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The Relationship Between Midwifery and Nursing Students' Attention Control Levels and Rational-Intuitive Decision-Making Skills and Their Propensity for Medical Errors

Ebelik ve Hemşirelik Öğrencilerinin Dikkat Kontrol Düzeyleri ve Akılcı-Sezgisel Karar Verme Becerilerinin Tıbbi Hataya Eğilimleri ile İlişkisi

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ABSTRACT

Aim: *This study was conducted to examine the relationship between midwifery and nursing students' levels of attention control and rational-intuitive decision-making skills and their propensity for medical errors.*

Material and Method: *The cross-sectional study was conducted between January-May 2023 through face-to-face interviews with 491 midwifery and nursing students. The dependent variable of the study is medical error tendency, while the independent variables are introductory characteristics, attention control levels, and rational-intuitive decision-making.*

Results: *The participants' scale score averages were found to be, Attention Control Scale 52.02 ± 9.23, Rational Decision Making 21.50 ± 3.30, Intuitive Decision Making 16.98 ± 5.03, and Propensity for Medical Error 221.45 ± 27.91. According to linear regression analysis, as students' weighted overall grade point average decreased, their attention control level and rational decision-making level decreased, and the tendency to make medical errors increased among nursing students ($p<0.05$).*

Conclusion: *It was determined that participants have a low tendency to make medical errors, moderate levels of attention control and intuitive decision-making, and high levels of rational decision-making. As attention control and rational decision-making levels increased, the tendency to make medical errors decreases. It is recommended that activities be carried out to strengthen students' attention control skills and that approaches promoting the development of rational decision-making processes.*

Keywords: *Medical Error, Rational-Intuitive Decision Making, Level of Attention Control*

ÖZET

Amaç: *Bu çalışma, ebelik ve hemşirelik öğrencilerinin dikkat kontrol düzeyleri ve akılcı-sezgisel karar verme becerilerinin tıbbi hataya eğilimleri ile ilişkisini incelemek amacıyla yapılmıştır.*

Gereç ve Yöntem: *Kesitsel tipteki araştırma Ocak-Mayıs 2023 tarihleri arasında 491 ebelik ve hemşirelik öğrencisi ile yüz yüze görüşülerek yürütülmüştür. Araştırmanın bağımlı değişkeni tıbbi hata eğilimi, bağımsız değişkenler ise tanıtıcı özellikler, dikkat kontrol düzeyleri ve akılcı-sezgisel karar vermedir.*

Bulgular: *Katılımcıların ölçek puan ortalamaları; Dikkat Kontrol Ölçeği 52.02 ± 9.23, Akılcı Karar Verme 21.50 ± 3.30, Sezgisel Karar Verme 16.98 ± 5.03 ve Tıbbi Hataya Eğilim 221.45 ± 27.91 olarak bulunmuştur. Lineer regresyon analizine göre, öğrencilerin ağırlıklı genel not ortalaması azaldıkça, dikkat kontrol düzeyi ile akılcı karar verme düzeyi düştükçe ve hemşirelik bölümü öğrencilerinde tıbbi hata yapma eğilimi artmaktadır ($p<0.05$).*

Sonuç: *Katılımcıların tıbbi hataya eğilim düzeyinin düşük, dikkat kontrol düzeyi ve sezgisel karar alma düzeylerinin orta, akılcı karar verme düzeylerinin yüksek olduğu belirlenmiştir. Dikkat kontrolü ve akılcı karar verme düzeyi arttıkça tıbbi hata yapma eğilim düzeyi azalmaktadır. Öğrencilerin dikkat kontrol becerilerini güçlendirecek etkinlikler yapılması, akılcı karar verme süreçlerini geliştiren yaklaşımlar benimsenmesi önerilir.*

Anahtar Kelimeler: *Tıbbi Hata, Akılcı-Sezgisel Karar Verme, Dikkat Kontrol Düzeyi*

INTRODUCTION

In recent years, one of the topics addressed in the literature from legal, ethical, medical, educational and managerial perspectives has been medical errors (Karakas et al., 2023; Miziara & Miziara, 2025; Salameh et al., 2025). They represent a growing global health problem. According to the World Health Organization (WHO, 2023), medical errors account for approximately one in ten cases associated with disability and death worldwide, causing more than three million deaths annually. Medical error is defined as an event that contributes to an undesirable outcome, typically a preventable adverse effect, resulting from an unintentional act, omission, or incorrect execution during the planning or delivery of healthcare services (Miziara & Miziara, 2025). Beyond their direct impact on patient morbidity and mortality, medical errors also contribute to patient dissatisfaction, reduced trust in healthcare systems, and increased healthcare costs (Rodziewicz, Houseman, & Hipskind, 2018; Miziara & Miziara, 2025).

