The Relationship Between Knowledge and Attitudes Regarding Patient Safety Among Professional Nursing (Ners) Program Students at Universitas Advent Indonesia

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Abstract

Patient safety is a fundamental component of the quality of healthcare services, and professional nursing (Ners) students, as prospective nurses, need to be equipped with good knowledge and attitudes from the time of their education. This study aimed to determine the level of knowledge, attitudes, and the relationship between the two regarding patient safety among students of the Professional Nursing (Ners) Program at Universitas Advent Indonesia. This quantitative correlational study with a *cross-sectional* approach used *total sampling* of 40 students who had completed the nursing management clinical rotation. Data were collected from 16–26 October 2026 via Google Form using a knowledge questionnaire (20 items) and an attitude questionnaire (33 items) adapted from previous research, and were analyzed univariately and bivariately using the Chi-Square test, with Fisher's Exact test as the primary basis for inference. The results showed that 27 respondents (67.5%) had good knowledge and 31 respondents (77.5%) had very positive attitudes; overall, 85.0% of respondents had positive or very positive attitudes. The medical error cognitive dimension obtained the lowest mean (3.01). Level of knowledge was significantly associated with attitude (Fisher's Exact p = 0.008; Pearson Chi-Square p = 0.014; Cramér's V = 0.52): 85.2% of respondents with good knowledge had very positive attitudes, compared with 61.5% of respondents with poor knowledge. As a *cross-sectional* study, it shows association, not causation. By examining attitudes in four dimensions, it identifies attitudes toward medical errors as the weakest area, suggesting that patient safety education for Ners students should address attitude formation alongside knowledge, particularly regarding medical errors and incident reporting.

***Keywords**: Patient Safety, Knowledge, Attitude, Professional Nursing Students.*

A. INTRODUCTION

Patient safety is a fundamental and inseparable component of the quality of healthcare services. Patient safety refers to a series of efforts to prevent and minimize risks, errors, and harm to patients that could actually be avoided while care is being delivered (Pratiwi et al., 2025). These efforts include identifying potential hazards, managing incidents, recording and reporting adverse events (AEs), and implementing improvements to reduce unnecessary injury. The impact of AEs is not only physical and psychological for patients, but also reduces public trust in the healthcare system and adds to the financial burden of healthcare facilities (Rahman, 2024).

Nationally, every healthcare facility is required to implement patient safety standards based on Minister of Health Regulation No. 11 of 2017 (Kementerian

Kesehatan Republik Indonesia, 2017). The regulation sets out six goals: accurate patient identification, effective communication, safe use of medication, correct site and procedure for interventions, reduction of the risk of healthcare-associated infections, and reduction of the risk of patient falls. Each year the National Patient Safety Committee receives thousands of incident reports, most commonly involving medication errors and fall risks (Rahman, 2024).

Nurses are the largest group of healthcare workers and interact with patients for the longest time, so they play a crucial role in delivering safe care (Woo & Cui, 2025). Nurses' attitudes, knowledge, leadership, and motivation have been shown to be the main determinants of patient safety incident reporting in hospitals (Susanto & Handiyani, 2023). Therefore, patient safety competence, which encompasses the dimensions of knowledge and attitudes, needs to be possessed by every prospective nurse before entering the workforce.

Although they have studied patient safety in college, nursing students can still experience or be involved in patient safety incidents during clinical practice. Tavares et al. (2022) reported that students often face problems such as patient misidentification, poor communication among staff, errors in delivering care, needle-stick injuries, and suboptimal incident reporting, which are aggravated by limited clinical experience, insufficient supervisor guidance, and busy working conditions. This situation is relevant to the Professional Nursing (Ners) Program at Universitas Advent Indonesia, which uses Advent Hospital Bandung as one of its main clinical placement sites.

Knowledge and attitudes are two main determinants of healthcare workers' behavior in applying patient safety practices. Adequate knowledge is a prerequisite for understanding risks and taking preventive action, whereas a positive attitude encourages the development of a sustainable safety culture (Phillips & Byrne, 2013). Rohmah & Dewi (2024), in a study of anesthesiology nursing students, found no significant relationship of knowledge or attitude with the occurrence of errors ($p > 0.05$), indicating that knowledge and attitude do not necessarily translate into error-free practice. However, previous studies of patient safety knowledge and attitudes among nursing students have mostly been descriptive or conducted among undergraduate and anesthesiology nursing students (Rahman, 2024; Rohmah & Dewi, 2024). To our knowledge, studies of students in a Professional Nursing (Ners) Program who have completed the nursing management clinical rotation remain limited, and few studies break attitudes down into dimensions to show which aspect is weakest. This study addresses these gaps by describing knowledge and attitudes, by dimension, among Ners students at a single private university and by testing the association between the two. Its findings are intended to inform patient safety teaching before clinical placements. Accordingly, this study aimed to determine the level of knowledge, attitudes, and the relationship between level of knowledge and attitudes regarding patient safety among students of the Professional Nursing (Ners) Program at Universitas Advent Indonesia.

