.422 p=0.810	KW(X ²)=0.936 p=0.626	KW(X ²)=1.117 p=0.572
Number of Patients Receiving Daily Care (X ± SD) 15.88± 15.203 (min=1, max=60)							
Test and Significance		r= 0.002 p= 0.973	r= -0.036 p= 0.575	r= 0.081 p=0.204	r= -0.080 p=0.210	r= -0.026 p=0.686	r= -0.014 p=0.827
Witnessing Medical Error							
Yes	98	4.57±0.42	4.55±0.46	4.34±0.51	4.41±0.65	4.52±0.65	4.50±0.41
No	150	4.43±0.59	4.43±0.55	4.31±0.58	4.41±0.60	4.47±0.57	4.41±0.52
Test and Significance		MWU(Z)= -0.994 p= 0.320	MWU(Z)= -1.458 p= 0.145	MWU(Z)= - 0.236 p=0.814	MWU(Z)= -0.153 p=0.878	MWU(Z)= -0.995 p=0.320	MWU(Z)= - 0.748 p=0.556
Previously Committing a Medical Error							
Yes	54	4.20±0.63	4.31±0.55	4.09±0.52	4.16±0.58	4.37±0.57	4.22±0.51
No	194	4.57±0.47	4.52±0.50	4.39±0.55	4.48±0.61	4.52±0.61	4.51±0.45
Test and Significance		MWU(Z)= -4.419 p= 0.000	MWU(Z)= -2.836 p= 0.005	MWU(Z)= -3.673 p=0.000	MWU(Z)= -4.006 p=0.000	MWU(Z)= -2.307 p=0.021	MWU(Z)= -3.996 p=0.000

n: Sample size, X: Mean, SD: Standard deviation, MWU (Z): Mann–Whitney U test (Z value), KW (χ^2): Kruskal–Wallis test (chi-square value), r: Effect size, p<0.05 was considered statistically significant.,Min.: Minimum, Max.: Maximum

The correlational analysis in Table 7 highlights several significant relationships. A weak positive correlation was established between willingness to make an effort and the METSN subdimensions ($r=0.315$, $p=0.00$), and similarly, higher scores in willingness to make an effort corresponded to increased scores across all NPCS subdimensions, which were statistically significant but weak. The NPCS subscale belief in goals and values also showed a statistically significant but weak positive correlation with every METSN subscale ($p<0.05$). Examining the total METSN score, it was positively and weakly but statistically significantly correlated with both willingness to make an effort and belief in goals and values ($p<0.05$). Conversely, the score for professional membership retention had a statistically significant but weak negative relationship with the total METSN score ($p<0.05$).

The correlation between the total NPCS score and the total METSN score was also positive, though very weak but statistically significant ($r=0.177$, $p<0.05$). Further specific relationships were identified. Maintaining professional membership was weakly but statistically significantly negatively correlated with scores for medication/transfusion practices and hospital infections. A very weak but statistically significant negative correlation was also observed between communication scores and the scores for patient monitoring, material safety, and falls ($p<0.05$). Finally, the total NPCS score demonstrated a very weak but statistically significant positive link to medication/transfusion practices, hospital infections, falls, and communication, while showing a slightly stronger but still weak and statistically significant

positive relationship with patient monitoring and material safety ($p<0.05$).

A hierarchical multiple regression analysis was conducted to examine whether nurses' professional commitment predicts their medical error tendency after controlling for socio-demographic and professional variables (Table 8). Categorical variables such as education level and unit type were dummy coded with High School and Internal Medicine serving as the reference categories. In the first block, age, years of experience, malpractice status, education level, and unit type were entered. In the second block, Total NPCS was added to the model. The results indicated that adding Total NPCS significantly increased the explained variance of medical error tendency ($\Delta R^2=0.036$, $F=9.741$, $p<.01$). The full model explained 13.9% of the variance ($R^2=0.139$). The full model accounted for 13.9% of the variance in medical error tendency, suggesting that while the included variables showed statistically significant associations, much of the variance remains unexplained. Total NPCS was positively and significantly associated with METSN scores ($\beta=0.191$, $t=3.121$, $p<.01$). Given that higher METSN scores indicate lower medical error tendency, this finding reflects that greater professional commitment is associated with a lower tendency to make medical errors. Among the control variables, malpractice status ($\beta=0.210$, $t=3.403$, $p<.01$) and graduate-level education ($\beta=-0.215$, $t=-2.910$, $p<.01$) were also significant predictors, while the remaining variables were not statistically significant.