Medical errors represent a critical concern not only for practicing healthcare professionals but also for students engaged in clinical training, where such errors may present considerable challenges (Gorucu & Turk, 2025). Midwifery and nursing students provide patient care during the process of transforming theoretical knowledge into practical skills. In this process, the limited scope of practice areas, the small number of teaching staff, and high student quotas mean that students are not constantly supervised, which can increase the frequency of medical errors. Furthermore, the stress experienced by students in clinical practice may increase their tendency to make errors, and they may also be inclined to conceal their medical errors due to factors such as the reactions of healthcare professionals and teaching staff (Demir, Çakaloz, Taşpınar, & Çoban, 2020; Turan, Mankan, & Polat, 2017). In the literature, the mean scores on the Medical Error Propensity Scale range widely (161 ± 75.34 – 230.10 ± 23.69) (Thomas, Donohue-Porter, & Fishbein, 2017; Demir et al., 2020; Karaveli, 2020; Karakas, Aysun, Dedeoglu Demir, & Eycan, 2023; Can Gezer, 2024; Cekic & Sezer, 2024; Mousa et al., 2024; Salameh et al., 2025) and approximately one-third of students are reported to commit malpractice in clinical practice (Ozturk et al., 2017; Demir et al., 2020).

Situations contributing to medical errors include factors such as practice settings (Yesilyurt, Turan, & Yüksel, 2024), education-related issues (Karakas et al., 2023), level of conscious awareness (Gorucu & Turk, 2025), and personality traits (Kil & Chatzi, 2025). To reduce the risk of medical errors in healthcare practice, it is important to use attention control levels in conjunction with rational-intuitive decision-making skills. Attention control refers to an individual's capacity to sustain, divide, and direct attention when processing information (Akın et al., 2013). In clinical settings, factors such as distraction, heavy workload, stress, or fatigue increase the likelihood of making erroneous decisions (Thomas et al., 2017). The clinical decision-making process involves not only rational but also intuitive approaches. While the rational approach emphasises systematic information processing and evidence-based assessment, the intuitive approach facilitates decision-making, particularly in urgent or uncertain situations (Ime, Soyer, & Keskinoglu, 2020).

In the midwifery and nursing professions, the principle of ‘do no harm’ within the framework of ethical values forms the basis of patient safety, and preventing medical errors is essential to ensuring patient safety. The medical error tendencies of students who will become future healthcare professionals are critically important in terms of patient safety. Although there are studies in the literature on medical error tendencies, there are no studies investigating the relationship between attention control and rational-intuitive decision-making approaches in midwifery and nursing students and their tendency towards medical errors. Therefore, this study aimed to determine the relationship between midwifery and nursing students' levels of attention control and rational-intuitive decision-making skills and their tendency towards medical errors.

Research Questions

1. What is the level of medical error tendency among midwifery and nursing students?
2. Is there a relationship between sociodemographic characteristics and medical error tendency?
3. Is there a relationship between attention control levels and the tendency to make medical errors?
4. Is there a relationship between rational-intuitive decision-making skills and the tendency to make medical errors?

MATERIAL AND METHODS

Research Type

The cross-sectional study was conducted between January and May 2023 with midwifery and nursing students studying at a university, Faculty of Health Sciences. The reporting of this research followed the STROBE recommendations for cross-sectional designs (Von Elm et al., 2014).

Study Population and Sample

The study population consisted of 908 midwifery and nursing students. The sample size was calculated using the Epiinfo 7.0 programme (CDC, 2025) with a prevalence of 50%, a confidence level of 95%, and a margin of error of 3%, resulting in 491 participants. Students aged 18 years and older, enrolled in the midwifery/nursing department of the Faculty of Health Sciences at a university in their second year or above, and who volunteered to participate in the study were included in the research. The study employed a convenience sampling method among students who met the inclusion criteria and volunteered to participate.

