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Designing a training program on quality improvement and patient safety for nursing students

Hendri Hadiyanto^{1*}, Lutiya¹, Mary Ann C. Nery²

¹Universitas Muhammadiyah Sukabumi

²Philippine Women's University

Corresponding author: *E-mail: hadiyantohendri@ummi.ac.id

Abstract

Background: Patient safety is a fundamental component of healthcare, aimed at delivering care that is effective, efficient, and free from harm. With the increasing complexity of medical procedures and treatments, prioritizing patient safety is essential to minimize errors and adverse outcomes. Such efforts are not only vital for enhancing patient health but also for fostering public trust in healthcare services.

Purpose: To design a training program focusing on quality improvement and patient safety for nursing students.

Method: An exploratory sequential mixed-method design was employed, comprising three phases. The initial phase utilized a qualitative approach through semi-structured interviews with nursing students to gather in-depth insights. The second phase involved the development of an intervention program based on the qualitative findings, specifically tailored to improve quality and patient safety competencies. The third phase focused on expert validation of the developed program.

Results: The qualitative analysis revealed five key themes: (1) Prioritizing Patient Safety, (2) Ensuring Accuracy in Patient Care, (3) The Importance of Infection Control, (4) Training as a Core Practice Component, and (5) The Need for Interdisciplinary Collaboration. Based on these themes, a 12-month training program was designed. Quantitative validation yielded favorable results, with an Item Content Validity Index (I-CVI) of 0.80, a Universal Agreement (UA) score of 0.80 (classified as Good), and an Average Agreement (AA) score of 0.81 (also classified as Good).

Conclusion: A robust quality and patient safety framework encompasses various critical components, including the establishment of a safety culture, identification of potential risks, and the implementation of preventive strategies to reduce harm.

Suggestions: Healthcare organizations, educators, and providers should adopt structured, time-bound strategies to enhance patient safety and care quality. These should include continuous training initiatives, biannual competency evaluations, and the application of quality improvement methodologies, accompanied by systematic monitoring and reporting of progress.

Keywords: Nursing Students; Patient Quality; Safety Enhancement Training Program.

INTRODUCTION

Given the alarming rise in morbidity and death among hospitalized patients nationwide, professional competency is an issue. Nurses and other healthcare professionals are under increased pressure to provide

safe, high-quality care. Consequently, there is an increasing need on nursing schools to produce graduates who can provide patient care in a safe manner. Nursing education programs develop

curricula, hire qualified teachers, and select learning opportunities for students in order to prepare and graduate competent, successful nurses (Durham & Alden, 2008).

Patient safety is "the absence of preventable harm to patients and the reduction of the risk of unnecessary harm associated with health care to an acceptable minimum" (World Health Organization, 2023). Patient safety is a crucial and ongoing concern in nursing research. By presenting a new perspective and theoretical explanation of patient safety in nursing, this study aims to explore a framework for understanding patient safety and offer guidance for future research (Kim & Seomun, 2023).

Currently, healthcare organizations' main goal is patient safety. Reduced risk of serious consequences is linked to improved patient safety environments. Promoting patient safety and reducing misunderstandings need that programmers receive training (Mistri, Badge, & Shahu, 2023). Patient safety is an essential aspect of healthcare that ensures patients receive effective, efficient, and harm-free care. With the increasing complexity of medical treatments and procedures, healthcare providers must prioritize patient safety to reduce the risk of errors and adverse events. This focus is not only critical for improving patient outcomes but also for building trust and confidence in the healthcare system. Emphasizing patient safety requires a culture of continuous improvement, where healthcare professionals are encouraged to identify, report, and learn from errors to prevent future incidents. By improving awareness, education, diagnosis, treatment, disease management, and research into preventive measures against coronavirus, nurses play a crucial role in promoting health and overcoming delays in receiving appropriate health care services (Silwal, Chalise, & Limbu, 2020; Ayyad, Baker, Oweidat, Al-Mugheed, Alsenany, & Abdelaliem, 2024).

