

# The Relationship Between Patient Safety Culture in Medication Administration and Nurses' Tendency Toward Medical Errors

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## Abstract

**Introduction:** Medication administration is a critical process in healthcare, directly influencing patient safety. Nurses play a key role in this process and are expected to adopt a strong safety culture.

**Methods:** This descriptive and correlational study was conducted with 150 nurses working at a training and research hospital between October 15, and November, 1, 2025. Data were collected using "Nurse Demographic Information Form," "Patient Safety Culture Scale in Medication Administration," and "Tendency Towards Medical Errors Scale."

**Results:** The mean patient safety culture score in medication administration was high ( $82.06 \pm 9.18$ ), while the mean medical error propensity score indicated a low tendency toward errors ( $230.04 \pm 15.08$ ). A statistically significant and positive correlation was found between patient safety culture and medical error propensity scores ( $r=0.502$ ,  $p<0.001$ ). Considering that higher scores on the Medical Error Propensity Scale represent a lower tendency toward medical errors, this finding indicates that a stronger patient safety culture is associated with reduced error propensity. Nurses with longer professional experience demonstrated significantly higher patient safety culture scores, while nurses with postgraduate education demonstrated higher patient safety culture scores and lower self-reported medical error tendencies.

**Discussion and Conclusion:** Nurses with higher perceptions of patient safety culture tend to be associated with lower tendencies toward medical errors. Organizational strategies that support safety culture, continuous professional education, and balanced workload management may be associated with medical error tendencies and patient care quality.

**Keywords:** Medical errors; Nursing; Patient safety; Safety management

Medication administration is a fundamental component of patient care and a critical process that directly affects patient safety. Errors occurring in this process not only negatively impact the patient's health but may also lead to ethical, legal, and psychological consequences for

healthcare professionals. As healthcare professionals who play an active role in the medication administration process, nurses hold key positions in ensuring medication safety.<sup>[1,2]</sup> The behaviors, values, and approaches exhibited by nurses during this process directly shape the culture of patient

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safety in medication administration.<sup>[3]</sup> This culture refers to an approach that prioritizes safe practices, embraces learning from errors, supports open communication, and adopts system-based solutions.<sup>[3,4]</sup> An established safety culture throughout the institution is of great importance, not only in enabling nurses to perform careful, attentive, and informed practices but also in preventing potential errors, encouraging incident reporting, and contributing to systemic improvements.<sup>[5,6]</sup> Conversely, the tendency of nurses to commit medical errors is defined as a heightened susceptibility to unintended actions that may result from several contributing factors, such as insufficient knowledge, excessive workload, diminished attention, or physical and mental exhaustion.<sup>[7]</sup> The literature demonstrates that a well-established patient safety culture substantially mitigates nurses' propensity for medical errors, whereas insufficient or poorly structured safety practices are associated with an elevated likelihood of errors and consequent patient harm.<sup>[2,8]</sup> Therefore, it is important for nurses to internalize a culture of patient safety in medication administration to maintain safe medication practices. Moreover, evaluating nurses' tendency toward medical errors is critical for improving the quality of patient care and ensuring continuity in healthcare services.<sup>[9,10]</sup>

A review of the literature reveals that studies have investigated either nurses' tendency toward medical errors or their patient safety culture separately.<sup>[11–13]</sup> In a study conducted with nurses working in medical-surgical units, it was found that nurses had a positive perception of the patientsafetyculture.<sup>[11]</sup> Another study that examined nurses' patient safety culture and related factors demonstrated that both individual (educational level) and institutional (unit of employment, approach after errors, and working hours) factors significantly influenced nurses' perceptions of patient safety culture.<sup>[13]</sup> A previous study investigating nurses' propensity for medical errors reported that this tendency was notably higher among nurses employed in surgical units.<sup>[11]</sup> Despite these findings, the literature lacks research specifically exploring how nurses' patient safety culture in medication administration relates to their likelihood of committing medical errors. In this context, the present study sought to examine the association between the patient safety culture in medication administration and nurses' tendency to make medical errors. Accordingly, this study was guided by the following questions:

- What are the levels of patient safety culture exhibited by nurses during medication administration?
- What is the extent of nurses' tendency to commit medical errors?

