

NURSING STUDENTS' SELF-REPORTED COMPETENCIES IN PATIENT SAFETY: PRELIMINARY RESULTS
SEBAHODNOTENIE KOMPETENCIÍ ŠTUDENTOV OŠETROVATELSTVA V OBLASTI BEZPEČNOSTI PACIENTOV: PRELIMINÁRNE VÝSLEDKY

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ABSTRACT

Introduction: Patient safety in undergraduate training of nursing students is a worldwide challenge. However, the degree to which it is integrated into nursing education varies greatly and tends to emphasize clinical safety aspects over sociocultural ones.

Objective: To evaluate how nursing students perceive their competencies in patient safety and identify potential discrepancies between academic and clinical training environments.

Methods: Data were collected between February and April 2024 using the Health Professional Education in Patient Safety Survey instrument (H-PEPSS). The sample consisted of 160 undergraduate nursing students from two healthcare faculties in the Slovak Republic. Descriptive and inductive statistics in the statistical program SPSS 25.0 were used in data analysis.

Results: Students were most confident in managing safety risks but less confident in communicating effectively in both settings. Statistically significant differences were observed between academic and clinical environments ($p \leq 0.05$). Moreover, concerns were raised about the low comfort level in speaking up about patient safety issues, with more than half of the students fearing negative repercussions for reporting unsafe practices.

Conclusion: The results suggest a need for enhanced training that balances both clinical and sociocultural aspects of patient safety, with a focus on fostering an environment where students feel empowered to speak up about safety issues without fear of repercussions. These insights underline the importance of developing comprehensive educational strategies to better prepare future nurses for safe practice in real-world healthcare environments.

Key words: Competence. Nursing education. Nursing student. Patient safety.

ABSTRAKT

Východiská: Bezpečnosť pacientov v pregraduálnej príprave študentov ošetrovateľstva je celosvetovou výzvou. Miera jej začlenená do vzdelávania sestier sa však značne líši a má tendenciu zdôrazňovať klinické aspekty bezpečnosti pred sociokultúrnymi.

Ciel: Zhodnotiť, ako študenti ošetrovateľstva vnímajú svoje kompetencie v oblasti bezpečnosti pacientov a identifikovať potenciálne rozdiely medzi akademickým a klinickým prostredím vzdelávania.

Metódy: Údaje boli zozbierané v období od februára do apríla 2024 pomocou nástroja Health Professional Education in Patient Safety Survey (H-PEPSS). Výskumný súbor tvorilo 160 študentov bakalárskeho štúdia ošetrovateľstva z dvoch fakúlt zdravotníctva v Slovenskej republike. Pri analýze údajov bola

použitá deskriptívna a induktívna štatistika v štatistickom programe SPSS 25.0.

Výsledky: Študenti boli najviac sebavedomí v riadení bezpečnostných rizík, ale menej sebavedomí v efektívnej komunikácii v oboch prostrediach. Medzi akademickým a klinickým prostredím boli pozorované štatisticky významné rozdiely ($p \leq 0.05$). Okrem toho boli vyjadrené obavy z nízkej úrovne pohodlia hovoriť o otázkach bezpečnosti pacientov, pričom viac ako polovica študentov sa obávala negatívnych dôsledkov za nahlásenie nebezpečných postupov.

Záver: Výsledky naznačujú potrebu posilnenej odbornej prípravy, ktorá by vyvážila klinické aj sociokultúrne aspekty bezpečnosti pacientov, so zameraním na podporu prostredia, v ktorom sa študenti cítia oprávnení hovoriť o otázkach bezpečnosti bez obáv z následkov. Tieto poznatky zdôrazňujú význam vypracovania komplexných vzdelávacích stratégií pre lepšiu prípravu budúcich sestier na bezpečnú prax v reálnom prostredí zdravotnej starostlivosti.

Kľúčové slová: Kompetencie. Vzdelávanie v ošetrovateľstve. Študent ošetrovateľstva. Bezpečnosť pacienta.

