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Do Nursing Students' Personality Traits Affect Medical Error Attitudes and Tendencies?

Hemşirelik Öğrencilerinin Kişilik Özellikleri Tıbbi Hata Tutum ve Eğilimlerini Etkiler Mi?

Sevda KARAKAŞ[1], Hatice ACAR BEKTAŞ[2], Rojjin MAMUK[3]

ABSTRACT

This study aimed to examine the relationship between nursing students' personality traits, attitudes toward medical errors, and tendency to make medical errors. This descriptive, cross-sectional, and correlational study was conducted with 343 third- and fourth-year nursing students from three universities who had completed or were currently undertaking an internship in obstetrics and gynecology clinics. Data were collected using the Student Information Form, the Tendency to Medical Errors Scale in Nursing, the Five-Factor Personality Scale, and the Scale of Attitudes toward Medical Errors. Of the students, 70.8% reported witnessing a medical error, while 9.3% reported making a medical error themselves. The mean total score was 2.40±0.45 for the Scale of Attitudes toward Medical Errors and 4.50±0.39 for the Tendency to Medical Errors Scale in Nursing. No significant relationship was found between personality traits and either medical error tendency or attitudes toward medical errors ($p>0.05$). However, witnessing a medical error was weakly and positively correlated with medical error tendency and weakly and negatively correlated with attitudes toward medical errors ($p<0.05$). In conclusion, students had low tendencies to make medical errors and negative attitudes toward medical errors. Witnessing a medical error was the main variable associated with students' attitudes toward medical errors.

Keywords: Medical Error, Attitudes Toward Medical Errors, Nursing Student, Obstetrics And Gynecology, Personality Traits

ÖZ

Bu çalışma, hemşirelik öğrencilerinin kişilik özelliklerinin tıbbi hatalara yönelik tutumları ve tıbbi hata yapma eğilimleri ile ilişkisini incelemek amacıyla yürütülmüştür. Tanımlayıcı, kesitsel ve korelasyonel tasarımdaki araştırma, üç üniversitede öğrenim gören, kadın hastalıkları ve doğum stajını tamamlamış ya da hâlen bu stajı yapan üçüncü ve dördüncü sınıf 343 hemşirelik öğrencisiyle gerçekleştirilmiştir. Veriler Öğrenci Bilgi Formu, Hemşirelikte Tıbbi Hata Eğilimi Ölçeği, Beş Faktör Kişilik Ölçeği ve Tıbbi Hatalara Yönelik Tutum Ölçeği ile toplanmıştır. Öğrencilerin %70,8'i tıbbi hataya tanık olduğunu, %9,3'ü ise tıbbi hata yaptığını belirtmiştir. Tıbbi Hatalara Yönelik Tutum Ölçeği toplam puan ortalaması 2,40±0,45, Hemşirelikte Tıbbi Hata Eğilimi Ölçeği toplam puan ortalaması 4,50±0,39'dur. Kişilik özellikleri ile tıbbi hata yapma eğilimi ve tıbbi hatalara yönelik tutum arasında anlamlı ilişki saptanmamıştır ($p>0,05$). Tıbbi hataya tanık olma ile tıbbi hata yapma eğilimi arasında zayıf pozitif, tıbbi hatalara yönelik tutum arasında ise zayıf negatif anlamlı ilişki bulunmuştur ($p<0,05$). Sonuç olarak öğrencilerin tıbbi hata yapma eğilimleri düşük, tıbbi hatalara yönelik tutumları olumsuzdur. Tıbbi hataya tanık olma, öğrencilerin tıbbi hatalara yönelik tutumlarıyla ilişkili temel değişken olarak belirlenmiştir.

Anahtar Kelimeler: Tıbbi Hata, Tıbbi Hatalara Yönelik Tutum, Hemşirelik Öğrencisi, Kadın Hastalıkları Ve Doğum, Kişilik Özellikleri

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[1]Sevda KARAKAŞ, Nursing Department Faculty of Health Sciences Gümüşhane University, Gümüşhane, sevdakarakas@gumushane.edu.tr. ORCID: 0000-0003-4617-8798
[2]Hatice Acar Bektaş, Midwifery Department, Faculty of Health Sciences, Tokat Gaziosmanpaşa University, Tokat, acarbektas@hotmail.com, ORCID: 0000-0001-7958-7868.
[3]Rojjin MAMUK, Nursing Department, Faculty of Health Sciences, Eastern Mediterranean University, Famagusta, North Cyprus, rojinmamuk@gmail.com, ORCID: 0000-0003-3612-2010

İletişim / Corresponding Author: Rojjin MAMUK
e-posta/e-mail: rojinmamuk@gmail.com

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INTRODUCTION

Medical error (ME) is defined as "inappropriate conduct, including negligence and recklessness, that causes harm to the patient" (1). Each year, at least 44,000 to 98,000 people in the United States of America and 25,000 people in Germany are known to lose their lives due to medical errors (2, 3).The extent of ME in Turkey is not known, yet according to the Turkish National Safety Reporting System, the rate of medical errors was around 16.6% in 2017; 155.295 ME were reported; around two-fifths of the reported ME were made by nurses; and the rate of nurses being sued for medical errors increased by 10% in the last four years (2).