- Is there an association between nurses' patient safety culture in medication administration and their tendency to make medical errors?

## Materials and Methods

### Study Type, Place, and Time

The present research employed a descriptive and correlational design and was conducted among nurses working in a training and research hospital between October 15 and November 1, 2025. The study was reported in accordance with the recommendations outlined in the STROBE Statement.<sup>[14]</sup>

### Population and Sample

The study population consisted of 400 nurses employed at a training and research hospital, and the study sample consisted of 150 nurses actively involved in patient care services. A convenience sampling method was used, and nurses who met the inclusion criteria and agreed to participate were included in the study. Before data collection, an a priori power analysis was conducted using G\*Power version 3.1.9.7. A two-tailed Pearson correlation analysis was planned to examine the association between nurses' patient safety culture in medication administration and their tendency toward medical errors. As no previous studies had directly investigated this relationship, Cohen's standardized effect size criteria were used to guide the power calculation.<sup>[15]</sup> Accordingly, an anticipated medium effect size ( $r=0.30$ ), an alpha level of 0.05, and a statistical power of 0.80 were used. The minimum required sample size was calculated as 84 participants. To increase statistical precision and account for potentially incomplete questionnaires, 150 nurses were recruited.

### Inclusion Criteria

- Nurses who were not on scheduled annual leave,
- Nurses who were actively employed in the hospital during the study period,
- Nurses who voluntarily consented to participate in the research,
- Nurses who had no limitations preventing them from completing the data collection.

### Data Collection Tools

The research data were gathered using the measurement instruments outlined below.

### Nurse Demographic Information Form

This section, developed based on relevant literature, included 11 items addressing nurses' demographic characteristics, such as age, gender, marital status, professional tenure, and current unit of practice, as well as factors related to medical errors and medication administration.<sup>[3,9,13]</sup>

### Patient Safety Culture Scale in Medication Administration

The scale, developed by Özen and Çetin (2024) as a tool for evaluating safe medication management,<sup>[3]</sup> comprises 14 items organized into three sub-dimensions: Importance (items 1–6), Prevention (items 7–11), and Devotion (items 12–14). The items in the devotion dimension were reverse-scored. Designed as a 7-point Likert-type instrument, the scale assigns scores from 1 to 7, ranging from “strongly disagree” to “strongly agree.” The total possible score ranged from 14 to 98, with higher scores reflecting a more robust patient safety culture in medication administration. In the original validation study, Cronbach's alpha coefficient was reported to be 0.81. In the current study, reliability analyses yielded alpha coefficients of 0.85 for the importance dimension, 0.80 for prevention, 0.87 for devotion, and 0.73 for the overall scale.

### Tendency Toward Medical Errors Scale

The scale was developed and validated by Özata and Altunkan in 2010.<sup>[16]</sup> It includes 49 items across 5 sub-dimensions that cover routine activities performed by nurses in patient care: Medication and Transfusion Practices (18 items), Hospital Infections (12 items), Patient Monitoring and Material Safety (9 items), Falls (5 items), and Communication (5 items). The scale is of Likert type and is evaluated in 5 categories: “1=never,” “2=very rarely,” “3=sometimes,” “4=usually,” and “5=always.” The scale was evaluated using the mean score, with values ranging from 1 to 5, where 1 represented the lowest and 5 the highest level. Higher mean scores approaching 5 indicate a reduced tendency to commit medical errors, whereas lower scores approaching 1 reflect an increased tendency. The overall scale score ranged from 49 to 245. In the original study by Özata and Altunkan, Cronbach's alpha coefficient was reported as 0.95. In the present study, reliability analyses produced alpha values of 0.91 for the Medication and Transfusion Practices sub-dimension, 0.90 for Hospital Infections, 0.86 for Patient Monitoring and Material Safety, 0.85 for Falls, 0.83 for Communication, and 0.95 for the total scale.