Data Collection

Data were collected by the researchers on scheduled dates at the conclusion of class sessions using face-to-face interviews. Prior to data collection, students were provided with detailed information regarding the objectives and scope of the study, and informed consent was obtained on a voluntary basis. Completion of the questionnaires required approximately ten minutes. A total of 61 students (12.4%) were excluded from the study: 22 (36.0%) declined participation, 29 (47.6%) were absent during data collection, and 10 (16.4%) submitted incomplete or invalid responses. To maintain the intended sample size, an equivalent number of additional participants were recruited, resulting in a final sample of 491 students.

Data Collection Tools

Data were collected using the Descriptive Characteristics Questionnaire, the Attention Control Scale, the Rational-Intuitive Decision-Making Styles Scale, and the Tendency to Make Medical Errors in Nursing Scale.

Descriptive Characteristics Questionnaire: The form was developed by the researchers based on the literature and includes questions on age, department, year of study, high school graduated from, place where the majority of life was spent, parental cohabitation status, voluntary choice of department, perceived difficulty of the profession, profession-related concerns, future plans, and Weighted Grade Point Average (WGPA) (Karaveli, 2020; Karakas et al., 2023; Yesilyurt, Turan, & Yüksel, 2024).

Tendency to Make Medical Errors Scale (TMES***):*** The scale, developed in 2010 to measure the level of susceptibility to medical errors, consists of 49 items and is a five-point Likert-type scale with five subscales (Medication and Transfusion Practices, Infection Prevention, Patient Monitoring and Equipment Safety, Fall Prevention, and Communication) (Ozata & Altunkan, 2010). The scale can yield scores ranging from 49 to 245, with higher total scores indicating a lower tendency for medical errors. The Cronbach's alpha value was found to be 0.95 in the scale's development study and 0.98 in this study.

Attention Control Scale: The scale is a single-dimensional measure consisting of 20 items, developed by Deerby and Reed (2001) to measure individuals' voluntary attention control levels, adapted into Turkish by Akın et al. (2013), and is a four-point Likert-type scale (Derryberry & Reed, 2001; Akın et al., 2013). Scores on the scale range from 20 to 80, with higher total scores indicating greater levels of attention control. The Cronbach's alpha coefficient was found to be 0.78 in the adaptation study of the scale and 0.90 in this study.

Rational and Intuitive Decision-Making Styles Scale: It was developed to measure the level of rational and intuitive decision-making (Hamilton et al., 2016) and consists of 10 items, a five-point Likert scale, and two subscales (Rational Decision-Making, Intuitive Decision-Making). No total score is calculated on the scale; the scores that can be obtained for each sub-dimension range from 5 to 20, and as the scores increase, so does the level of rational and intuitive decision-making (Ime et al., 2020). In the adaptation study of the scale, the Cronbach's alpha value was found to be 0.90 for Rational Decision Making and 0.85 for Intuitive Decision Making; in this study, the values obtained were 0.89 and 0.88, respectively.

Ethical Consideration

This study was conducted in accordance with the principles of the Helsinki Declaration. Permission was obtained from the a university Health Sciences Non-Interventional Research Ethics Committee (Date: 06.12.2022, Approval Number: 2022/101) and the a university Faculty of Health Sciences (Date: 30.12.2022, Approval Number: E.212646). Furthermore, verbal and written

consent was obtained from all students participating in the study.

Data Analysis

The collected surveys were analyzed using SPSS version 25. Descriptive statistics were presented as counts, percentages, means, and standard deviations. The normality assumption for continuous variables was assessed using the Shapiro–Wilk test and by examining skewness and kurtosis coefficients within ±1.5. Comparisons of two group means were performed using the independent samples t-test, while comparisons of three or more group means were conducted using one-way ANOVA with Tukey HSD post hoc tests. Relationships between continuous variables were evaluated using Pearson correlation analysis. Variables found to be significant in univariate analyses were further assessed using linear regression analysis. The Type I error rate was set at 5% ($p<0.05$).

RESULTS

Of the students participating in the study (n=491), 50.5% were aged 18-20, 56.8% were midwifery students, 44.8% were in their second year of study, 11.4% were health vocational school graduates, 29.9% had spent most of their lives in the district, 91.6% had parents living together, 70.9% had chosen their department voluntarily, and 39.7% selected the department because of their interest in the profession.