INTRODUCTION

Patient safety is increasingly recognized as a comprehensive framework of organized activities designed to reduce risks, prevent negative outcomes, and protect patients from harm. This framework of patient safety includes a combination of culture, processes, behaviours, technologies, and healthcare environments that collectively minimize the occurrence of errors, infections, accidents, and injuries. According to the World Health Organization (WHO, 2022), improving patient safety not only reduces avoidable harm but also lowers the likelihood of errors in clinical practice. Developing and regularly assessing a culture of patient safety is crucial to enhancing overall healthcare quality (IOM, 2004).

The culture of patient safety is shaped by social learning, shared thinking, and the collective behaviour of healthcare workers. It is a product of shared values and beliefs about patient safety, especially among nurses who are often at the frontline of care delivery (Joint Commission, 2018). Embedding the

culture of patient safety in the education of nursing students has been recommended for decades, with significant calls for its inclusion in curricula as early as 1999 (IOM, 2004). The WHO (2022) stresses the need for nursing students to gain essential patient safety competencies during their education to meet growing healthcare demands.

Research on patient safety consistently shows that improving education and clinical practice during training is vital for fostering a strong patient safety culture in healthcare institutions (Alquwez et al., 2018; Farokhzadian et al., 2024). For nursing students, patient safety education is especially critical since they actively participate in providing care during their clinical training. This participation influences nursing students' development of professional values and safety-oriented behaviors, which are shaped by the safety culture of their clinical environment. However, nursing students may sometimes lack the necessary skills and knowledge to fully contribute to patient safety, leading to potential errors in complex clinical settings, which can affect both patient outcomes and students' learning experiences (Firat Kılıç et al., 2023).

At the same time, nursing students can offer unique perspectives on patient safety. Even during clinical practice, they are part of healthcare teams and can observe both the strengths and weaknesses of patient safety practices. Students' attitudes towards patient safety can help identify areas for improvement in both the educational and clinical settings (Kong et al., 2019). The quality of care provided by nursing students is largely influenced by the academic environment, which shapes their understanding of patient safety (Christensen, 2018).

Educational institutions play a key role in helping nursing students reflect on their competencies in patient safety and preparing them to provide safe, high-quality care across various clinical settings. The first step in achieving this is assessing the strengths and weaknesses of nursing students' competencies in patient safety. These competencies include working in teams, effective communication, managing safety risks, understanding human and environmental factors, and recognizing and responding to adverse events (Huang et al., 2020).

Nursing education aims to develop the above-mentioned competencies through specific patient safety training, followed by regular assessments of students' knowledge and skills. The goal is to ensure students are prepared to protect, maintain, and

promote safe care in their future professional roles (Fagan et al., 2021; Foster et al., 2019). To assess patient safety competencies, self-assessment tools such as the Health Professional Education in Patient Safety Survey (H-PEPSS) have been commonly used. The H-PEPSS has demonstrated strong psychometric properties across various countries, including the USA, China, Belgium, and Australia, making it one of the most widely used tools for assessing patient safety competencies among healthcare students (Ginsburg et al., 2012; Usher et al., 2017; Bergs et al., 2021).

In the Slovak Republic, however, no tools have been tested or used to assess nursing students' patient safety competencies, highlighting a gap in the current healthcare education system. Addressing this gap could significantly contribute to preparing future nurses for delivering safe, high-quality care in diverse clinical environments.

AIM

This study aimed to evaluate how nursing students in the Slovak Republic perceive their own competencies in patient safety (PS). The research sought to assess nursing students' self-evaluation of competencies acquired both in academic and clinical settings.

SAMPLE

A total of 160 nursing students participated from two universities in the Slovak Republic. A purposive sampling technique was employed. Inclusion criteria: a) completed at least one semester of clinical practice, b) provided informed consent. Students were excluded if they were on maternity leave or had participated in an Erasmus exchange during the data collection period.