By ensuring that these services are connected to primary care and promoting increased awareness of this illness among all nurses, the training program aims to raise the level of management and support provided by nurses (Silwal et al., 2020). Studies and

related literature pointed out parallels and discrepancies. The evaluation of nursing students' patient quality and safety enhancement training program is the main goal of the current study. The impact of patient safety training programs on nursing staff adherence to safety goals and safety culture has been reported in previous research. The current study examines how nursing staff adherence to safety goals and safety culture is influenced by patient safety training programs (Ghallab, Amin, El Molla, & Elewa, 2024; Al-Mugheed, Bayraktar, Al-Bsheish, AlSyouf, Jarrar, AlBaker, & Aldhmadi, 2022). The study came to the conclusion that healthcare organizations would incur large financial costs if they invested in patient safety culture and safety goals.

By putting patient safety first, organizations can lower expenses related to adverse events, avoidable mistakes, and litigation. Furthermore, an organization's reputation is enhanced, staff retention is increased, and patient satisfaction is raised by a positive patient safety culture (Kachalia, Mello, Nallamothu, & Studdert, 2016). Strong patient safety cultures save money and increase operational effectiveness, which may be put toward more patient safety programs and quality improvement projects. This will have a beneficial. Additionally, patient safety training programs often include components on effective communication, which is essential for preventing misunderstandings and errors in patient care. From the perspective of hospital stakeholders, building a patient safety culture is a priority, and training programs help instill this culture among healthcare workers, leading to better patient outcomes.

By focusing on these dimensions, patient safety education can play a transformative role in strengthening healthcare quality in Indonesia, benefiting both providers and recipients of care. This study seeks to explore: (1) the specific training needs of Indonesian nursing students in enhancing patient quality and safety; (2) the development of nurse-led interventions derived from qualitative insights; and (3) recommendations emerging from the integrated findings of this mixed methods research.

Hendri Hadiyanto^{*}, Lutiya¹, Mary Ann C. Nery²

¹Universitas Muhammadiyah Sukabumi

²Philippine Women's University

Corresponding author: *E-mail: hadiyantohendri@ummi.ac.id

DOI: <https://doi.org/10.33024/minh.v8i7.1418>

RESEARCH METHOD

This research uses an exploratory sequential mixed methods design, an approach that combines qualitative and quantitative data collection and analysis in a series of phases. In the first phase, the researcher collects qualitative data and then analyzes it, the results of which guide the subsequent quantitative phase, which may involve a survey or other form of quantitative data collection. This means that qualitative analysis provides an essential foundation for developing specific research questions for the quantitative phase, which may involve questionnaires, surveys, or other forms of quantitative data collection.

Given the goal of providing an accurate response to the research objectives, an analyst can assist with various justifications or objectives to strengthen the questions and objectives. Therefore, an exploratory sequential mixed methods study design is necessary for this research to enhance the validity and reliability of the adapted instruments.

Purposive sampling will be used to secure 13 participants for the qualitative and quantitative

research based on the following criteria: 1) willingness to participate in the study; 2) being a level 4 nursing student; and 3) having experience in a hospital. Participants who meet the following criteria will be excluded: 1) having reading and writing difficulties; 2) currently pursuing another study program; and 3). Recent high school graduates/new college students.

In phase 1, general information was collected including participant demographics, such as age, gender, highest level of education, academic qualifications, and educational level.

In phase two, the study focused on developing an intervention. Data were collected and analyzed using NVivo. Given innovations in software technology, electronic data coding techniques are gradually becoming more widely used to achieve accuracy in handling such data. Five key tasks were identified where NVivo facilitates qualitative data analysis (Bazeley, & Richards, 2000).

In phase three, the study developed an output in the form of an action plan for program implementation based on themes from the students' nursing experiences.

RESEARCH RESULTS

Table 1. Demographic Profile of Respondents

Code	Age (Years)	Gender	Semester
P1	21	Female	7
P2	21	Male	7
P3	22	Female	7
P4	21	Male	7
P5	21	Female	7
P6	23	Female	8
P7	24	Female	8
P8	22	Female	8
P9	21	Female	7
P10	21	Female	7
P11	21	Female	7
P12	21	Female	7
P13	22	Female	7

Based on the demographic profile of the respondents, the majority were 21 years old. This indicates a young demographic, likely consisting of students or young professionals in the nursing field. Women predominated in this study, and most were in their seventh semester.