Table 1. Sociodemographic Characteristics of the Research Group (n=491)

Variables	n	%
Age		
18-20	248	50.5
21 and above	243	49.5
Department		
Midwifery	279	56.8
Nursing	212	43.2
Class		
2	220	44.8
3	214	43.6
4	57	11.6
High school graduated from		
Health vocational high school	56	11.4
Other*	435	88.6
The place where he spent most of his life		
Metropolitan city	139	28.3
City	119	24.2
District	147	29.9
Village	86	17.5
The living situation of the mother and father		
Parents together	450	91.6
Divorced	30	6.1
Deceased	11	2.2
Department chosen voluntarily		
Yes	348	70.9
No	143	29.1
Reason for choosing the department		
Interest in the profession	195	39.7
Ease of finding a job	151	30.8
Other**	145	29.5
Perceived difficulty of the profession		
No	61	12.4
Yes	430	87.6
Profession-related concerns		
None	61	12.4
Risk of endangering patients' lives	312	63.5
Restrictions on social life	61	12.4
Low professions status	40	8.1
Workplace hazards (e.g., infectious diseases, violence)	17	3.5
Future plans		
Work in the field as a midwife/nurse	346	70.5
Pursue an academic career	121	24.6
Transition to another profession	24	4.9
Total	**491**	**100.0**

*: Anatolian High School, Science High School, General High School.
**: Recommended by relatives, admitted to this department based on exam score, enjoys helping others, good salary.

The participants' mean age was 20.69 ± 1.52 years, and their Weighted Grade Point Average (WGPA) was 2.84 ± 0.45. The mean scores were 52.02 ± 9.23 for the Attention Control Scale, 21.50 ± 3.30 for the Rational Decision-Making Scale, 16.98 ± 5.03 for the Intuitive Decision-Making Scale (IDMS), and 221.45 ± 27.91 for the Tendency to Make Medical Errors Scale. For the TMES subscales, mean scores were 81.82 ± 10.57 for Medication and Transfusion Practices, 54.39 ± 7.17 for Infection Prevention, 39.81 ± 6.32 for Patient Monitoring and Device Safety, 22.70 ± 3.15 for Fall Prevention, and 22.53 ± 3.68 for Communication (Table 2).

Table 2. Distribution of Continuous Variables in the Research Group (n=491)

Variable	Mean ± SD	Min-Max
Age	20.69 ± 1.52	18-40
WGPA	2.84 ± 0.45	1.54-3.94
Attention Control Scale	52.02 ± 9.23	32-79
Rational Decision-Making Scale	21.50 ± 3.30	5-25
Intuitive Decision-Making Scale	16.98 ± 5.03	5-25
Tendency to Make Medical Errors Scale	221.45 ± 27.91	62-245
Medication and Transfusion Practices	81.82 ± 10.57	23-90
Infection Prevention	54.39 ± 7.17	12-60
Patient Monitoring and Equipment Safety	39.81 ± 6.32	9-45
Fall Prevention	22.70 ± 3.15	10-25
Communication	22.53 ± 3.68	5-25

X: Mean, **SD:** Standard deviation. **WGPA:** Weighted Grade Point Average

In the study group, the mean score of the Tendency to Make Medical Errors Scale (TMES) was significantly higher among nursing students (t=-3.545, p<0.001), students who did not choose their department voluntarily (t=-3.021, p=0.003), and those who did not select the department out of interest in the profession (t=7.909, p<0.001). No significant differences were observed according to age, year of study, type of high school graduated from, place where most of life was spent, family structure, perceived difficulty of the profession, profession-related concerns, or future career plans (p>0.05) (Table 3).

Table 3. Tendency to Make Medical Errors by Sociodemographic Characteristics in the Research Group (n=491)

Variable	n (%)	Mean ± SD	Test value	p
Age				
18-20	248 (50.5)	222.07 ± 27.59	t=0.497	0.619
21 and above	243 (49.5)	220.82 ± 28.27		
Department				
Midwifery	279 (56.8)	225.29 ± 25.34	**t=3.545**	**<0.001**
Nursing	212 (43.2)	216.27 ± 30.26		
Class				
2	220 (44.8)	221.41 ± 29.31	F=0.870	0.420
3	214 (43.6)	220.33 ± 28.68		
4	57 (11.6)	225.82 ± 17.43		
High school graduated from				
Health vocational high school	56 (11.4)	223.16 ± 20.00	t=0.485	0.628
Other*	435 (88.6)	221.23 ± 28.78		
The place where he spent most of his life				
Metropolitan city	139 (28.3)	220.48 ± 27.42	F=0.541	0.655
City	119 (24.2)	223.73 ± 26.72		
District	147 (29.9)	219.82 ± 29.39		
Village	86 (17.5)	222.67 ± 27.91		
The living situation of the mother and father				
Parents living together	450 (91.6)	221.90 ± 26.49	t=1.173	0.241
Parents living separately	41 (8.4)	216.56 ± 40.43		