### Data Collection

Data for this study were collected through face-to-face survey administration with nurses who voluntarily agreed to participate after obtaining ethical approval and institutional permissions. The data were gathered during the period determined by the researcher through direct interaction with the nurses working at the relevant healthcare institutions. Within the scope of the study, participants were provided with a demographic information form, the “Patient Safety Culture Scale in Medication Administration,” and the “Tendency Towards Medical Errors Scale.” The questionnaire was designed in a clear and comprehensible manner to facilitate participants' responses and was structured to be completed within approximately 10–15 min. During implementation, the researcher provided the necessary guidance and information to ensure that participants responded in line with the principles of confidentiality and anonymity. During the data collection process, the nurses' clinical workload was considered, and appropriate timeframes were selected; participation was based entirely on voluntariness.

### Ethical Considerations

Before initiating the research, ethical approval was obtained from the Hatay Mustafa Kemal University Non-Invasive Research Ethics Committee (date: October 8, 2025; decision no: 30). Written authorization was obtained from the institution where the study was conducted. Before data collection, the nurses were informed in detail about the purpose, scope, and procedures of the study, and written informed consent was obtained from all participants. The principles of the Declaration of Helsinki were followed throughout the research process. Furthermore, permission to use the scales utilized in the study was obtained through email from the original authors who conducted Turkish validity and reliability studies.

### Data Analysis

Data analysis was performed using the Statistical Package for the Social Sciences 25.0 statistical software package (IBM Corp., Armonk, NY, USA). Descriptive analyses, including frequency, percentage, mean, and standard deviation, were used to summarize the characteristics of the data. We assessed the normality of the distribution based on skewness and kurtosis values, and distributions with values between –1.5 and +1.5 were considered to meet the normality assumption.<sup>[17]</sup> For variables that satisfied the normality criteria, independent samples t-tests were

used to compare differences between two groups, while one-way analysis of variance was applied for comparisons involving three or more groups. Correlation analyses were conducted to examine the relationships between the scale scores. All statistical analyses were performed at a 95% confidence level, with statistical significance set at  $p < 0.05$ .

## Results

The nurses included in the study had a mean age of  $30.06 \pm 4.69$  years old. Of the participants, 52.7% were female, and 47.3% were male. Regarding educational status, the highest proportion (88.0%) were bachelor's degree graduates. In terms of professional experience, 48.7% had 1–5 years of work experience. 34% of the nurses worked in internal medicine. Regarding work shifts, 76.7% worked in shifts, while 23.3% worked during daytime hours. Regarding shift length, 71.3% were assigned to 24-h shifts. Of the participants, 95.3% had received in-service training on medication errors, and 85.3% reported that they had never reported a medication error. Furthermore, 58.0% of the respondents expressed concerns about making medical errors (Table 1).

The mean total score of the Patient Safety Culture in Medication Management Scale was  $82.06 \pm 9.18$ . The subdimension mean scores were  $36.38 \pm 4.34$  for the importance subscale,  $31.25 \pm 3.28$  for the prevention subscale, and  $14.42 \pm 6.44$  for the dedication subscale. The mean total score on the medical error propensity scale was  $230.04 \pm 15.08$ . The subdimension mean scores were as follows: Medication and transfusion applications  $85.80 \pm 5.37$ , infection prevention  $56.76 \pm 4.16$ , fall prevention  $22.94 \pm 2.26$ , patient monitoring and material safety  $41.33 \pm 4.02$ , and communication  $23.20 \pm 2.28$  (Table 2).

A statistically significant difference was found in the total score of the Patient Safety Culture in Medication Management Scale according to the number of years of professional experience ( $p = 0.012$ ). The highest mean score was observed in the group with  $\geq 16$  years of experience ( $87.20 \pm 10.48$ ). A significant difference was also identified based on educational status ( $p = 0.010$ ), with the highest mean score ( $87.00 \pm 9.64$ ) belonging to participants with postgraduate degrees. No statistically significant differences were observed in the subscale scores of importance, prevention, and dedication with respect to gender, years of professional experience, or shift length ( $p > 0.05$ ) (Table 3).