Table 7. Relationship between nurses' NPCS and METSN subscale mean scores

Subscale	Statistic	Willingness to Make Effort	Maintaining Professional Membership	Belief in Goals and Values	NPCS
Drugs and Transfusion Practices	r	0.301	-0.276	0.222	0.137
	p	0.000	0.000	0.000	0.031
Hospital Infection	r	0.325	-.0232	0.263	0.198
	p	0.000	0.000	0.000	0.002
Patient Monitoring and Material Safety	r	0.254	-0.110	0.223	0.216
	p	0.000	0.085	0.000	0.001
Falls	r	0.242	-0.181	0.200	0.148
	p	0.000	0.004	0.002	0.020
Communication	r	0.211	-0.172	0.260	0.137
	p	0.001	0.006	0.000	0.031
METSN	r	0.315	-0.252	0.262	0.177
	p	0.000	0.000	0.000	0.005

r: Effect size, $p < 0.05$ was considered statistically significant

Table 8. Hierarchical multiple regression analysis predicting medical error tendency

Variable	B	SE	β	t
Block 1 Control Variables				
Age	0.008	0.009	0.144	0.855
Years of experience	-0.011	0.057	-0.027	-0.200
Malpractice status	0.248	0.073	0.210**	3.403
Education (Associate)	-0.159	0.141	-0.089	-1.129
Education (Bachelor)	-0.156	0.106	-0.135	-1.479
Education (Graduate)	-0.484	0.166	-0.215**	-2.910
Surgical unit	-0.143	0.087	-0.119	-1.640
Intensive care	-0.051	0.077	-0.049	-0.656
Emergency Department	-0.052	0.089	-0.042	-0.584
Block 2 Main Variable				
Total Professional Commitment	0.011	0.004	0.191**	3.121
Model Summary	Model 1 R²= 0.139	Model 2 ΔR²= 0.036	F = 9.741**	
*:p <.05, **:p < .01, reference categories: education: high school, unit: internal medicine				

Discussion

The current study was designed to investigate the correlation between professional commitment and the propensity for medical errors among nurses. The nurses demonstrated a high degree of professional commitment. This conclusion is based on their NPCS scores (Table 2), which were high relative to the scale's possible scoring range of 26 (min) to 104 (max). Although, Amlaku et al. (2025) and Arslan Seker and Coskun Palaz (2024) reported moderate levels of commitment [19,20], our findings align with studies suggesting that commitment levels have increased in response to evolving professional expectations and expanded nursing roles [10,21,22]

Considering the METS score range (min: 1, max: 5), it can be said that the nurses included in our study had low levels of medical error tendency (Table 2). When reviewing the literature on nurses' levels of tendency to medical error, some studies found that nurses' levels of tendency to medical error were low, consistent with our study, while the study by Ahn and Lee (2023) found that they were high [23-25]. It is anticipated that the existence of many internal and external factors affecting professional commitment and tendency to medical error in nursing, and the fact that these factors differ among nurses and institutions providing health services, may lead to different results in studies.

The analysis (Table 7) revealed a statistically significant, though very weak, positive relationship between the total NPCS score and the mean total METSN score (r=0.17, p=0.005). This finding suggests that nurses with higher levels of professional commitment were associated with a slightly decreased tendency to make medical errors.

In this study, the Cronbach's alpha coefficient of the NPCS Scale was 0.67, which is notably lower than the values reported in both the original study [17] and the Turkish validation [3]. Several factors may account for this discrepancy. Differences in sample

characteristics such as institutional context, cultural factors, or the demographic profile of participating nurses may influence how items are interpreted. These findings suggest that certain items of the scale may not function uniformly across different populations and that the scale's psychometric properties may vary depending on the context. Therefore, careful consideration is warranted when using the scale in similar clinical or organizational settings.

In our study, as the mean score for the NPCS subscale of Continuing Professional Membership increased, the mean scores for the METSN subscale of Drug and Transfusion Practices and Hospital Infections decreased (Table 7). Based on these findings, it can be said that nurses who are not determined to maintain their professional membership generally do not care about patient safety.

Our research revealed a significant inverse relationship: as nurses' scores increased in the NPCS subdimensions of Belief in Goals and Values and Willingness to Make Effort, their reported tendency for medical errors decreased (Table 7). Nurses who accept the values of their profession and strive to uphold these values seek to develop their knowledge and skills and to practice more carefully [26]. Based on this, it can be concluded that the nurses in our study demonstrated a strong commitment to professional values. This commitment, coupled with their efforts to protect and advance these values, appears to be a contributing factor to their low propensity for medical errors.

Table 7 demonstrates that although the correlations were weak, a statistically significant positive association existed between the overall NPCS score and the subscales of Medication and Transfusion Practices (r=0.137, p=0.031), Hospital Infections (r=0.198, p=0.002), Falls (r=0.148, p=0.020), and Communication (r=0.137, p=0.031). Additionally, a weak yet statistically significant correlation was identified between the total NPCS score and the Material Safety and Patient Monitoring

subscale ($r=0.216$, $p=0.001$). Considering these results, it may be inferred that nurses who demonstrate strong professional values and motivation, perceive nursing as a meaningful career, and maintain long-term professional aspirations tend to prioritize patient safety more effectively in clinical practice.