B. LITERATURE REVIEW

1. Patient Safety and Nurse Competence

Patient safety is a top priority of modern healthcare that is directly related to the quality of care and patients' lives. Conceptually, patient safety is a system for preventing harm, injury, or loss arising from medical actions or from negligence that should have been avoidable, encompassing risk management, incident reporting and analysis, learning from those incidents, and implementing solutions to reduce risk (Woo & Cui, 2025). Patient safety is not merely an administrative procedure, but part of a culture and system that all healthcare workers need to understand and embrace from their years of education.

Xiao et al. (2024) defined patient safety competence as the attitudes, knowledge, and skills nurses need to reduce the likelihood of unintended incidents. This competence is multidimensional, encompassing interacting cognitive (knowledge), affective (attitude), and psychomotor (skills) elements.

2. Patient Safety Knowledge

Knowledge of patient safety includes understanding of infection prevention and control, safe medication use, and the ability to anticipate, monitor, and respond to unexpected events (Levett-Jones et al., 2024). According to Notoatmodjo (2019), knowledge is the result of sensing an object and is the main basis for the formation of behavior. Woo & Cui (2025) reported that nursing students with minimal field experience tend to be less confident in their understanding of patient safety and hesitant to speak up about safety concerns, whereas classroom and clinical education consistently increase their confidence and knowledge.

Salsabila et al. (2024) found that most anesthesiology nursing students had an adequate understanding of patient safety, but there was still a gap between theoretical knowledge and practice in the field. Shin & Baek (2024) showed that background in patient safety education and experience with patient safety events significantly influence students' knowledge and readiness. Pratiwi et al. (2025), studying 121 seventh-semester undergraduate nursing students in Indonesia, found a weak but significant positive correlation between knowledge and compliance with patient safety practices (Spearman $r = 0.266$; $p = 0.003$), and noted that compliance is also influenced by factors other than knowledge.

3. Attitudes toward Patient Safety

Attitude is an emotional element that plays an important role in patient safety actions; a supportive attitude is a key factor in the successful implementation of safety procedures (Shin & Baek, 2024). Attitude consists of three interrelated components: cognitive (beliefs), affective (feelings or emotions), and conative (tendency to act) (Notoatmodjo, 2019). Misalignment among these components may explain why positive attitudes that are expressed are not always applied in clinical practice.

Hartati et al. (2023) reported that students in clinical practice who had

positive attitudes toward all aspects of patient safety had lower error rates, and Sinaga et al. (2023) found that nurses with positive attitudes toward safety culture tended to implement safety policies well.

4. The Relationship between Knowledge and Attitudes

Notoatmodjo's (2019) behavioral model proposes that knowledge is related to the formation of attitudes, and that attitudes in turn relate to action. The more positive aspects of an object that are known, the more positive the attitude toward that object. Rohmah & Dewi (2024), however, found no significant relationship of knowledge or attitude in implementing patient safety with the occurrence of errors among anesthesiology nursing students ($p > 0.05$), which suggests that the links between knowledge, attitude, and outcomes are not straightforward. Woo & Cui (2025) affirmed that effective patient safety teaching cannot be separated from methods that shape knowledge and attitudes simultaneously, while Zarandona et al. (2025) found attitude to be the most dominant predictor of nursing students' intention to report medication errors ($\beta = 0.39$; $p < 0.001$).

The relationship between knowledge and attitudes can be explained through several complementary frameworks. Notoatmodjo's (2019) model treats knowledge as one basis of attitude and behavior. The Precede-Proceed model adds predisposing, enabling, and reinforcing factors, such as clinical experience, role modeling by preceptors, and safety culture at the practice site. The Theory of Planned Behavior, used by Zarandona et al. (2025), places attitude among the determinants of behavioral intention. Taken together, these frameworks suggest that knowledge and attitude are related but distinct constructs: knowledge concerns what a student understands about safe practice, whereas attitude concerns beliefs and the tendency to act on them. Because attitude may also be shaped by factors other than knowledge, this study tests for an association and does not assume a causal direction.