However, a statistically significant difference was found in the total score of the Medical Error Propensity Scale according to educational status ( $p = 0.029$ ), with the highest mean score ( $238.66 \pm 7.09$ ) observed among participants with a postgraduate degree. A significant difference was

**Table 1.** Descriptive characteristics of nurses (n=150)

| Variables                                                                       | Mean $\pm$ SD<br>(min-max)  |      |
|---------------------------------------------------------------------------------|-----------------------------|------|
|                                                                                 | n                           | %    |
| Age                                                                             | 30.06 $\pm$ 4.69<br>(23–47) |      |
| Gender                                                                          |                             |      |
| Female                                                                          | 79                          | 52.7 |
| Male                                                                            | 71                          | 47.3 |
| Education status                                                                |                             |      |
| Secondary education                                                             | 9                           | 6.0  |
| Associate degree                                                                | 6                           | 4.0  |
| Bachelor's degree                                                               | 132                         | 88.0 |
| Graduate degree                                                                 | 3                           | 2.0  |
| Years of professional experience                                                |                             |      |
| 1–5 years                                                                       | 73                          | 48.7 |
| 6–10 years                                                                      | 50                          | 33.3 |
| 11–15 years                                                                     | 17                          | 11.3 |
| 16 years and above                                                              | 10                          | 6.7  |
| Current clinical unit                                                           |                             |      |
| Internal medicine units                                                         | 51                          | 34.0 |
| Surgical units                                                                  | 29                          | 19.3 |
| Intensive care units                                                            | 49                          | 32.7 |
| Emergency service                                                               | 21                          | 14.0 |
| Work schedule                                                                   |                             |      |
| Day shift                                                                       | 35                          | 23.3 |
| Shift work                                                                      | 115                         | 76.7 |
| Shift length                                                                    |                             |      |
| 8 h                                                                             | 35                          | 23.3 |
| 16 h                                                                            | 8                           | 5.3  |
| 24 h                                                                            | 107                         | 71.3 |
| Received in-service training on medication errors                               |                             |      |
| Yes                                                                             | 143                         | 95.3 |
| No                                                                              | 7                           | 4.7  |
| Medication error reporting experience (If yes, please answer the next question) |                             |      |
| Yes                                                                             | 22                          | 14.7 |
| No                                                                              | 128                         | 85.3 |
| Experience of sanctions after reporting a medication error                      |                             |      |
| Yes                                                                             | 16                          | 73.0 |
| No                                                                              | 6                           | 27.0 |
| Concern about making a medical error                                            |                             |      |
| Yes                                                                             | 87                          | 58.0 |
| Sometimes                                                                       | 46                          | 30.7 |
| No                                                                              | 17                          | 11.3 |

SD: Standard deviation; %: Percentage.

**Table 2.** Distribution of mean scores of the Patient Safety Culture in Drug Administration Scale and the Medical Error Tendency Scale among nurses (n=150)

| Scales                                                | Number of items | Min-max score that can be obtained | Min-max points received | Mean±SD      |
|-------------------------------------------------------|-----------------|------------------------------------|-------------------------|--------------|
| Patient safety culture scale in medication management |                 |                                    |                         |              |
| Importance                                            | 6               | 6–42                               | 19–42                   | 36.38±4.34   |
| Prevention                                            | 5               | 5–35                               | 13–35                   | 31.25±3.28   |
| Devotion                                              | 3               | 3–21                               | 3–21                    | 14.42±6.44   |
| Total points                                          | 14              | 14–98                              | 43–98                   | 82.06±9.18   |
| Tendency towards medical errors scale                 |                 |                                    |                         |              |
| Medication and transfusion practices                  | 18              | 18–90                              | 66–90                   | 85.80±5.37   |
| Hospital infections                                   | 12              | 12–60                              | 45–60                   | 56.76±4.16   |
| Falls                                                 | 5               | 5–25                               | 16–25                   | 22.94±2.26   |
| Patient monitoring and material safety                | 9               | 9–45                               | 28–45                   | 41.33±4.02   |
| Communication                                         | 5               | 5–25                               | 14–25                   | 23.20±2.28   |
| Total points                                          | 49              | 49–245                             | 184–245                 | 230.04±15.08 |

SD: Standard deviation.