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Table 2. Matrix of Quality Improvement and Patient Safety Training Program

Themes Construct	Subcategories	No of item	Program	Goal	Intervention Construct	Goal and Objective	Topic
Patient Safety Focus	Patient Safety overview	1	Introduction to Patient safety	To highlight the importance of patient safety and its impact on healthcare quality.	1.Risk Assessment 2.Safety Culture Promotion 3.Patient Safety Committees 4.Simulation Training	1. Implementing strategies to reduce the incidence of medical errors, adverse events, and healthcare-associated infections. This involves adhering to evidence-based practices, utilizing advanced technologies, and maintaining rigorous hygiene protocols. 2. To develop and enforce clinical guidelines and best practices to ensure consistent and safe care delivery across all healthcare settings. 3. To foster an environment where healthcare professionals feel empowered to report errors and near misses without fear of retribution. Encouraging open communication and continuous learning helps to identify and address potential safety issues.	1. Definition of Patient Safety 2. Key Concepts in Patient Safety (e.g., reducing errors, preventing harm) 3. The role of healthcare professionals in patient safety 4. Communication strategies to ensure safety 5. Reporting and learning from errors 6. Importance of the healthcare environment in safety

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Themes Construct	Subcategories	No of item	Program	Goal	Intervention Construct	Goal and Objective	Topic
Emphasis on Patient Accurate Medication	1. Accuracy of identification, 2. Correct Administering Medication, 3. Principles of explaining drug administration	3	Medication Management and Accuracy	To emphasize the critical role of accurate medication administration in patientcare	1. Technology Integration 2. Verification Processes 3. Communication Protocols 4. Patient Engagement	1. To identify patients identity before administering medication 2. To cross check medications against patient records 3. Ensuring clear, consistent communication among healthcare teams regarding patient medications 4. Educate patients on their medications and encouraging to ask questions and be involved in their care.	1. Medication Safety: The 5 Rights (Right Patient, Right Medication, Right Dose, Right Time, Right Route) 2. Common Medication Errors and their Causes 3. Role of Healthcare Providers in Preventing Medication Errors 4. Tools and Strategies to Improve Medication Safety (e.g., technology, double-check systems) 5. Medication Reconciliation Process 6. Patient Education on Medications
Critical role of infection control	1. Effectiveness of Hand Washing In Preventing Infection, 2. Infection Prevention Procedures	2	Role of Infection Prevention and Control	To provide knowledge and skills for preventing infections in healthcare settings.	1. Health Education 2. Hand Hygiene 3. Sterilization Protocol 4. PPE Utilize	1. To decrease the incidence of healthcare-associated infections through effective protocols. 2. To ensure adherence to hand hygiene practices among healthcare workers.	1. Principles of Infection Control 2. Standard Precautions and Transmission-Based Precautions 3. Proper Hand Hygiene Techniques

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Themes Construct	Subcategories	No of item	Program	Goal	Intervention Construct	Goal and Objective	Topic
						3. To maintain high standards of sterilization for medical equipment and environments. 4. To guarantee the correct and consistent use of personal protective equipment. 5. To provide ongoing education for healthcare staff on best infection control practices.	4. Infection Control in High-Risk Areas (e.g., surgical units, ICU) 5. Cleaning and Sterilization Protocols 6. Role of Personal Protective Equipment (PPE) 7. Prevention of Healthcare-Associated Infections (HAIs)
Training as a Foundation for Practice	1. Preparing of Clinical Practice 2. Challenging of Practice Field	2	Training and Continuous Improvement	To underscore the importance of ongoing training and professional development in ensuring safe and effective patient care.	1. Simulated training 2. Skill Assessment 3. Mentorship	1. To equip healthcare professionals with the necessary skills to apply theoretical knowledge in real-world settings 2. To ensure ongoing education to keep healthcare workers updated with the latest best practices and advancements. 3. To Provide guidance and support through experienced mentors to aid in professional development.	1. Importance of Lifelong Learning in Healthcare 2. Continuous Quality Improvement (CQI) in Patient Safety 3. Training Programs and Simulations for Skill Enhancement 4. Role of Reflection and Feedback in Personal Development 5. Evaluation of Training Programs for Effectiveness

Hendri Hadiyanto^{1*}, Lutiya¹, Mary Ann C. Nery²¹Universitas Muhammadiyah Sukabumi²Philippine Women's University