METHODS

Design

The study was designed as a pilot study and followed the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) checklist. The STROBE checklist was used to ensure transparent and comprehensive reporting of the study. It guided the description of study objectives, respondent selection, data collection, analysis, and presentation of results, ensuring alignment with best practices for observational research. The checklist also supported a structured discussion of limitations, biases, and implications. Adherence to STROBE

enhances clarity, reproducibility, and critical appraisal (von Elm et al., 2007).

Data collection

The study was approved by the Ethics Committee of the Constantine the Philosopher University in Nitra, Slovakia (UKF/917/191013:002). Data was collected between February and April 2024. The Health Professional Education in Patient Safety Survey (H-PEPSS) (Ginsburg et al., 2012) was used to evaluate nursing students' self-reported competencies in patient safety. Permission to use and linguistically adapt the H-PEPSS tool for the Slovak context was obtained from Dr. Ginsburg, the original developer. The validation process followed ISPOR guidelines (Wild et al., 2005), including forward-backward translation, expert panel review, and pilot testing to ensure cultural and contextual appropriateness.

The face and content validity were assessed within the translation process. Face validity was examined by eleven nursing students (three undergraduate students, eight postgraduate students) from one nursing faculty in the Slovak Republic. Students evaluated the instrument in the context of its comprehensiveness, relevance of individual items and understandableness. Students assessed all items in the H-PEPSS instrument as relevant and the tool was considered comprehensive, however, several items were reformulated to make them clearer (items 5, 7, 13, 17, 18, 25, 32) by adding additional words or examples.

Furthermore, content validity was evaluated by a panel of eight experts (eight nurse educators teaching clinical subjects working in one nursing faculty). The experts evaluated each item of the H-PEPSS on a 4-point Likert scale (1 – not relevant, 4 – highly relevant). The overall content validity index (S-CVI), which was calculated as the average assessment of individual elements (I-CVI), was 0.872, which is considered acceptable. At the individual item level, the expert agreement ranged between 0.625 and 0.975 (Polit et al., 2007). All items that achieved the I-CVI less than 0.78 were reformulated (items 9,12,14,18,20,29,36,37). After adjustments, H-PEPSS instrument was considered a comprehensive instrument measuring PS competency among Slovak nursing students.

The H-PEPSS instrument contains 37 items. The first section evaluates clinical aspects of safety (e.g., hand hygiene, infection control, and safe medication

practices). Six PS dimensions were evaluated across academic and clinical settings: Working in teams with other healthcare professionals (6 items), Communicating effectively (3 items), Managing safety risks (3 items), Understanding human and environmental factors (3 items), Recognizing and responding to reduce harm (4 items), and Safety culture (4 items). The third section addresses students' comfort in speaking up about patient safety (3 items). A 5-point Likert scale ranging from 1 (completely disagree) to 5 (completely agree) was used to assess these competencies.

Sociodemographic data included previous education, year of study, PA teaching, current clinical placement, supervision, previous experience and outcome expectations. The survey included information about voluntary participation, confidentiality, and the study's objectives.

Data analysis

Data analysis was performed using SPSS version 25.0. Both descriptive (mean, SD, frequency, minimal and maximal values) and inferential statistical methods were employed. The proportion of missing data in our study ranged from 0.5 % to 0.6 %, which is considered minimal and does not typically bias the results significantly.

The choice of statistical tests was based on the distribution characteristics of the data and the specific comparisons required between groups. The Kolmogorov-Smirnov test was applied to check the normality of the data distribution. Since the data met the assumption of normality ($p \geq 0.05$), parametric tests were selected for further analysis.

Paired-samples t-tests were used to compare nursing students' PS competencies between academic and clinical settings. This test was chosen because it compares the means of two related groups. In this case, the same students report their competencies in two different settings. The paired t-test is appropriate when analysing data from repeated measures, as it accounts for the inherent correlation between the two sets of observations from the same individuals (Polit et al., 2007).