**Table 3.** Comparison of nurses' patient safety culture in drug administration scale scores according to selected variables (n=150)

| Patient safety culture scale in medication administration |            |            |            |                      |
|-----------------------------------------------------------|------------|------------|------------|----------------------|
| Variables                                                 | Importance | Prevention | Devotion   | Total points         |
| Gender                                                    |            |            |            |                      |
| Female                                                    | 36.50±3.94 | 31.68±2.91 | 13.96±6.49 | 82.14±9.21           |
| Male                                                      | 36.25±4.77 | 30.77±3.62 | 14.94±6.40 | 81.96±9.21           |
| p*                                                        | 0.723      | 0.091      | 0.354      | 0.741                |
| t**                                                       | 0.355      | 1.700      | -0.930     | -0.332               |
| Years of professional experience (years)                  |            |            |            |                      |
| 1–5 <sup>a</sup>                                          | 36.27±4.14 | 31.10±3.45 | 14.54±6.68 | 81.93±9.31           |
| 6–10 <sup>b</sup>                                         | 36.76±4.56 | 31.44±2.87 | 14.46±5.95 | 82.66±8.35           |
| 11–15 <sup>c</sup>                                        | 34.94±3.88 | 30.35±3.53 | 12.58±7.08 | 77.88±9.09           |
| 16 years and above <sup>d</sup>                           | 37.80±5.11 | 32.90±3.41 | 16.50±6.11 | 87.20±10.48          |
| p*                                                        | 0.342      | 0.254      | 0.490      | <b>0.012, d&gt;b</b> |
| F***                                                      | 1.122      | 1.370      | 0.811      | 4.556                |
| Education status                                          |            |            |            |                      |
| Secondary education <sup>a</sup>                          | 33.33±5.12 | 31.55±2.83 | 15.33±6.42 | 80.22±10.32          |
| Associate degree <sup>b</sup>                             | 37.83±3.31 | 32.33±3.20 | 14.66±3.98 | 84.83±4.35           |
| Bachelor's degree <sup>c</sup>                            | 36.53±4.27 | 31.18±3.34 | 14.23±6.58 | 81.95±9.27           |
| Graduate degree <sup>d</sup>                              | 36.00±5.29 | 31.33±3.21 | 19.66±2.30 | 87.00±9.64           |
| p*                                                        | 0.151      | 0.258      | 0.520      | <b>0.010 d&gt;a</b>  |
| F***                                                      | 1.792      | 0.855      | 0.757      | 4.621                |
| Shift length                                              |            |            |            |                      |
| 8 h                                                       | 35.25±4.57 | 30.62±3.76 | 13.82±6.76 | 79.71±9.49           |
| 16 h                                                      | 37.50±3.20 | 32.25±3.28 | 11.75±6.15 | 81.50±9.79           |
| 24 h                                                      | 36.67±4.30 | 31.38±3.11 | 14.82±6.36 | 82.87±8.98           |
| p*                                                        | 0.188      | 0.341      | 0.355      | 0.206                |
| F***                                                      | 1.693      | 1.083      | 1.042      | 1.595                |

\* p: (p&lt;0.05); \*\*t: Independent t-test; \*\*\*F: One Way analysis of variance Test; a, b, c, d: Bonferroni Test statistics.