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Themes Construct	Subcategories	No of item	Program	Goal	Intervention Construct	Goal and Objective	Topic
Interdisciplinary Approach to Patient Safety	Produce Collaboration approach of safety standards	1	Interdisciplinary Patient Safety	To emphasize the importance of teamwork and collaboration in improving patient safety and healthcare outcomes.	1. Collaborative Care Teams 2. Effective Communication Protocols	1. To ensure clear and effective communication among all healthcare team members to prevent misunderstandings and errors. 2. To foster a culture of collaboration and mutual respect among different healthcare professionals to deliver comprehensive patient care.	1. Understanding the Interdisciplinary Team in Healthcare 2. Roles and Responsibilities of Different Healthcare Professionals 3. Communication and Collaboration Strategies for Effective Teamwork 4. Conflict Resolution within Healthcare Teams 5. Case Studies on Successful Interdisciplinary Collaboration 6. Building Trust and Respect among Team Members

Hendri Hadiyanto^{1*}, Lutiya¹, Mary Ann C. Nery²

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**Table 3. Content Validity Index Scale (S-CVI):
Universal Agreement (UA) and Average Agreement (AA)**

Content Validity Index Scale (S-CVI)	Results
Universal Agreement (UA)	
Total Item with I-CVI to 1.0	24
Total number of items	30
Universal Agreement (UA) score	0.8
Category	Good
Average Agreement (AA)	
Total I-CVI scores	121
Total number of items	150
Average Agreement (AA) score	0.81
Category	Good

Table 3 presents the validation results of the Content Validity Index (I-CVI). Researchers recommend that a scale with excellent content validity should have an I-CVI of 0.78 or higher and S-CVI/UA and S-CVI/Ave of 0.8 and 0.9, respectively. The I-CVI is determined by dividing the number of experts who rated each item as moderately relevant (scored as "3") or highly relevant (scored as "4") by the total number of expert validators. Scores range from 0 to 1, with higher scores indicating greater construct validity. The Scale Content Validity Index (S-CVI/UA), as determined by experts, measures how well the scale content aligns with the construct it is intended to assess, while the Scale Content Validity Index: Average Agreement (S-CVI/Avg), as determined by experts, measures how relevant and reflective the scale content is to the construct it is intended to assess.

In the given results, the I-CVI results of all are 1 except Communication strategies to ensure safety, Reporting and learning from errors, The Role of Healthcare Providers in Preventing Medication Errors, The Role of Personal Protective Equipment (PPE), Understanding Interdisciplinary Teams in Healthcare, and Case Studies on Successful Interdisciplinary Collaboration which are 0.80 but still relevant. The S-CVI (UA) is 0.80 which indicates that 80% of the items in the scale are relevant to the construct being measured, this is considered a Good score. The S-

CVI (A) is 0.81, which indicates a Good score. Overall, the S-CVI scores for universal agreement and mean indicate that this scale is a valid measure of the construct it is intended to measure.

DISCUSSION

Phase 1 – qualitative. After the upon examination of the key informants based on the analysis, five themes were successfully formulated in determining and establishing method in patient quality and safety enhancement training program focusing on (1) Patient Safety Focus; (2) Emphasis on Patient Accurate Medication; (3) Critical role of infection control; (4) Training as a foundation for practice; (5) Interdisciplinary approach to patient safety.

Patient safety focus revolves around implementing measures and cultivating an environment aimed at minimizing risks and preventing harm to patients in healthcare settings (Domer, Gallagher, Shahabzada, Sotherland, Paul, Kumar, & Kaur, 2021). This includes adopting evidence-based practices, ensuring open communication among healthcare providers, and continuously improving systems and processes to enhance patient safety (Sonğur, Özer, Gün, & Top, 2018). *"Patient safety is an effort to avoid, prevent and reduce the risk of injury that could endanger the health or safety of patients while they are receiving treatment. This includes various aspects such as ensuring patient identity,*

Hendri Hadiyanto^{*}, Lutiya¹, Mary Ann C. Nery²

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maintaining hand hygiene and ensuring that the correct medication is given” (P3).