H-PEPSS demonstrated strong psychometric properties, with Cronbach's α 0.85 in original version (Ginsburg et al., 2012) and 0.95 in our sample.

RESULTS

The questionnaire was completed by 160 nursing students (response rate of 75.0 %) with an average

age of 20.95 (SD = 2.107) years from two universities in the Slovak Republic. Most of them were second-year students (78; 48.8 %), followed by the first-year students (45; 28.1 %). Additionally, most students were assigned to nurse educator or teacher (45; 28.1 %), and lecturer (40; 25.0 %) during their clinical placement, which was primarily in medical-surgical care units (99; 61.9 %), and critical-specialized services including intensive care units (27; 16.9 %). A slight majority of students also reported having previous experience in healthcare (84; 52.5 %). Of the participants, 49 (30.6 %) reported that their expectations related to clinical placement mostly met, reflecting varied perceptions among students.

Evaluation of self-reported dimensions of PS competencies by nursing students

In the academic but also in clinical setting, these students were most confident in what they learned about Managing safety risks (84.63 %, 66.06 % respectively). Additionally, regarding both environments, nursing students were less confident in their knowledge of Communicating effectively (71.23 %, 56.73 % respectively). Statistically significant differences in rating all dimensions of PS competencies with higher scores achieved in the academic environment were identified (Table 1).

Clinical safety, broader PS issues and comfort to speaking about PS

Considering the evaluation of the four general

aspects of the clinical setting (Table 2), nursing students rated that they were more confident in hand hygiene in academic (95.0 %) as well as clinical setting (83.2 %), followed by Safe medication practices (92.5 %, 83.1 % respectively).

In terms of broader PS issues, the highest rated clinical aspect of PS (e.g. hand hygiene, transferring patients, medication safety) was the awareness of the scope of what is safe (86.8 %). In contrast, the lowest rated clinical aspect of PS was the opportunity to learn and interact with members of interdisciplinary teams (39.4 %).

Regarding comfort in speaking up about PS, only 33.2 % of nursing students felt safe when they saw someone engage in unsafe care practice in the clinical setting and could approach them. Alarmingly, more than half of the students (55.7 %) stated that reporting a PS problem will result in negative repercussions for the person reporting it.

Clinical safety, broader PS issues and comfort to speaking about PS

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Table 1 Dimensions of self-reported PS competencies by nursing students (n = 160)

Self-reported PS dimensions	Academic setting		Clinical setting		Paired t-test		
	M±SD	% of positive responses	M±SD	% of positive responses	t	p	95 % CI
Work in teams with other health professionals	3.99 ± 0.57	75.48	3.61 ± 0.73	58.55	6.05	≤ 0.001	0.25 – 0.50
Communicating effectively	3.90 ± 0.72	71.23	3.51 ± 0.81	56.73	5.98	≤ 0.001	0.25 – 0.51
Managing safety risks	4.15 ± 0.74	84.63	3.72 ± 0.92	66.06	5.76	≤ 0.001	0.28 – 0.57
Understanding human and environmental factors	4.02 ± 0.61	79.40	3.70 ± 0.74	64.20	4.86	≤ 0.001	0.18 – 0.44
Recognize and respond to reduce harm	4.07 ± 0.66	81.93	3.75 ± 0.77	65.15	4.59	≤ 0.001	0.18 – 0.45
Culture of safety	3.93 ± 0.70	76.90	3.57 ± 0.79	58.17	5.99	≤ 0.001	0.23 – 0.47

Legend: * p ≥ 0.05; ** p ≥ 0.01; % of positive responses – Agree / Strongly Agree

Table 2 Other aspects of PS perceived by nursing students (N = 160)

