

ISSN: 2089-922X E-ISSN: 2621-3214

NURSING CURRENT: **JURNAL KEPERAWATAN**

Vol. 13 No. 2 (2025): December



Published by
Faculty of Nursing, Universitas Pelita Harapan



UPH Universitas
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REMARKS

We give praise and thanks to our Lord Jesus Christ for His faithfulness and grace that have enabled the publication of *Nursing Current*, Faculty of Nursing, Universitas Pelita Harapan, Vol. 13 No. 2, December 2025. This edition reflects our commitment to stewarding the gifts entrusted to us by God through the advancement of nursing knowledge that upholds academic excellence while embracing our calling to serve others with compassion, integrity, and wisdom. The diverse scholarly works presented in this issue demonstrate thoughtful engagement with contemporary challenges in nursing practice, education, and health promotion, grounded in evidence and contextual relevance.

Through *Nursing Current*, the Faculty of Nursing UPH invites educators, researchers, practitioners, and students to continue writing, sharing, and contributing to the growth of nursing science. We pray that this journal will serve as a platform that glorifies God, enriches nursing knowledge, and supports the development of professional nurses who are clinically competent, compassionate in care, and faithful in their calling to improve the quality of nursing services and nursing education. May God bless every work and service carried out through *Nursing Current*.

Dr. Grace Solely Houghty, M.B.A., M.Kep
Dean, Faculty of Nursing Universitas Pelita Harapan

FOREWORD

With gratitude to God, we are pleased to present Volume 13, No. 2 (2025) of Nursing Current: Jurnal Keperawatan. This issue reflects our commitment to advancing nursing scholarship through rigorous editorial and review processes.

This edition offers a diverse range of topics, including innovations in nursing education, community health perspectives, behavioral studies, women's health, mental health interventions, and the integration of VR-AI technology for adolescent health education. These contributions demonstrate the journal's dedication to addressing complex and emerging challenges in nursing and healthcare.

To strengthen quality and global engagement, we are expanding our editorial and reviewer network to include scholars from diverse institutions. Looking ahead, we are preparing for international indexing next year to enhance visibility and impact. We encourage authors to respond promptly to reviewer feedback for timely publication.

We extend our sincere gratitude to all contributors and readers. May this volume serve as a valuable resource for advancing nursing knowledge and practice.

Warm regards,
Dr. Ni Gusti Ayu Eka
Editor-in-Chief

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Original Research

Debriefing and Clinical Judgment Ability in Nursing Education: A Scoping Review

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ARTICLE INFO

Keywords:

Clinical
judgment
Debriefing
Education
Nursing
Nursing
students

ABSTRACT

Clinical judgment is a critical competence for nursing students, yet its development remains inconsistent across nursing programs. Debriefing has emerged as a promising educational strategy to enhance this ability, particularly when integrated with simulation-based learning. The Method used a scoping review followed the Arksey and O'Malley framework to identify debriefing techniques used in undergraduate nursing education, their outcomes on clinical judgment, and learning activities that support their development. Fourteen studies published between 2016 and 2024 were included from three databases (ProQuest, MEDLINE, and PubMed). Inclusion criteria were English-language, full-text available, and focused on undergraduate nursing education. Results of this study are structured and theory-based debriefing methods were found to significantly improve nursing students' clinical judgment, particularly in noticing, interpreting, and reflecting. Simulation-based learning combined with reflective debriefing and clinical placements further supported skill transfer into real practice settings. The conclusion is that structured and theory-informed debriefing significantly enhances clinical judgment in nursing education. Integrating reflective debriefing into simulation and clinical learning activities is essential to bridge the gap between theoretical knowledge and clinical competence. Recommendation is that educators are encouraged to adopt structured, theory-based debriefing models and ensure that facilitators receive proper training. Future research should explore longitudinal and interprofessional effects of debriefing on clinical competence.

Received 2 July 2025;
Received in revised form 23 September 2025;
Accepted 11 November 2024

<https://doi.org/10.19166/nc.v13i2.10034>

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INTRODUCTION

According to the International Council of Nursing (1987) nurses are defined as professionals who have successfully completed an accredited basic and general nursing education program and have been granted authorization to practice by the appropriate regulatory authority in their respective countries. Foundational nursing education includes a formally approved curriculum designed to provide comprehensive knowledge in the behavioural, life, and nursing sciences, preparing learners for general nursing practice, leadership roles, and advanced or specialized study (International Council of Nursing, n.d.). The primary aim of the bachelor of nursing program is to develop graduates who can effectively apply theoretical knowledge in real-world clinical settings as healthcare professionals (Johnston et al., 2017).