Table 3. (Continued) Tendency to Make Medical Errors by Sociodemographic Characteristics in the Research Group (n=491)

Variable	n (%)	Mean ± SD	Test value	p
Department chosen voluntarily				
Yes	348 (70.9)	224.16 ± 24.99	**t=3.021**	**0.003**
No	143 (29.1)	214.86 ± 33.16		
Reason for choosing the department				
Interest in the profession[a]	195 (39.7)	227.51 ± 22.38	**F=7.909**	**<0.001**
Ease of finding a job[b]	151 (30.8)	216.89 ± 30.35	a>b=c	
Other**[c]	145 (29.59	218.05 ± 30.54		
Perceived difficulty of the profession				
No	61 (12.4)	227.16 ± 23.62	t=1.710	0.088
Yes	430 (87.6)	220.64 ± 23.39		
Profession-related concerns				
Risk of endangering patients' lives[a]	312 (63.5)	222.24 ± 26.89		
Restrictions on social life[b]	61 (12.49	222.60 ± 26.42		
Low professionaş status[c]	40 (8.1)	209.35 ± 38.76	F=3.246	0.052
Workplace hazards (e.g., infectious diseases, violence) [d]	17 (3.52)	210.94 ± 28.36		
Future plans				
Work in the field as a midwife/nurse	346 (70.5)	222.71 ± 26.68		
Pursue an academic career	121(24.6)	223.77 ± 27.98	F = 1.566	0.210
Transition to another profession	24(4.9)	212.33 ± 35.60		

*: Anatolian High School, Science High School, General High School.
**: Recommended by relatives, admitted to this department based on exam score, enjoys helping others, good salary.
t : Student's t test, **F:** Oneway ANOVA (post hoc: Tukey HSD)
***: As the Medical Error Propensity Scale score increases, the tendency to make medical errors decreases.

When examining the relationship between continuous variables and the Tendency to Make Medical Errors Scale in the study group, it was observed that as the Weighted Grade Point Average (WGPA) decreased (r=0.184, p=0.026), Attention Control Scale scores decreased (r=0.139, p=0.002), Rational Decision-Making Scale scores decreased (r=0.466, p<0.001), and Intuitive Decision-Making Scale scores decreased (r=0.145, p<0.001), the tendency to make medical errors increased. No significant differences were found in Tendency to Make Medical Errors in Scale scores according to age (p>0.05) (Table 4).

Table 4. Correlation of Continuous Variables with the Tendency to Make Medical Errors Scale (n=491)

Variable	r	p
Age	-0.002	0.969
WGPA	0.184	**<0.001**
Attention Control Scale	0.139	**0.002**
Rational Decision-Making Scale	0.466	**<0.001**
Intuitive Decision-Making Scale	0.145	**<0.001**

r: Pearson's correlation coefficient**; WGPA:** Weighted Grade Point Average

Following univariate analyses, variables found to be statistically significant were evaluated using linear regression analysis with the Enter method to assess the relationship between independent and dependent variables. The variables included in the model explain 25% of the variation in the TMES (R2=0.267, Adjusted R2=0.256, F=38.206, p<0.001). As a result of the linear regression analysis, the Medical Error Propensity Scale score is high among nursing students (β =-7.511; 95% CI -11.94; -3.07). Furthermore, as WGPA decreases (β=7.324; 95% CI 2.42;12.22), as the level of Attention Control decreases (β=0.296; 95% CI 0.06;0.53), and as the Rational Decision Making score decreases (β=3.499; 95% CI 2.81; 4.18), the tendency to make medical

errors increases. There is no statistically significant difference between the tendency to make medical errors and voluntarily choosing the department, department preference, and intuitive decision-making level (p>0.05) (Table 5).