**Table 4.** Comparison of nurses' Tendency Towards Medical Errors Scale scores according to some variables (n=150)

| Tendency towards medical errors scale    |                                      |                     |                     |                                        |               |                     |
|------------------------------------------|--------------------------------------|---------------------|---------------------|----------------------------------------|---------------|---------------------|
| Variables                                | Medication and transfusion practices | Hospital infections | Falls               | Patient monitoring and material safety | Communication | Total points        |
| Gender                                   |                                      |                     |                     |                                        |               |                     |
| Female                                   | 86.15±4.91                           | 56.50±4.39          | 22.77±2.50          | 41.12±4.51                             | 23.10±2.57    | 229.65±16.20        |
| Male                                     | 85.42±5.86                           | 57.04±3.90          | 23.14±1.97          | 41.56±3.42                             | 23.30±1.93    | 230.47±13.84        |
| p*                                       | 0.409                                | 0.433               | 0.322               | 0.509                                  | 0.578         | 0.741               |
| t**                                      | 0.828                                | -0.786              | -0.993              | -0.662                                 | -0.558        | -0.332              |
| Years of professional experience (years) |                                      |                     |                     |                                        |               |                     |
| 1–5                                      | 85.05±5.60                           | 56.50±4.10          | 22.86±2.41          | 40.91±4.46                             | 22.91±2.52    | 228.28±15.48        |
| 6–10                                     | 86.44±5.18                           | 57.34±3.88          | 23.14±2.04          | 42.12±3.31                             | 23.68±1.83    | 232.72±14.00        |
| 11–15 years                              | 85.47±5.30                           | 55.76±4.61          | 22.05±2.27          | 40.05±3.66                             | 22.41±2.34    | 225.76±15.42        |
| 16 years and above                       | 88.50±4.08                           | 57.40±5.23          | 24.10±1.91          | 42.60±3.94                             | 24.20±1.75    | 236.80±14.51        |
| p*                                       | 0.205                                | 0.489               | 0.129               | 0.146                                  | 0.062         | 0.114               |
| F***                                     | 1.547                                | 0.813               | 1.917               | 1.821                                  | 2.499         | 2.018               |
| Education status                         |                                      |                     |                     |                                        |               |                     |
| Secondary education <sup>a</sup>         | 87.66±3.50                           | 57.00±4.21          | 23.55±1.94          | 40.44±3.16                             | 23.22±1.85    | 231.88±9.31         |
| Associate degree <sup>b</sup>            | 84.66±6.18                           | 57.50±3.33          | 23.16±1.94          | 40.66±4.50                             | 23.16±2.56    | 230.83±14.52        |
| Bachelor's degree <sup>c</sup>           | 85.63±5.47                           | 56.63±4.23          | 22.85±2.31          | 41.36±4.12                             | 23.19±2.30    | 229.68±15.58        |
| Graduate degree <sup>d</sup>             | 90.00±0.00                           | 60.00±0.00          | 24.66±0.57          | 42.33±3.20                             | 23.33±2.88    | 238.66±7.09         |
| p*                                       | 0.350                                | 0.546               | 0.457               | 0.829                                  | 1.000         | <b>0.029 d&gt;b</b> |
| F***                                     | 1.103                                | 0.713               | 0.877               | 0.295                                  | 0.004         | 3.756               |
| Shift length                             |                                      |                     |                     |                                        |               |                     |
| 8 h <sup>a</sup>                         | 85.14±4.92                           | 54.97±4.69          | 22.14±2.82          | 40.08±5.36                             | 22.62±3.00    | 224.97±17.68        |
| 16 h <sup>b</sup>                        | 87.37±4.06                           | 56.75±4.36          | 22.37±2.38          | 42.12±3.39                             | 22.75±2.37    | 231.37±13.41        |
| 24 h <sup>c</sup>                        | 85.90±5.60                           | 57.34±3.82          | 23.25±1.99          | 41.68±3.48                             | 23.42±1.97    | 231.60±14.02        |
| p*                                       | 0.538                                | <b>0.013 c&gt;b</b> | <b>0.032 c&gt;a</b> | 0.107                                  | 0.174         | <b>0.030 c&gt;a</b> |
| F***                                     | 0.622                                | 4.489               | 3.535               | 2.273                                  | 1.771         | 3.640               |

\*p: (p&lt;0.05); \*\*: Independent t-test; \*\*\* F: One Way analysis of variance Test, a, b, c, d: Bonferroni Test statistics.

also detected in the shift length (p=0.030). Furthermore, statistically significant differences were identified in the subscales of infection prevention (p=0.013) and fall prevention (p=0.032), with the highest mean scores in both subscales belonging to nurses working 24-h shifts. No statistically significant differences were found in the total or subscale scores based on sex or years of professional experience (p>0.05) (Table 4).