Based on this framework, the level of patient safety knowledge was treated as the explanatory (independent) variable and attitude toward patient safety as the outcome (dependent) variable for analytical purposes only, without implying causality. The hypotheses proposed are: H_0 — there is no significant relationship between level of knowledge and attitude regarding patient safety among students of the Professional Nursing (Ners) Program at Universitas Advent Indonesia; H_a — there is a significant relationship between the two.

C. METHOD

This study is a quantitative, analytical, correlational study with a *cross-sectional* approach, in which the knowledge and attitude variables were measured simultaneously at a single point in time, without repeated measurements or intervention on the respondents (Setyawati et al., 2023; Sugiyono, 2022).

The study population was all active students of the Professional Nursing (Ners) Program at the Faculty of Nursing, Universitas Advent Indonesia. The sample

was determined using *total sampling*. Inclusion criteria were active students who had completed or were undergoing the nursing management clinical rotation and who were willing to become respondents by signing informed consent. Exclusion criteria were students who were inactive or on academic leave, absent during data collection, or who withdrew or did not complete the questionnaire. All 40 students met the criteria and were included in the analysis. Because the study population consisted of all 40 eligible students, no sample size calculation was performed; *total sampling* was used so that the entire accessible population was included. The small population limits statistical power (see Limitations).

Data were collected using two structured questionnaires adapted from previous research instruments (Hermawan & Iryawati, 2022; Rahman, 2024) and adjusted to the context of nursing education in Indonesia. The knowledge questionnaire consisted of 20 statements covering patient identification, effective communication, medication safety, surgical safety, reduction of infection risk through hand hygiene, and reduction of fall risk, using a 1–4 Likert scale (strongly disagree to strongly agree), so that the total score ranged from 20 to 80. Knowledge was categorized as good if the score was ≥ 50 (a mean item score of 2.5, the midpoint of the 1–4 scale) and poor if the score was < 50. Because knowledge was measured with agreement-type Likert statements, the instrument may capture perceived rather than actual knowledge; this is acknowledged as a limitation.

The attitude questionnaire consisted of 33 statements using a 1–4 Likert scale (very unlikely to do to very likely to do) divided into four groups: patient safety cognitive (18 items), medical error cognitive (3 items), medical error conative (5 items), and interpersonal and decision-making in medical errors (7 items). Based on the mean score, attitudes were categorized as very negative (1.00–1.75), negative (1.76–2.50), positive (2.51–3.25), and very positive (3.26–4.00). In the present study, validity and reliability were re-tested on the 40 respondents. Item validity, assessed with Pearson item–total correlations, was satisfactory for all items (knowledge: r = 0.761–0.940; attitude: r = 0.659–0.952; r-table = 0.312 for n = 40 at α = 0.05), and *Cronbach's alpha* was 0.982 for the knowledge questionnaire and 0.989 for the attitude questionnaire. These tests used the same 40 respondents as the main analysis rather than a separate pilot sample. Content validity was reviewed and approved by the academic advisor with expertise in nursing management and patient safety prior to data collection to ensure item relevance. Both instruments were also reported to be reliable in previous research, with a *Cronbach's alpha* of 0.830 for the knowledge questionnaire and 0.956 for the attitude questionnaire (Rahman, 2024).

Although both questionnaires address the six patient safety goals, they measure different constructs. The knowledge questionnaire assesses respondents' understanding of safe practice (what is known), whereas the attitude questionnaire assesses beliefs, the likelihood of acting, and attitudes toward medical errors and incident reporting (what is believed and intended). The possibility of measurement overlap between the two instruments is acknowledged in the Limitations.

Data were checked for completeness (*editing*), coded (*coding*), entered (*entry*),

and cleaned (*cleaning*) using SPSS and Microsoft Excel. Univariate analysis was performed to describe respondent characteristics and the frequency distribution and percentage of knowledge and attitudes. *Bivariate* analysis used the *Chi-Square* test with $\alpha = 0.05$; a relationship was considered significant if $p < 0.05$. Because most cells had expected frequencies < 5, which violates the assumptions of the Pearson Chi-Square test, statistical inference was based primarily on Fisher's Exact test, with the Pearson Chi-Square and Monte Carlo results reported for comparison. The strength of the association was expressed with Cramér's V.