Clinical practice is the main education area that enables nursing students to transform the knowledge they acquire during their education into skills. The literature includes limited results regarding nursing students' ME rates, yet the medical error rates reported in the studies conducted are alarming (3-6). Nursing students' medical error rates were reported to be 38% in Türkiye (4). It is considered that nursing students avoid reporting ME due to fear of punishment, and only 25-40% of ME are reported; therefore, the rate of ME may be even higher (3-6).

ME are known to frequently occur in obstetrics and gynecology clinics (7). High ME rates in these clinics are associated with high patient circulation and workload, unexpected and emergency changes in maternal and fetal medical conditions, and large numbers of invasive interventions (8-10).

Obstetrics and gynecology clinics are great learning areas for nursing students, yet the possibility of ME is a matter of concern also for students. Factors such as student nurses' providing care to patients for the first time in clinics, lack of professional knowledge and skills, lack of access to adequate clinical guidance, or fear of punishment are considered to lead to ME in students (3, 11, 12). On the other hand, independent of the education they received or clinical conditions, students' characteristics such as personality traits may also affect the tendency for ME (13).

The American Psychological Association (APA) defines personality as individual differences in characteristic thinking patterns, feelings, and behaviors. These differences, which make the individual unique, are felt in every aspect of human life. Students' personality traits have indirect effects on their academic success, plans, organizations, and care during clinical practices, as well as their decision-making and problem-solving in clinics (14). Theoretically, positive personality traits such as being adaptable, being open to learning and experience, and having a high sense of responsibility are important determinants that can reduce medical error tendencies (15, 16). However, no studies were found to have investigated whether students' personality traits affect their tendency to make medical errors.

In this regard, this study investigated whether nursing students' personality traits affect their ME tendencies and attitudes while working in gynecology clinics.

Research Questions

1. What are nursing students' ME tendencies and attitudes?

2. Do nursing students' personality traits affect their ME tendencies and attitudes?

3. What other factors affect nursing students' ME tendencies and attitudes?

MATERIALS AND METHODS

Design and Sample of the Study

This descriptive, cross-sectional, and correlational study conducted between 01 May -15 July 2022. The target population of

the study consisted of students (N=373) who were enrolled in the nursing department of health sciences faculties at three different universities in the spring semester of the 2021-2022 academic year. G*Power 3.1.9.7 program was used to determine the sample size of the study (10). Hence, according to Cohen (1988)'s medium effect size recommendation, the correlation p H1=0.2 and the two-tailed hypothesis method, the confidence interval was determined as 95% and the margin of error as 5%. Calculation results showed that at least 319 people should be reached (11). Considering a potential 10% data loss, the study was completed with a total of 343 students. Since the rate of malpractice is relatively high in gynecology clinics, participants were expected to have completed or to be currently undertaking an internship in obstetrics and gynecology clinics. Accordingly, the inclusion criteria were defined as being a third- or fourth-year nursing student and volunteering to participate in the study.

Data Collection and Tools

The study data were collected by the researchers by meeting students face-to-face outside of their class time. Each student spared approximately 10 minutes for the study. Prior to data collection, permission to use the scales employed in the study was obtained from their authors.

Student Information Form, which was prepared by the researchers in line with the literature, consisted of 5 questions (3, 5, 12). The form contains questions related to the Students' experiences of ME during their practice in obstetrics and gynecology units.

Tendency to Medical Errors Scale in Nursing (TMESN), was developed by Özata and Altunkan in 2010 to measure nurses' ME tendencies. The 49-item scale, which is responded on a five-point Likert scale includes five sub-scales (Medication and Transfusion, Falling, Hospital Infections, Patient Monitoring/ Equipment Safety, and Communication). The mean score is used for the evaluation of the scale, and high scores indicate that nurses have a low tendency to make ME. Low mean scores indicate a high tendency to make ME. Cronbach's alpha value of the original scale was reported as 0.93 (13). Cronbach's alpha value was determined as 0.98 in this study.

The Five-Factor Personality Scale (FFPS), which was adapted into Turkish by Horzum et al. in 2017, aims to determine individuals' personality traits. The five-point Likert-type scale has five sub-scales (Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience) and 10 items. Scores to be obtained from each sub-scale range between 0 and 10, with higher scores indicating more prominent personality traits indicated by that dimension. Cronbach's alpha value of the Turkish version of the scale was reported as 0.70 (14). Cronbach's alpha value was determined as 0.73 in this study.