A statistically significant positive correlation was found between the total score of the Patient Safety Culture in Medication Administration Scale and the total score of the medical error propensity scale (r=0.502, p<0.001). Considering that higher scores on the medical error propensity scale indicate a lower tendency toward medical

errors, this finding suggests that a stronger patient safety culture is associated with reduced error propensity. At the subscale level, the Importance dimension showed significant positive correlations with medication and transfusion practices (r=0.321, p<0.001), infection prevention (r=0.319, p<0.001), fall prevention (r=0.335, p<0.001), patient monitoring and material safety (r=0.445, p<0.001), and communication (r=0.389, p<0.001). The Prevention dimension also demonstrated significant positive correlations with medication and transfusion practices (r=0.430, p<0.001), infection prevention (r=0.455, p<0.001), fall prevention (r=0.396, p<0.001), patient monitoring and material safety (r=0.514, p<0.001), and communication (r=0.458, p<0.001). In contrast, the

**Table 5.** The relationship between nurses' patient safety culture in drug administration scale scores and medical error tendency scale scores (n=150)

| Tendency towards medical errors scale sub-dimensions and total scores |                                      |                     |                   |                                        |                   |                   |
|-----------------------------------------------------------------------|--------------------------------------|---------------------|-------------------|----------------------------------------|-------------------|-------------------|
| PSCS-MM and sub-dimensions total score                                | Medication and transfusion practices | Hospital Infections | Falls             | Patient monitoring and material safety | Communication     | Total points      |
| Importance                                                            |                                      |                     |                   |                                        |                   |                   |
| r                                                                     | 0.321                                | 0.319               | 0.335             | 0.445                                  | 0.389             | 0.460             |
| p                                                                     | <b>&lt;0.001*</b>                    | <b>&lt;0.001*</b>   | <b>&lt;0.001*</b> | <b>&lt;0.001*</b>                      | <b>&lt;0.001*</b> | <b>&lt;0.001*</b> |
| Prevention                                                            |                                      |                     |                   |                                        |                   |                   |
| r                                                                     | 0.430                                | 0.455               | 0.396             | 0.514                                  | 0.458             | 0.553             |
| p                                                                     | <b>&lt;0.001*</b>                    | <b>&lt;0.001*</b>   | <b>&lt;0.001*</b> | <b>&lt;0.001*</b>                      | <b>&lt;0.001*</b> | <b>&lt;0.001*</b> |
| Devotion                                                              |                                      |                     |                   |                                        |                   |                   |
| r                                                                     | 0.187                                | 0.206               | 0.134             | 0.034                                  | 0.068             | 0.110             |
| p                                                                     | <b>0.022**</b>                       | <b>0.011**</b>      | 0.103             | 0.683                                  | 0.409             | 0.182             |
| Total Points                                                          |                                      |                     |                   |                                        |                   |                   |
| r                                                                     | 0.466                                | 0.478               | 0.430             | 0.408                                  | 0.407             | 0.502             |
| p                                                                     | <b>&lt;0.001*</b>                    | <b>&lt;0.001*</b>   | <b>&lt;0.001*</b> | <b>&lt;0.001*</b>                      | <b>&lt;0.001*</b> | <b>&lt;0.001*</b> |

r=Pearson correlation; \*: p<0.001; \*\*: p<0.05. PSCS-MM: Patient safety culture scale in medication management.

Devotion dimension was significantly correlated only with medication and transfusion practices ( $r=0.187$ ,  $p=0.022$ ) and infection prevention ( $r=0.206$ ,  $p=0.011$ ) (Table 5).

## Discussion

In this study, nurses demonstrated positive attitudes toward safe medication practices, as reflected by scores above the scale average, which may be attributed to ongoing professional education, institutional emphasis on patient safety, and the accumulation of clinical experience. Consistent with our findings, Özen and Çetin<sup>[3]</sup> (2024) also reported that nurses exhibited positive attitudes toward safe medication practices. Similarly, in a study conducted by Aydınli and Cerit<sup>[18]</sup> (2024) to assess medication safety competency levels among nurses in Türkiye, a high level of medication safety competency was identified, and it was emphasized that this competency was directly related to safety culture. The findings of the present study indicate that nurses have a high perception of safety culture in medication administration processes, consistent with similar results in the existing literature.