Tablo 5. Evaluation of Independent Variables and Tendency to Make Medical Errors Scores Using Linear Regression Analysis (n=491)

Variable	ß	S.E.	Std ß	p	%95 C.I.	
					Lower	Upper
Department	-7.511	2.256	-0.133	**<0.001**	-11.94	-3.07
Department chosen voluntarily	-4.913	3.174	-0.080	0.122	-11.15	1.32
Reason for Choosing the Department	0.066	1.780	0.002	0.970	-3.43	3.56
WGPA	7.324	2.492	2.938	**0.003**	2.42	12.22
Attention Control Scale	0.296	0.120	0.098	**0.014**	0.06	0.53
Rational Decision-Making Scale	3.499	0.347	0.414	**< 0.001**	2.81	4.18
Intuitive Decision-Making Scale	0.182	0.229	0.033	0.427	-0.26	0.63

R=0.267, **Adjusted R^2**=0.256, **F**=25.107, **p**<0.001. **β:** Regression Coefficient**, SE:** Standard Error**, C.I:** Confidence Interval**.** ***Variables included in the model: Department:*** *(Midwifery: 0, Nursing: 1),* ***Department Chosen Voluntarily:*** *(Yes: 0, No: 1),* ***Reason for Choosing the Department:*** *(Love the profession: 0, Easier employment: 1, Other: 2),* ***WGPA:*** *(continuous),* ***Attention Control Scale:*** *(continuous),* ***Rational Decision-Making Scale:*** *(continuous),* ***Intuitive Decision-Making Scale:*** *(continuous)*

DISCUSSION

The study, conducted to examine the relationship between midwifery and nursing students' attention control levels and rational-intuitive decision-making skills and their tendency towards medical errors, found that participants' Medical Error Tendency Scale mean score was 221.45 ± 27.91, indicating a low tendency towards medical errors. Low susceptibility to medical error indicates that students are attentive, adequately equipped, and confident individuals in healthcare practice, and therefore have a low probability of making medical errors during healthcare delivery. Similarly to this study, in the study conducted by Cekic and Sezer with nursing students, the mean score on the Medical Error Propensity Scale was 218.08 ± 22.18 (Cekic & Sezer, 2024), and in the study conducted by Can Gezer with 3rd and 4th-year nursing students was 217.01 ± 26.63 (Can Gezer, 2024), and in the study conducted by Karaveli Çakır with nursing students, it was 217.57 ± 27.12 (Karaveli, 2020), indicating a low tendency for medical errors.

Contrary to the findings of this study, Karakaş and colleagues found a lower tendency for medical errors (230.10 ± 23.69) (Karakas et al., 2023); Demir and colleagues found 183.9 ± 17.1 in their study with midwifery students (Demir et al., 2020). Turan and colleagues' study with midwifery and nursing intern students found 200.62 ± 33.07 (Turan et al., 2017), Mousa and colleagues' multicentre study with nursing students found 188 ± 24.9 (Mousa et al., 2024), and in a study conducted with nursing students in Palestine, it was found to be 161 ± 75.34 (Salameh et al., 2025). These studies show a higher tendency for medical errors compared to our study. These differences in the literature may be due to differences in students' clinical practice opportunities. Indeed, in Turkey, the high number of midwifery and nursing student quotas, limited practice areas, and the low number of teaching staff per student (Demir et al., 2020) may limit students' participation in clinical practice. This situation can negatively affect students' skill acquisition.

In this study, it was found that participants scored highly on all subscales of the scale. When examining these subdimensions of the scale, it was found that the subdimension of medication and transfusion practices had the highest mean score, and therefore the tendency for medical errors was lower in this subdimension, while the subdimensions of fall prevention and communication had the lowest mean scores, and therefore the tendency for medical errors was higher in these subdimensions. Similar results were found in studies by Demir et al. (2020), Turan et al. (2017), and Karaveli Cakir (2020), which were similar to this study. On the other hand, unlike our study, Şahin et al.'s study (Akgun Sahin & Ozdemir Kardas, 2015) found that nurses scored low on all sub-dimensions.

In the study, the results of the linear regression analysis showed that the Medical Error Tendency Scale score was high among nursing students.