The scale of Attitudes towards Medical Errors (SATME) was developed in Turkish by Güleç and Intepeler (2013) to determine healthcare professionals' attitudes toward medical errors. The five-point Likert-type scale includes three sub-scales and a total of 16 items. The cut-off point of the scale was determined as three. A score of below three (<3) indicates a negative attitude towards medical errors; namely, employees have low awareness of the importance of ME and reporting errors. On the other hand, a mean score of three and above (>3) indicates a positive medical error attitude; namely, employees have a high awareness of the importance of ME and reporting errors. Cronbach's alpha value of the original scale was reported as 0.75 (15). In this study, Cronbach's alpha value was found 0.80.

Data Analysis

The study data were analyzed using the Statistical Package for Social Sciences (SPSS) 24.0 Windows program, and the statistical significance was accepted as $p<0.05$. Spearman-rho correlation analysis was used to examine the relationship between variables. Arithmetic means, frequencies, standard deviations, and percentages were used for descriptive analyses; Cronbach's alpha internal consistency analysis was performed for the scales.

Ethical Considerations

This study, which is based on volunteer participation, was started after receiving the approval of Tokat Gaziosmanpaşa University Research Ethics Committee (Decision No: 01.16 Date: 14.01.2022).

Strengths and Limitations of the Study

This study is the first study to show that nursing students' personality traits do not affect their attitudes and tendencies to make ME. In addition, no other studies in the literature were found to show that witnessing ME negatively affects students' ME attitudes. These two important results of the study can be considered as the strengths of the study. Besides, the study was conducted as a multicenter study, which is considered another strength. On the other hand, the study data were based only on students' self-reports, which is a limitation.

RESULTS AND DISCUSSION

A total of 343 nursing students from three different universities were involved in this study; 84.5% of the students were female; 52.8% were enrolled in the third year; and 88.3% chose the nursing department willingly. Of all the participating students, 70.8% witnessed a ME, and 9.3% of the students themselves reportedly made a ME (Table 1).

Table 1. Students' Experiences of ME During Their Practice in Clinics (N=343)

Gender	n	%
Female	290	84,50
Male	53	15,50
Choosing the department willingly		
Yes	303	88,30
No	40	11,70
Have you witnessed a ME during clinical practice?		
Yes	243	70,8
No	100	29,2
Have you witnessed a ME by a friend of yours?		
Yes	62	18,1
No	281	81,9
Have you ever made a ME before?		
Yes	32	9,3
No	311	90,7

ME: Medical error

Table 2 displays the mean scores for scales. An analysis of the FFPS indicates that agreeableness was the personality trait with the highest mean score (6.72±1.36), which was followed by neuroticism (6,29±1,46). The SATME mean score was 2.40±0.45, and 90.4% of the students scored <3 points. ME perception was the sub-scale with the highest mean score (3.00±0.67). The TMESN total mean score was 4.50±0.39. The medication and transfusion sub-scale had the highest mean score (4.58±0.56).

A negative, low-level, and statistically significant relationship was found between ME tendencies and ME attitudes ($p<0.05$). On the other hand, no relationship was found between ME tendencies and other characteristics such as personality traits and choosing the department willingly. Similarly, no relationship was found between ME attitudes and personality traits. A positive, weak, and significant correlation was found between witnessing ME's before and ME tendencies ($p<0.05$). In addition, a negative, weak, and significant relationship was found between witnessing ME's and ME attitudes ($p<0,05$). (Table 3)

Clinical practice is the main training area that enables nursing students to transform the knowledge they acquire during their education into skills. However, for both patients and students, this important training

area includes a high risk due to the possibility of ME's. A meta-analysis on the issue showed that 39.6% of nursing students made ME's, which proves the significance of the situation (3) In addition, the rate of witnessing ME's ranges from 10% to 58% (4-6, 16-18). In this study, students' ME rates were found to be quite low compared to the rates in the literature, but the rates of witnessing ME's were quite high. Due to the increasing number of malpractice lawsuits, clinicians generally accept students mainly as observers in clinical settings, which is considered to decrease the rates of making errors but increase the rates of witnessing errors among students.