Emergency department nurses exhibited greater scores on the NPCS dimension evaluating professional continuation than their counterparts in other departments, indicating comparatively lower intent to remain in the profession (Table 5). A high score on this subscale indicates a low willingness to continue in the profession. Therefore, it can be said that nurses working in the emergency department have less commitment to their profession and a lower willingness to continue. Bahar et al. (2015) also stated in their study that the job satisfaction of nurses working in the emergency department was moderate due to the harsh working conditions, lower job motivation compared to other units, and high risk of exposure to violence [27]. In this context, it can be said that the findings obtained in our study are related to similar reasons, and that difficult and negative working conditions in the emergency department can reduce nurses' commitment to their profession.

In our study, nurses who witnessed medical errors had higher mean scores on the NPCS subscale of belief in goals and values than nurses who did not witness medical errors (Table 6). This subscale of the scale measures concerns about the development of the nursing profession. In this context, it can be said that nurses who witnessed medical errors have concerns about the future of the profession.

In our study, when the educational status of nurses and their METSN mean total scores were examined, it was determined that high school graduate nurses had a statistically significant lower tendency to medical error than nurses with bachelor's and master's degrees ($p<0.05$) (Table 6). However, this finding should be interpreted with caution due to the highly unbalanced group sizes, which may increase the likelihood of Type I error. Consistent with previous studies, Cebeci et al. (2012) reported no statistically significant relationship between education level and medical error tendency [27], whereas Babacan et al. (2015) found results similar to ours [28]. It is possible that factors such as differences in supervision intensity, clinical responsibilities, or the level of direct oversight during practice rather than education level itself may help explain this pattern. In this context, the clinical environment and role expectations of nurses with lower educational levels may influence how safely they perform clinical tasks.

As shown in Table 1, most nurses in the study reported no previous experience of committing a medical error. Furthermore, those who had never made an error exhibited a lower medical-error tendency than nurses who had made one in the past. These findings are consistent with the results of Uysal and Karakurt (2019), who similarly reported that nurses without a history of medical errors demonstrated reduced error propensity [30]. Overall, the evidence suggests that prior experience with committing an error may be associated with an increased

likelihood of future errors.

In the present study, the hierarchical multiple regression analysis demonstrated that nurses' level of professional commitment significantly predicted their medical error tendency after controlling for socio-demographic and professional variables. Similarly, Simsekli Bakirhan and Tan (2023) found that as professional commitment increased, the tendency to commit errors decreased [31]. Among the control variables, malpractice experience emerged as a positive and significant predictor ($\beta=0.210$, $p<0.01$), indicating that nurses who had previously been involved in malpractice cases showed a greater tendency toward errors. This result aligns with Zhang et al. (2021), suggesting that emotional strain and work-related stress can increase error risk [32]. Additionally, graduate-level education significantly and negatively predicted medical error tendency ($\beta=-0.215$, $p<0.01$). This suggests that advanced education may enhance clinical competence, decision-making skills, and error awareness, thereby reducing error propensity.

Conclusion

The findings indicated an above-average level of professional commitment among the participating nurses. This commitment was particularly high within the Belief in Goals and Values dimension, although it was notably lower in the Maintaining Professional Membership dimension. When analyzing specific groups, nurses working in the Emergency Department demonstrated higher scores for Maintaining Professional Membership than their colleagues in other units. Furthermore, a greater level of professional commitment was observed in nurses who had previously witnessed a medical error.

Regarding the tendency to make medical errors, the results showed a generally low propensity overall. The lowest error tendencies were noted in the Medication and Transfusion Practices subdimension and Communication subdimension. In contrast, a higher tendency for error was identified in the Patient Monitoring subdimension and Material Safety subdimension. The study also determined that nurses who were high school graduates and those who had witnessed medical errors in the workplace were associated with a lower tendency toward such errors.

It was determined that higher levels of professional commitment were associated with lower tendency to make medical errors.

In accordance with the outcomes of this research, to increase nurses' commitment to their profession and reduce the tendency to medical errors;

Strengthening professional values early in nursing education is essential, as higher scores in Belief in Goals and Values and Willingness to Make Effort were associated with a lower tendency toward medical errors in this study.

Improving organizational management within nursing services is also critical, given that nurses with malpractice experience demonstrated a higher inclination toward medical errors, underscoring the need for stronger institutional oversight.

Additionally, providing regular in-service training to enhance

nurses' professional competence is justified by the observed association between higher levels of professional commitment and reduced error tendency.

Finally, reducing excessive workload and preventing non-nursing assignments appear necessary, as emergency nurses exhibited lower levels of professional continuation, likely due to the demanding and high-pressure nature of their work environment.

Conflict of Interests

The authors declare that there is no conflict of interest in the study.

Financial Disclosure

The authors declare that they have received no financial support for the study.

Ethical Approval

The study received ethical approval from the the Cumhuriyet University (Decision No: 2019-07/08, July 4, 2019) and institutional permission (August 27, 2019/32) was issued by the Gaziantep Provincial Health Directorate.

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