Clinical safety		M ±SD	% of positive responses
Safe clinical practice in general	Academic setting	4.27 ± 0.84	90.6
	Clinical setting	4.06 ± 0.87	81.9
Hand hygiene	Academic setting	4.52 ± 0.70	95.0
	Clinical setting	4.17 ± 0.99	83.2
Infection control	Academic setting	4.31 ± 0.76	90.6
	Clinical setting	3.90 ± 0.98	72.5
Safe medication practices	Academic setting	4.36 ± 0.74	92.5
	Clinical setting	4.09 ± 0.94	83.1
How are broader PS issues addressed in health professional education?		M ±SD	% of positive responses
As a student, the scope of what was 'safe' for me to do in the practice setting was very clear to me		4.09 ± 0.80	86.8
There is consistency in how patient safety issues were dealt with by different preceptors in the clinical setting		3.61 ± 0.81	66.9
I had sufficient opportunity to learn and interact with members of interdisciplinary teams		3.23 ± 1.04	39.4
I gained a solid understanding that reporting adverse events and close calls can lead to change and can reduce reoccurrence of events		3.99 ± 0.89	80.0
Patient safety was well integrated into the overall program		3.96 ± 0.83	76.8
Clinical aspects of patient safety were well covered in our program		4.18 ± 0.86	85.7
"System" aspects of patient safety were well covered in our program		3.70 ± 0.88	62.5
Comfort speaking up about patient safety		M ±SD	% of positive responses
In clinical settings, discussion around adverse events focuses mainly on system-related issues, rather than focusing on the individual(s) most responsible for the event		3.39 ± 0.76	45.0
In clinical settings, reporting a patient safety problem will result in negative repercussions for the person reporting it		3.46 ± 0.99	55.7
If I see someone engaging in unsafe care practice in the clinical setting, I feel safe to approach them		3.09 ± 1.15	33.2

Legend: % of positive responses – Agree / Strongly Agree

clinical aspect of PS was the opportunity to learn and interact with members of interdisciplinary teams (39.4 %).

Regarding comfort in speaking up about PS, only 33.2 % of nursing students felt safe when they saw someone engage in unsafe care practice in the clinical setting and could approach them. Alarmingly, more than half of the students (55.7 %) stated that reporting a PS problem will result in negative repercussions for the person reporting it.

DISCUSSION

The results of this study offer valuable insights into how nursing students in the Slovak Republic perceive their competencies in patient safety (PS) across academic and clinical settings.

The results of the study demonstrate a notable divergence between nursing students' self-reported patient safety (PS) competencies in academic versus clinical settings, supported by statistically significant differences ($p \leq 0.001$) across all six dimensions of PS competencies. Nursing students felt more confident in-patient safety competencies academically than clinically, aligning with findings from Saudi Arabia, China, and Belgium (Alquwez et al., 2018; Bergs et al., 2021; Yu et al., 2020). This discrepancy can be attributed to the structured nature of academic settings, where learning is facilitated by clear instruction, support from educators, and an environment that allows for reflection and revision. Conversely, clinical settings are dynamic and less predictable, often presenting challenges

that require immediate action, which can reduce students' confidence in applying patient safety principles (Usher et al., 2017). In clinical environments, students are exposed to real-world pressures, including time constraints, complex patient conditions, and the need to collaborate with experienced healthcare professionals. These factors can make it difficult for students to implement what they have learned in the classroom, especially when they are still developing the necessary skills for effective communication and teamwork (Huang et al., 2020). The gap between theoretical knowledge and practical application has been widely recognized in nursing education, with multiple studies pointing to the need for better integration of theory and practice (Firat Kılıç et al., 2023).