Patient safety is the cornerstone of high-quality health care. Much of the work defining patient safety and practices that prevent harm have focused on negative outcomes of care, such as mortality and morbidity. Nurses are critical to the surveillance and coordination that reduce such adverse outcomes. Much work remains to be done in evaluating the impact of nursing care on positive quality indicators, such as appropriate self-care and other measures of improved health status (Carroll, Gebretsadik, Griffin, Wu, Dupont, Mitchel, & Hartert, 2008). *“How to identify correctly is the first by checking the patient's identification bracelet then the second is verification with two identity markers, namely with the standards applied, which include full name, then name, date of birth or name of the medical record then the next is verbal confirmation before the action or administration of medication then the fourth is using a barcode in several situations such as those that have a high risk of misidentification” (P5).*

To provide appropriate healthcare and avoid medication errors, it is paramount to know which medications a patient is taking. Discrepancies in medication are common, over half of patients in one study at the time of hospital admission, with 39% capable of causing injury, and the most common type of discrepancy is errors of omission, leaving out medications a patient is taking. It is frequently a challenge for consumers to identify pills when pills are transferred to different containers, combined to a single container for convenience, or portioned into day-of-week pillboxes to simplify medication management. While generally well-intended, when patients' separate medications from their original bottles or packaging, this presents a challenge to their healthcare teams (Delgado, 2019). *“Well, to prevent this infection from happening, perhaps one of the things that we as nurses, wherever we are, must first use personal protective equipment when we are going to take action. Before taking action, we should wash our hands first, sir, to clean our hands from various kinds of microbes like that, sir” (P2).*

Infection prevention and control (IPC) is a practical, evidence-based approach preventing patients and health workers from being harmed by avoidable infections (Gilbert & Kerridge, 2020). Effective IPC requires constant action at all levels of the health system, including policymakers, facility managers, health workers and those who access health services. IPC is unique in the field of patient safety and quality of care, as it is universally relevant to every health worker and patient, at every health care interaction. Defective IPC causes harm and can kill. Without effective IPC it is impossible to achieve quality health care delivery. Infection prevention and control effects all aspects of health care, including hand hygiene, surgical site infections, injection safety, antimicrobial resistance and how hospitals operate during and outside of emergencies (World Health Organization, 2024). *“I think the training provided is quite good it could be improved with more simulations. Real simulations of practical training in real conditions would really help students understand the challenges they face in the field, especially in emergency situations. In addition, more introduction to patient safety technology is also important” (P11).*

Human patient simulation is a relatively new teaching strategy that allows learners to develop, refine, and apply knowledge and skills in a realistic clinical situation as they participate in interactive learning experiences designed to meet their educational needs. Learners participate in simulated patient care scenarios within a specific clinical environment, gaining experience, learning and refining skills and developing competencies; all this is accomplished without fear of harm to a live patient. The use of simulation as a teaching strategy can contribute to patient safety and optimize outcomes of care, providing learners with opportunities to experience scenarios and intervene in clinical situations within a safe, supervised setting without posing a risk to a patient (Durham et al., 2008). *“Of course there is, for me it needs to be considered too because we remember that we are doing something not for ourselves but for other people too, that program according to the procedure is for us to prevent unwanted things in our implementation in*

Hendri Hadiyanto^{*}, Lutiya¹, Mary Ann C. Nery²

¹Universitas Muhammadiyah Sukabumi

²Philippine Women's University

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health facilities, therefore it is very important to emphasize how health students or other medical personnel are able to implement this patient safety, one of which is by obeying the procedure, sir" (P2).

Cooperation in interdisciplinary teams' increases productivity, contributes to the better use of team members' skills and leads to a greater feeling of individual responsibility for achieving the objective, as well as ensures holistic patient care, stimulates creativity and results in innovative solutions in patient care (Littlechild, & Smith, 2013; Bendowska & Baum, 2023).

Phase 2 – intervention development. The activities on the table cover an extensive range of patient safety topics. For instance, they begin with the foundational concepts such as the definition of patient safety and key principles involved. This foundational knowledge is crucial for healthcare professionals to understand the importance of patient safety from the outset.

The topic highlights the role of healthcare professionals in maintaining patient safety. It emphasizes the need for effective communication strategies, which are essential for preventing misunderstandings that can lead to errors. The table also underscores the significance of reporting and learning from errors to foster a culture of continuous improvement.