D. RESULT AND DISCUSSION

1. Respondent Characteristics

The study was conducted among students of the Professional Nursing (Ners) Program who had completed the nursing management clinical rotation, with Advent Hospital Bandung as one of the main clinical placement sites. A total of 40 students completed the questionnaire in full and all were analyzed. Table 1 shows that the majority of respondents were female (34 people; 85.0%), and all respondents had completed the nursing management clinical rotation, so exposure to clinical experience was relatively uniform. The predominance of female respondents should be taken into account when interpreting the results. The questionnaire collected only sex and completion of the nursing management clinical rotation; age, prior clinical experience, and patient safety training were not collected, which is acknowledged as a limitation.

Table 1 Respondent Characteristics (n = 40)

Characteristic	Category	n	%
Sex	Male	6	15.0
	Female	34	85.0
Nursing management clinical rotation	Completed	40	100.0
	Not yet completed	0	0.0
Total		**40**	**100.0**

Source: Primary research data (2026)

2. Level of Knowledge regarding Patient Safety

Table 2 shows that most respondents had good knowledge, namely 27 people (67.5%), while 13 people (32.5%) had poor knowledge. The mean total knowledge score was 57.55 (SD = 16.243) with a range of 26–80, and the mean per item was 2.88 (SD = 0.81) on a scale of 1–4.

Table 2 Level of Knowledge regarding Patient Safety

Level of knowledge	n	%
Good	27	67.5
Poor	13	32.5
Total	**40**	**100.0**

Source: Primary Research Data (2026)

The high proportion of good knowledge indicates that patient safety material from coursework and clinical experience has reached most of the students. This

finding is in line with Salsabila et al. (2024) and Rahman (2024); among final-year Nursing Science students at Universitas Hasanuddin, Rahman (2024) found that 96.1% had good knowledge, a higher proportion than in this study. According to Notoatmodjo (2019), knowledge is obtained through sensing an object and becomes the foundation for the formation of behavior.

Nevertheless, one in three respondents still had poor knowledge, and the wide spread of scores (26–80) indicates disparities in understanding among students. According to Shin & Baek (2024), training background and experience with patient safety incident cases influence students' knowledge and readiness, and Woo & Cui (2025) observed that the combination of academic education and clinical experience increases both confidence and knowledge. These factors were not measured in this study, so the explanation above remains speculative. This finding is also important from a risk perspective: good knowledge among most respondents does not automatically guarantee safe practice, and the 13 respondents with poor knowledge need special attention.

3. Attitudes regarding Patient Safety

Table 3 shows the predominance of very positive attitudes in 31 respondents (77.5%). Together with 3 respondents (7.5%) with positive attitudes, 34 respondents (85.0%) supported patient safety principles, while 6 respondents (15.0%) had negative or very negative attitudes. The mean total attitude score was 112.10 (SD = 22.609; range 56–131) with a mean per item of 3.40 (SD = 0.69).

Table 3 Attitude Categories regarding Patient Safety

Attitude category	n	%
Very negative	2	5.0
Negative	4	10.0
Positive	3	7.5
Very positive	31	77.5
Total	**40**	**100.0**

Source: Primary research data (2026)

By dimension (Table 4), the patient safety cognitive domain was the aspect with the best achievement (mean 3.53; 77.5% very positive). The medical error cognitive domain ranked lowest (mean 3.01), with only 17 respondents (42.5%) in the very positive category and 9 respondents (22.5%) in the negative to very negative categories. The conative dimension and the interpersonal and decision-making dimension were at a moderate level, with proportions of very positive of 67.5% and 62.5%, respectively.

Table 4 Attitude Categories by Dimension

Attitude dimension	Very negative n (%)	Negative n (%)	Positive n (%)	Very positive n (%)	Mean ± SD
Patient safety cognitive (18 items)	0 (0.0)	6 (15.0)	3 (7.5)	31 (77.5)	3.53 ± 0.70
Medical error cognitive (3 items)	5 (12.5)	4 (10.0)	14 (35.0)	17 (42.5)	3.01 ± 0.80
Medical error conative (5 items)	3 (7.5)	4 (10.0)	6 (15.0)	27 (67.5)	3.32 ± 0.78
Interpersonal and decision-making in medical errors (7 items)	3 (7.5)	3 (7.5)	9 (22.5)	25 (62.5)	3.26 ± 0.70

Source: Primary Research Data (2026)

Attitude encompasses interrelated cognitive, affective, and conative dimensions (Notoatmodjo, 2019). Students' high level of confidence in technical procedures such as patient identification, effective communication, medication safety, hand hygiene, and fall risk prevention contrasts with their lower scores on attitudes toward medical errors, suggesting that students are more comfortable with explicit technical procedures than with disclosing errors. Technical procedures tend to be easier to implement because their instructions are explicit and frequently practiced, unlike the disclosure of medical errors, which requires a climate of openness and the courage to take risks.