In contrast, this study found that nurses with 16 or more years of professional experience and those with postgraduate education had significantly higher patient safety culture scores. Similar findings have been reported in the literature. In their study on medication safety competence, Jung and Park<sup>[19]</sup> (2025) observed that senior nurses demonstrated improvements in their perceptions

and attitudes toward medication safety as their years of experience increased. Moreover, a systematic review conducted by Zaitoun et al.<sup>[20]</sup> (2023) indicated that nurses with advanced professional experience and academic education had stronger perceptions of medication safety culture, and that organizational support and continuous education reinforced this relationship. These findings suggest that the culture of patient safety in medication management is strengthened by clinical experience and higher educational attainment, likely because experienced and well-educated nurses are more aware of potential risks and adhere more rigorously to safe practices. In particular, the higher scores observed among nurses with 16 or more years of experience and those with postgraduate education indicate that experience and academic advancement are closely associated with safer medication practices.

In this study, nurses demonstrated a low propensity for medical errors. Moreover, nurses with postgraduate education and those working extended shifts exhibited significantly lower tendencies toward errors. Similarly, a previous study reported that nurses' likelihood of committing medical errors was low, with factors such as age, years of experience, and shift type influencing this tendency.<sup>[21]</sup> İşçi and Altuntaş<sup>[22]</sup> found that nurses with higher levels of professionalism had a significantly lower likelihood of making errors, emphasizing the role of educational background. Furthermore, a study conducted among intensive care nurses showed that attitudes toward medical errors and

error reporting were associated with several individual and professional characteristics, including age, clinical position, job satisfaction, and participation in relevant training programs.<sup>[23]</sup> These findings suggest that educational and professional characteristics may be associated with nurses' self-reported tendency toward medical errors. However, the findings related to shift length should be interpreted cautiously and should not be considered evidence that longer shifts improve patient safety.

The study found that a stronger patient safety culture in medication management was associated with a lower propensity for medical errors. This finding is consistent with previous evidence indicating that stronger patient safety culture is associated with safer clinical practices and fewer adverse events, including medication-related events.<sup>[4,8]</sup> Accordingly, nurses' adherence to safe medication practices and their reduced likelihood of committing errors appear closely linked to a well-established safety culture, which may foster vigilance, accountability, and consistent application of safety protocols. Institutional support aimed at strengthening safety culture may therefore help reduce medical errors and improve patient care quality.

## Limitations

First, this study was conducted with nurses working in a single hospital, which limits the generalizability of the findings. The use of self-reported data based on participants' statements introduces the possibility that their responses may have been influenced by social desirability bias. External factors, such as environmental conditions and workload during the administration of the scales, also represent potential limitations that may have influenced the participants' responses.

## Conclusion

The findings of this study indicate that nurses demonstrated a strong patient safety culture in medication management and exhibited a relatively low tendency to commit medical errors. A statistically significant positive association was observed between patient safety culture and Medical Error Propensity Scale scores, suggesting that a stronger safety culture is associated with safer medication practices and a lower error propensity. Clinical experience and higher academic education levels were found to be associated with this relationship. These results have important implications: in nursing education, integrating patient safety principles and promoting practical training can enhance safety awareness; in health policy, institutional strategies and continuous professional development programs can

reinforce a culture of safety; and in clinical nursing practice, fostering adherence to safe medication procedures can directly reduce medical errors and improve patient care quality. Initiatives by healthcare institutions aimed at reinforcing patient safety culture may therefore play a critical role in enhancing patient safety across these domains.

**Ethics Committee Approval:** The Hatay Mustafa Kemal University Non-Invasive Research Ethics Committee granted approval for this study (date: 08.10.2025, number: 30).

**Informed Consent:** Written informed consent was obtained from all participants.

**Conflict of Interest:** None declared.

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