Medication safety is another vital topic covered in the schedule. The table outlines activities that focus on common medication errors, the role of healthcare providers in ensuring medication safety, and various tools and strategies to mitigate these errors. This is particularly important as medication errors can have serious repercussions on patient health (Bates & Slight, 2014).

Infection control is a recurring theme in the schedule. Activities related to infection control cover principles of infection prevention, standard precautions, proper hand hygiene techniques, and cleaning and sterilization protocols. The table also addresses infection control in high-risk areas and the use of personal protective equipment (PPE).

One of the key aspects of the schedule is the prevention of healthcare-associated infections (HAIs). The table includes activities aimed at understanding

HAIs and implementing strategies to prevent them. This is critical in reducing the incidence of infections that patients can acquire while receiving medical care. Interdisciplinary teamwork is also highlighted in the table. Activities focus on understanding the roles and responsibilities of different healthcare professionals and fostering collaboration among them. Effective teamwork is essential for providing comprehensive care and ensuring patient safety (Leonard & Frankel, 2011).

One of the key topics listed is "Communication and Collaboration Strategies for Effective Teamwork," which emphasizes the importance of clear and efficient communication among healthcare professionals. This is essential for preventing errors and ensuring that all team members are on the same page regarding patient care. Another important topic is "Conflict Resolution within Healthcare Teams" which addresses strategies for resolving disagreements and maintaining a harmonious work environment.

The table also includes "Case Studies on Successful Interdisciplinary Collaboration" highlighting real-world examples of effective teamwork across different healthcare disciplines. These case studies serve as valuable learning tools, showcasing best practices and successful outcomes. Additionally, topics such as "Building Trust and Respect among Team Members" and "Importance of Lifelong Learning in Healthcare" are crucial for fostering a supportive and continuous learning environment.

Other important topics covered in the table include "Continuous Quality Improvement (CQI) in Patient Safety" which focuses on ongoing efforts to enhance patient safety and care quality. This topic emphasizes the need for regular evaluations and improvements in healthcare processes. "Training Programs and Simulations for Skill Enhancement" are also highlighted, showcasing the importance of practical training and simulations in developing and maintaining healthcare professionals' skills.

Overall, the image serves as a valuable resource for healthcare organizations. It provides a structured approach to planning and implementing patient safety

Hendri Hadiyanto^{*}, Lutiya¹, Mary Ann C. Nery²

¹Universitas Muhammadiyah Sukabumi

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initiatives throughout the year. By covering a wide range of topics and scheduling specific activities for each month, the table ensures that healthcare professionals receive continuous education and training to maintain a safe environment for patients. The activities provides a comprehensive overview of essential topics in healthcare teamwork and training. It serves as a valuable resource for healthcare organizations, offering a structured approach to planning and implementing training and collaboration initiatives. By addressing a wide range of topics and emphasizing continuous improvement, the table ensures that healthcare professionals are well-equipped to provide high-quality and safe patient care.

Implementing and enhancing patient safety in medical education is critical for healthcare systems worldwide. By emphasizing the importance of patient safety throughout the curriculum with various means, medical education institutions can train competent and compassionate healthcare professionals who prioritize safe, high-quality care focusing on the patient and his well-being. Integrating patient safety principles, simulation-based training, interprofessional education, reporting systems, and continuous assessment will help nurture a culture of patient safety and ultimately contribute to improved patient outcomes now and in the long run. These effects and outcomes need to be assessed in a standardized manner. Immersive simulations allow students to practice critical decision-making and clinical skills in a controlled environment.

These exercises can create realistic scenarios highlighting patient safety's importance, helping learners develop appropriate responses and strategies without endangering real patients. Providing a well-structured debriefing facilitates highly valued learning moments concerning patient safety issues. Collaboration among healthcare professionals is essential for safe and effective patient care since the patients' safety cannot be guaranteed by any health profession alone. This is why the World Health Organisation has emphasized the importance of interprofessional teaching as early as 2010. Incorporating interprofessional education into medical

curricula enables students to understand the roles, responsibilities, and perspectives of different healthcare team members and vice versa, promoting effective teamwork and communication.

Phase 3 - validation process, the validity of an investigation pertains to the extent to which the results obtained from the investigation's participants accurately reflect the genuine outcomes among individuals who are comparable but not part of the research project (Patino & Ferreira, 2018). The notion of validity is applicable to all categories of clinical investigations, encompassing the incidence, connections, treatments, and assessment.