This is evident in the low score of the medical error cognitive dimension, which contains the notions that medical errors are unavoidable and that service efficiency is difficult to reconcile with safety quality. Some students may regard mistakes as commonplace amid the dynamics and workload of clinical practice. According to Tavares et al. (2022), the risk of incidents among students increases due to limited experience, weak communication, minimal clinical guidance, and a high task load, and Woo & Cui (2025) affirmed that students are often reluctant to speak up about patient safety issues. An unwillingness to be open has the potential to damage safety culture, because without error reporting, the processes of reflection and improvement will not occur.

The importance of attitude is demonstrated by Zarandona et al. (2025), who found attitude to be the most dominant predictor of students' intention to implement medication safety, as well as by Hartati et al. (2023) and Sinaga et al. (2023), who linked positive attitudes with better implementation of safety policies and fewer errors. Therefore, the six respondents (15.0%) with negative or very negative attitudes still need attention. Self-administered completion of the questionnaire also leaves room for responses that tend toward the ideal, so the proportion of very positive attitudes should be read with caution.

4. The Relationship between Level of Knowledge and Attitudes regarding Patient Safety

In Table 5, the combination of respondents with good knowledge and very positive attitudes was the largest group (23 respondents; 57.5%). Within the knowledge strata, 85.2% of respondents with good knowledge (23 of 27) had very positive attitudes, compared with 61.5% (8 of 13) of respondents with poor knowledge. A tendency toward negative attitudes (negative and very negative) was found more often in the poor knowledge group, namely 5 of 13 people (38.5%), compared with 1 of 27 people (3.7%) in the good knowledge group.

Table 5 Cross-Tabulation of Level of Knowledge and Attitudes regarding Patient Safety

Level of knowledge	Very negative n (%)	Negative n (%)	Positive n (%)	Very positive n (%)	Total n (%)
Poor	1 (2.5)	4 (10.0)	0 (0.0)	8 (20.0)	13 (32.5)
Good	1 (2.5)	0 (0.0)	3 (7.5)	23 (57.5)	27 (67.5)
Total	**2 (5.0)**	**4 (10.0)**	**3 (7.5)**	**31 (77.5)**	**40 (100.0)**

Percentages are calculated from the total respondents (n = 40).

Source: Primary research data (2026).

The test results in Table 6 show a *Pearson Chi-Square* of 10.664 (df = 3) with p = 0.014, which is smaller than $\alpha = 0.05$. However, because 75.0% of cells had expected frequencies < 5, the Pearson Chi-Square is not the primary basis for inference; Fisher's Exact Test (p = 0.008) was used as the primary test, and the Monte Carlo (p = 0.007) and Pearson Chi-Square (p = 0.014) results were consistent with it, so H_0 is rejected and H_a is accepted. The strength of the association was Cramér's V = 0.52 (calculated from the Pearson Chi-Square value, n = 40, and min(r − 1, c − 1) = 1), which is a strong association by conventional benchmarks. With a *cross-sectional* correlational design, this finding only indicates a relationship between variables, not a cause-and-effect relationship.

Table 6 Chi-Square Test Results for Level of Knowledge and Attitudes

Statistical test	Value	df	Asymptotic sig. (2-sided)	Monte Carlo sig. (2-sided)
Pearson Chi-Square	10.664	3	0.014	0.007
Likelihood Ratio	12.270	3	0.007	0.007
Fisher's Exact Test	9.388	–	–	0.008
Linear-by-Linear Association	4.474	1	0.034	0.049

Note: 6 cells (75.0%) had expected frequencies < 5; minimum expected frequency 0.65. *Monte Carlo* values are based on 10,000 sampled tables.