Managing safety risks emerged as the highest-rated dimension of PS competencies among nursing students, both in academic (84.63 %) and clinical settings (66.06 %). This competency reflects students' confidence in recognizing potential hazards and implementing measures to mitigate risks in patient care. The high scores in this dimension suggest that nursing education programs are effectively equipping students with the theoretical knowledge and practical skills needed to identify and address safety risks, such as adhering to infection control protocols and ensuring safe medication administration (Ginsburg et al., 2012; Usher et al., 2017). However, despite this confidence, the transition to clinical environments often introduces challenges that can hinder the practical application of these skills. Factors such as time constraints, complex patient conditions, and varying levels of support from clinical mentors may reduce students' ability to consistently manage safety risks in clinical settings (Huang et al., 2020; Bressan et al., 2021). To address these challenges, education programs should emphasize experiential learning through clinical simulations and structured debriefing sessions, which allow students to practice managing risks in a controlled environment. Additionally, fostering collaboration with experienced healthcare professionals during clinical placements can provide students with the guidance and support necessary to enhance their confidence and proficiency in managing safety risks (Farokhzadian et al., 2024; Firat Kılıç et al., 2023).

One of the most concerning findings of this study is the low confidence reported by nursing students in their communication competencies, particularly

in the clinical setting. Dimension of Communicating effectively showed a significant disparity between settings, with lower mean scores in clinical environments ($M = 3.51 \pm 0.81$, 56.73 %) compared to academic settings ($M = 3.90 \pm 0.72$, 71.23 %). This finding echoes previous research, which has consistently highlighted communication as one of the most challenging competencies for nursing students to develop (Alquwez et al., 2018; Usher et al., 2017). Communication skills are critical for fostering teamwork, ensuring accurate information exchange, and preventing errors in patient care. However, studies have shown that nursing students often struggle to assert themselves and communicate effectively in hierarchical clinical environments, where they may feel intimidated by senior staff or fear negative repercussions for speaking up (Fagan et al., 2021; Firat Kılıç et al., 2023). This issue is compounded by the fast-paced and high-pressure nature of healthcare settings, which can limit opportunities for reflection and dialogue (Bressan et al., 2021). Addressing these barriers requires a dual approach: integrating structured communication training into nursing curricula and fostering a supportive clinical culture that values open communication and transparency (Ginsburg et al., 2012; Usher et al., 2017). Simulation-based training and role-playing scenarios have been identified as effective strategies for enhancing students' communication skills, providing them with a safe environment to practice and gain confidence (Foster et al., 2019). By prioritizing communication competencies, nursing education can better prepare students to collaborate effectively and contribute to safer patient care.

The low percentage of students who felt comfortable speaking up about patient safety issues (33.2 %) is particularly concerning, as it suggests that many students may feel unable to raise concerns about unsafe practices. This finding is consistent with other studies that have identified a culture of silence in healthcare, where junior staff and students are reluctant to report errors or unsafe practices due to fear of punishment or negative repercussions (Fagan et al., 2021; Firat Kılıç et al., 2023). The fear of negative repercussions for reporting patient safety issues, as reported by 55.7 % of students, highlights the need for healthcare organizations to create a more supportive culture that encourages transparency and learning from mistakes (Yu et al., 2020). Studies have shown that organizations with strong patient safety cultures prioritize learning from errors

and view mistakes as opportunities for improvement, rather than as reasons for punishment (Ginsburg et al., 2012). To achieve this, healthcare institutions must implement systems that promote open communication and provide protection for those who report errors (Bressan et al., 2021).

While this study found that core patient safety practices, such as hand hygiene and safe medication administration, are well-integrated into nursing education programs, broader system-related aspects of patient safety, such as organizational management and communication policies, were less thoroughly addressed. This gap in education may contribute to the challenges students face in applying their theoretical knowledge to real-world clinical environments (Ginsburg et al., 2012). To address these gaps, nursing education programs should place greater emphasis on experiential learning opportunities, such as simulation-based training.

CONCLUSION

This study provides valuable insights into the self-reported patient safety competencies of nursing students in the Slovak Republic. The findings highlight key discrepancies between academic and clinical settings, particularly in the areas of communication and the ability to speak up about safety concerns. To address these challenges, nursing education programs must enhance experiential learning opportunities, improve mentorship during clinical placements, and collaborate with healthcare organizations to foster a supportive patient safety culture. By addressing these areas, nursing students will be better prepared to ensure the safety and well-being of their patients in diverse clinical environments.

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