Furthermore, as the WGPA score decreased, as the level of Attention Control decreased, and as the rational decision-making score decreased, the tendency to make medical errors increased. The research group found that nursing students had a high tendency to make medical errors. This situation may be due to the fact that there are more nursing students than midwifery students, and therefore they have fewer practical/internship hours than midwifery students, which may limit their practical skills. Indeed, the Nursing Undergraduate Education Workshop Final Report also emphasises the rapid increase in student numbers and the low number of teaching staff per student in practical training (YOK, 2017). The study found that participants' tendency to make medical errors increased as their WGPA decreased. No study in the literature has evaluated the relationship between students' WGPA and medical errors. This may be related to the fact that students who are successful in theory and practice, and therefore have a high WGPA, make fewer errors. Indeed, practical courses have a significant effect on WGPA. The study found that the tendency to make medical errors increased as the level of attention control decreased. Although there is no study in the literature that directly addresses this issue, a study by Gorucu and Turk evaluating the relationship between conscious awareness and medical errors found that errors decreased as conscious awareness increased, but this was not statistically significant (Gorucu & Türk, 2025). In a study conducted by Kiyici and Koc with nursing students, the level of attention control was found to be moderate, and low attention and control were found to negatively affect learning and clinical performance. The study found that as the level of rational decision-making decreased, the tendency for medical errors increased. Although no study evaluating medical error tendency in relation to this topic was found in the literature, a study evaluating the relationship between clinical decision-making and medical error found that medical errors decreased as clinical decision-making skills increased (Cekic & Sezer, 2024). Studies in the literature show that students' risk of making incorrect choices increases under stress, fatigue, or heavy workloads (Turan et al., 2017; Demir et al., 2020). Therefore, as the level of rational decision-making decreases among nursing and midwifery students, the tendency for medical errors may increase due to cognitive limitations such as misjudgement, use of incomplete information, and failure to adequately analyse alternatives in clinical processes.

The study found no statistically significant differences in the tendency to make medical errors between univariate and multivariate analyses based on age, class, high school attended, place where most of one's life was spent, family structure, voluntary choice of department, perception of difficulties in the chosen profession, anxiety related to the profession, future plans, and level of intuitive decision-making. In this context, the fact that sociodemographic characteristics and motivational variables do not significantly affect the tendency to make medical errors indicates that clinical experience and skill level, cognitive capacity and attention control, stress and fatigue levels, and the quality of educational guidance are more important in preventing the tendency to make medical errors. Indeed, in the study by Gorucu et al., cognitive characteristics, rather than sociodemographic characteristics, were found to be effective in reducing the tendency towards medical errors (Gorucu & Turk, 2025). Although the level of intuitive decision-making was correlated with the tendency for medical errors in the correlation analysis, it lost its significance in the regression analysis. This may be due to the fact that intuitive decision-making, which is based on a person's experience, insight, and rapid thinking processes and is mostly unconscious, has not yet developed to the desired extent in students.

Limitations

The cross-sectional design of the study limits the assessment of causal relationships, while the fact that the research was conducted in a single faculty restricts the generalisability of the findings. Furthermore, due to the limited number of studies evaluating the relationship between attention control and rational-intuitive decision-making approaches and medical error tendency using multivariate analyses, it was not possible to comprehensively compare the findings, and the discussion focused on horizontal comparisons. The strengths of the study include covering both midwifery and nursing students in a relatively large research group, comparing the level of medical error tendency between these two groups, and being one of the first studies to reveal the relationship between attention control perception and rational-intuitive decision-making and medical error.

CONCLUSION

Participants were found to have a low tendency towards medical errors, moderate attention control

perceptions, and high rational decision-making perceptions. The low tendency of midwifery and nursing students to make medical errors indicates that they have developed strong competencies in clinical practice, which contributes to reducing the frequency of medical errors. As attention control perception and rational decision-making perception increase, the tendency towards medical error decreases. To reduce students' tendency towards medical error, it may be advisable to organise training to strengthen attention control skills and adopt approaches that develop rational decision-making processes. Attention control and rational intuitive approaches should be considered in reducing the tendency towards medical error.

Ethics Committe Approval

Ethics committee approval was received for this study from the Balıkesir University Health Sciences Non-Interventional Research Ethics Committee (Date: 06.12.2022, and Approval Number: 2022/101).

Author Contributions

Idea/Concept: E.Ç. Design: E.Ç., F.Ö., Audit/Consultancy: E.Ç., Analysis and/or Interpretation: E.Ç., Source Review: E.Ç., F.Ö., Writing the Article: E.Ç., F.Ö., Critical Review: E.Ç.

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Conflict of Interest

The authors have no conflict of interest to declare.

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