This finding supports the research hypothesis that knowledge and attitude are related, in line with the conceptual framework that links knowledge to the formation of attitudes (Notoatmodjo, 2019), although the *cross-sectional* design cannot establish the direction of the relationship. This result differs from Rohmah & Dewi (2024), who found no significant relationship of knowledge or attitude with errors among anesthesiology nursing students; however, that study used errors as the outcome and a different sample (n = 161), so the two are not directly comparable. Woo & Cui (2025) also stated that patient safety learning is effective when

knowledge and attitudes are shaped together, while Susanto & Handiyani (2023) placed knowledge and attitudes as important determinants of incident reporting. A plausible interpretation, which was not tested here, is that students who understand that patient misidentification can lead to medication or procedural errors tend to be more convinced of the importance of identification procedures. Because both questionnaires address the six patient safety goals, content overlap may also have artificially strengthened the observed association, and measurement bias cannot be ruled out (see Limitations).

However, this relationship is not perfect. Eight of 13 respondents (61.5%) with poor knowledge still had very positive attitudes, and one of 27 respondents with good knowledge had a very negative attitude. This indicates that knowledge is not the only factor shaping attitudes. In the *Precede-Proceed* model referred to by Notoatmodjo (2019), health behavior is also influenced by enabling and reinforcing factors, for example clinical experience, role modeling by preceptors, and safety culture at the practice site, which were not measured in this study.

A critical question is why 8 of the 13 respondents (61.5%) with poor knowledge still had very positive attitudes. Several explanations are possible, but none was measured in this study and they should be treated as hypotheses. First, self-administered questionnaires invite socially desirable responses, so students may endorse ideal attitudes regardless of what they know. Second, attitudes may be shaped by clinical experience, role modeling and supervision by preceptors, the learning environment of the institution, and the patient safety culture at the practice site, which may foster positive attitudes even where knowledge is incomplete. Third, the Likert-type knowledge scale may capture perceived rather than actual knowledge, and the cut-off of 50 classifies as "*poor*" students who may still understand basic principles. Finally, the direction of the association could run either way: students with positive attitudes may be more motivated to learn. Future studies should measure these factors directly.

The implication is that strengthening knowledge needs to go hand in hand with attitude formation. Before and during hospital practice, students need refreshers on patient safety material, case simulations, and clinical guidance that instills the habit of double-checking and the courage to report incidents. The limitations of this study are described below.

This study has several limitations. First, only 40 students from a single university participated. Although *total sampling* included the entire eligible population, the small number limits statistical power and the stability of the estimates, particularly because most cells had expected frequencies below 5, and the findings cannot be generalized to Ners students elsewhere. Second, knowledge was measured with Likert-type agreement statements, which may reflect perceived rather than actual knowledge; objective items such as multiple-choice or true/false questions would be preferable in future studies. Third, the knowledge and attitude questionnaires cover similar patient safety goals, which may inflate the observed association through measurement overlap. Fourth, the instruments were adapted

from earlier studies, and their validity and reliability were tested on the same 40 respondents as the main analysis rather than in a separate pilot sample, and content validity was judged by a single academic advisor rather than an expert panel; the very high *Cronbach's alpha* values (0.982 and 0.989) may reflect item redundancy or responses clustered near the maximum and should be interpreted cautiously. Fifth, data were self-reported through an online form and may be affected by socially desirable responding. Sixth, the *cross-sectional* design permits no conclusion about causality or direction, and potentially relevant factors such as clinical experience, supervision, patient safety training, and safety culture at the practice site, as well as respondents' age, were not measured.

E. CONCLUSION

Most of the 40 students of the Professional Nursing (Ners) Program at Universitas Advent Indonesia had good knowledge regarding patient safety (67.5%; mean score 57.55 out of a maximum of 80) and very positive attitudes (77.5%); in total, 85.0% had positive or very positive attitudes. The patient safety cognitive dimension obtained the highest mean, while the medical error cognitive dimension was the lowest. Level of knowledge was significantly associated with attitude (Fisher's Exact Test $p = 0.008$; Pearson Chi-Square $p = 0.014$; Cramér's $V = 0.52$; $\alpha = 0.05$): respondents with good knowledge were more likely to have very positive attitudes (85.2%) than respondents with poor knowledge (61.5%). This finding indicates an association between the two variables, not a cause-and-effect relationship. By showing that attitudes toward medical errors were the weakest dimension, the study also indicates where patient safety education for Ners students may need to focus.

Educational institutions are advised to refresh patient safety material before clinical rotations through case studies and simulations, and to build a safe learning environment for discussing errors and reporting incidents. Students are expected to make basic patient safety practices a habit and to dare to report events that could potentially harm patients. Future research is advised to increase the number of samples and institutions, collect other characteristics such as age and length of practice, use objective knowledge measures, and use tests that show the strength and direction of the relationship, such as *Spearman correlation and multivariate analysis*.

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