The process of validating replacement measures for actual intervention assessments is a crucial step in ensuring that alternative evaluation methods accurately reflect the effectiveness of interventions. This involves rigorously testing and comparing these surrogate measures against established benchmarks to confirm their reliability and validity. Through systematic analysis and empirical evidence, the goal is to ensure that these replacement measures can be trusted to provide meaningful insights and outcomes, thereby maintaining the integrity and accuracy of intervention evaluations.

Validity provides information on the accuracy of a method's measurement. A method is deemed valid if it yields results that closely match real-world values and measures what it purports to measure. In this study, the face validity and content validity will apply to measure The Patient Quality and Safety Enhancement Training. Integration of the results – mixed methods, integrating results is an essential stage in the development of The Patient Quality and Safety Enhancement Training program for nurse students in the Indonesia. The triphasic method nurse students a comprehensive strategy to Enhancement training of patient quality and safety that all facets of the problem are effectively dealt with. The initial stage entails qualitative research, which aims to capture the comprehensive knowledge and perspective of nurse students in healthcare organizations. This phase offers a comprehensive comprehension of patient quality and safety, encompassing its origins, outcomes, and the encounters faced by nurse

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students. The data obtained in this phase is qualitative and provides a full understanding of the situation, enabling researchers to uncover patterns, themes, and trends.

The second step is dedicated to creating a program using the qualitative information collected in the previous phase. This stage entails the examination of the data and the identification of the most efficient solutions to enhancing patient quality and safety. The qualitative findings provide the basis for the program's growth, guaranteeing that it is firmly rooted in reality and tailored to the qualification of nurse students as requirement in healthcare facility. The program is specifically created to be customized for the particular circumstances of nurse students in healthcare institutions in the Indonesia, considering the distinct difficulties and issues encountered by nurse students in these healthcare facility.

The final phase is doing quantitative research to assess the program's validity and effectiveness. The quantitative data offers an unbiased assessment of the program's influence, enabling researchers to assess its efficacy in enhancing patient quality and safety. By integrating qualitative and quantitative data, a thorough picture of the program's achievements is achieved.

The significance of patient quality and safety mixed methods in this study is in its capacity to encompass both the subjective and objective dimensions of nursing students as enhancement of training program. Qualitative research offers valuable insights into the subjective experiences and perspectives of nurse students, whereas quantitative research gives an unbiased and measurable assessment of the program's impact. By integrating both methodologies, researchers can achieve triangulation to enhance the patient quality and safety training program of their findings. In addition, mixed techniques provide a more comprehensive understanding for nurse students as healthcare provider.

Effective development of an the patient quality and safety enhancement training program for nurse students in healthcare facilities in the Indonesia relies heavily on the integration of results. The triphasic

approach in this study guarantees comprehensive coverage of all facets of enhancing patient quality and safety, encompassing the comprehension of its origins and repercussions, as well as the assessment of intervention efficacy (Falade, Gyampoh, Akpamgbo, Chika, Obodo, Okobi, & Chukwu, 2024). By integrating qualitative and quantitative methodologies, researchers may formulate a comprehensive program that is firmly based on empirical evidence and customized to the unique circumstances for nurse students in healthcare facilities in the Indonesia. The utilization of a mixed-methods technique enhances the validity and reliability of the study, resulting in a more precise comprehension of enhancing patient quality and safety training program and its effects on the implementation of patient quality and safety regulation in healthcare facility.

CONCLUSION

Ensuring patient safety and quality of care requires a multifaceted approach that includes fostering a culture of safety, enhancing nurses' competencies in medication management and infection control, and promoting continuous professional development. Integrating these elements into nursing education—alongside interprofessional collaboration and effective communication—equips nurses to deliver high-quality, safe, and patient-centered care.

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²Philippine Women's University

Corresponding author: *E-mail: hadiyantohendri@ummi.ac.id

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Designing a training program on quality improvement and patient safety for nursing students

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Hendri Hadiyanto^{1*}, Lutiya¹, Mary Ann C. Nery²

¹Universitas Muhammadiyah Sukabumi

²Philippine Women's University

Corresponding author: *E-mail: hadiyantohendri@ummi.ac.id

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