Table 2. Mean Scores of the Scales and Sub-Scales (N=343)

Scales and sub-scales	Mean	Sd	Range	Min	Max
Five-factor Personality Scale					
Agreeableness	6,72	1,36	8,00	2,00	10,00
Neuroticism	6,29	1,46	8,00	2,00	10,00
Conscientiousness	6,26	1,24	8,00	2,00	10,00
Openness to experience	6,13	1,36	8,00	2,00	10,00
Extraversion	5,97	1,09	8,00	2,00	10,00
Total score	31,38	4,21	40	10	30
The scale of Attitudes towards Medical Errors					
Perception of ME's	3,00	0,67	4,00	1,00	5,00
Approach to ME's	2,43	0,51	3,15	1,00	4,15
Causes of ME's	2,20	0,58	3,30	1,00	4,30
Total score	2,40	0,45	3,07	1,00	4,07
Tendency to Medical Errors Scale					
Medication and Transfusion	4,58	0,56	2,56	2,44	5,00
Hospital Infections	4,54	0,56	2,42	2,58	5,00
Falling	4,48	0,66	2,80	2,20	5,00
Communication	4,44	0,69	3,00	2,00	5,00
Patient Monitoring and Equipment Safety	4,33	0,69	2,78	2,22	5,00
Total score	4,50	0,39	1,83	3,17	5,00

ME: Medical error

TMESN total mean score showed that the students' tendency to make ME's was quite low in the study. Students' tendency to make ME's was quite low especially in medication and transfusion practices. The results of three different studies in Turkey, one with nursing students and two with nurses, reported similar findings to the ones in this study (12 ,19, 20). On the other hand, a meta-analysis conducted in Iran showed that the most common ME made by students was related to the administration of wrong drug doses (3). Prevention of nosocomial infections was the second area in which students had a low tendency for ME's. Two separate studies conducted with nurses reported that nurses made low-level errors in the prevention of infections (20, 21). Another study conducted with nursing students in Turkey also showed that students had lower ME tendencies in preventing nosocomial infections (12). These findings, which are in line with the literature, are valuable in terms of showing that students give importance to the prevention of infections and the right administration of drugs, which are two important goals of the nursing discipline. On the other hand, students tended to make ME's regarding patient monitoring and equipment safety, which indicates that these issues should be addressed more thoroughly in the education process.

This study also examined participating students' ME attitudes and found that almost all of them (90.4%) had negative ME attitudes, indicating that students' awareness of the importance of ME's and error reporting is quite low. Although this study found that students' tendency to make ME's was low, this result, which is different from the literature knowledge, is quite thought-provoking (22-24). The study also found a positive correlation between witnessing ME's and ME tendencies and a negative correlation between witnessing ME's and ME attitudes, indicating that this result is not coincidental. The findings showed that although the

theoretical education process decreased the students' tendency to make ME's, the ME management process they witnessed in the clinical environment was found to negatively affect students' ME attitudes. This condition can be considered a kind of breaking point. Therefore, it is clear that careful consideration of the ME management process in clinics would positively affect newly trained health professionals' attitudes toward the issue.

Students' approaches, reactions, and search for solutions to all problems encountered during clinical practice may differ from individual to individual, which could be caused by students' personality traits (25, 26). An analysis of students' personality traits showed that agreeableness and neuroticism were the most prominent personality traits, respectively. However, unlike witnessing a ME factor, no relationship was found between personality traits and ME attitudes and tendencies. This is pleasing in terms of showing that ME tendencies and attitudes are not affected by an unchangeable factor such as personality.

Table 3. Correlation of Personality Traits with ME Attitudes and ME Tendencies (n=343)

		Five-factor Personality Scale					ME Attitudes Mean	Witnessing a ME
		Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness to experience		
ME Tendencies mean	**r**	-,039	-,020	,061	,021	-,016	-,145**	,108*
	p	,474	,714	,258	,700	,763	,007	,045
ME Attitudes mean	**r**	,010	-,030	-,079	-,064	-,050		-,127*
	p	,854	,578	,142	,238	,358		,019

*ME: Medical error, r: Spearman-rho correlation, *p<0.05*

CONCLUSION AND RECOMMENDATION

This study found that although student nurses' ME tendencies were low in clinical practice, their ME attitudes were quite negative. However, students' personality traits did not affect ME attitudes and tendencies. The only factor affecting students' ME tendencies and attitudes was determined as witnessing ME's before. This finding shows that witnessing ME's is the most important breaking point for student nurses to change their attitudes. Therefore, ME's should be managed professionally in clinics. In this way, newly trained nurses' ME attitudes could be improved positively, new errors could be prevented, and patient rights could be protected in clinics.

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Author Contributions

S.K: Conceptualization, Data curation, acquisition, Investigation, Methodology, administration, Writing – original draft, Writing – review & editing.

H.A.B: Conceptualization, Data curation, Formal analysis, acquisition, Investigation, Methodology, Writing – original draft, Writing – review & editing.

R.M: Conceptualization, Data curation, acquisition, Investigation, Methodology, administration, Writing – original draft, Writing – review & editing.

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Conflicts of Interest

The authors declare that there is no conflict of interest.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Ethical Approval and Participant Consent

This study was conducted following approval from the Tokat Gaziosmanpaşa University Research Ethics Committee (Decision No:

01.16 Date: 14.01.2022). Participation was voluntary, and written informed consent was obtained from all participants in accordance with the ethical principles of the Declaration of Helsinki prior to data collection.

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