Kavanagh & Szweda (2017) found that only 23% of newly graduated nurses demonstrated the entry-level competence required to be considered practice ready. Likewise, a study in Taiwan reported that only about 53% of undergraduate nursing students achieved a satisfactory level of clinical competence (Liou et al., 2020). Furthermore, an integrative review from Gonzalez & Nielsen (2024) highlighted the scarcity of scholarly literature that specifically explores instructional strategies that foster clinical judgment skills within clinical practice environments. The review of these studies shows that nursing educators have utilized diverse methods to enhance students' clinical judgment abilities. Nevertheless, further investigation is required to establish evidence-based best practices in clinical education. Advancing this area is essential to improve the quality of clinical learning and ensure that educational strategies effectively support critical thinking and sound clinical decision-making (Gonzalez & Nielsen, 2024).

Yang et al. (2019) reported that simulation-based instructional methods had a significantly greater impact on students' clinical judgment abilities compared to conventional, non-simulation approaches. Such methods enhance performance across key dimensions of clinical judgment, including noticing, interpreting, responding, and reflecting. Existing literature also emphasizes that debriefing plays a critical role in facilitating clinical learning, both in real-world clinical placements and in simulated learning environments (Dreifuerst, 2015; International Nursing Association for Clinical Simulation and Learning [INACSL] Standards Committee et al., 2021; Lomuscio et al., 2025).

Structured debriefing refers to a guided reflective process following a simulation or clinical encounter, using a

defined framework to help learners critically examine their actions, decisions, and underlying reasoning to promote deeper learning and strengthen future clinical judgment (Dreifuerst, 2015). In their concept analysis of debriefing within professional clinical practice settings, Fisher & Oudshoorn (2019) observed that although debriefing is widely used in simulation laboratories, it should also be incorporated into clinical practice education to enrich learning experiences and minimize the gap between theoretical knowledge and clinical application. Additionally, is relevant across multiple domains of nursing education and is recommended as a curricular component to support reflective practice, which can positively influence educational outcomes (National League for Nursing [NLN], 2015 in Reed, 2020).

Recent literature further reinforces the contribution of debriefing to clinical judgment development and nursing education more broadly. Debriefing facilitates reflective thinking, emotional processing, and the integration of theoretical knowledge into clinical decision-making (Şahin & Başak, 2021). Structured debriefing models such as Debriefing for Meaningful Learning (DML) and the Lasater Clinical Judgment Rubric (LCJR) have shown effectiveness in promoting critical thinking and clinical reasoning (Bussard et al., 2024). Integrating debriefing practices into nursing curricula may bridge the gap between academic preparation and clinical readiness.

A persistent challenge in nursing education is the disparity between the expected practice readiness of graduates and their actual clinical competence, particularly in the domain of clinical judgment. Despite the use of diverse teaching strategies such as simulation, the evidence regarding best practices for fostering clinical judgment remains limited and inconclusive. In addition, although debriefing has been recognized as an effective method for connecting theoretical knowledge with clinical application, its consistent integration into clinical education has not yet been fully achieved. To address this gap, the present study seeks to examine: (1) the debriefing methods employed in nursing education, (2) the outcomes associated with the application of debriefing in nursing education, and (3) the learning activities that have been reported to enhance clinical judgment among nursing students.

METHOD

Scoping reviews are an appropriate method for mapping existing research on a particular topic, identifying the types of available evidence, highlighting areas of knowledge strength and gaps, and outlining key characteristics of the concepts being studied (Peters et al., 2020). The purpose of this review aligns with the methodological approach, as scoping reviews offer a rigorous process for examining

the literature, synthesizing existing evidence, and informing future research directions (Tricco et al., 2018). The five-stage framework developed by Arksey & O'Malley (2005) was utilized, which includes formulating the research question, locating relevant literature, screening and selecting studies, extracting and organizing data, and synthesizing, summarizing, and presenting the findings. The research questions guiding this review were: What debriefing methods are used in nursing education, what are the reported outcomes of implementing debriefing in nursing education? and What learning activities have been identified as contributing to the development of clinical judgment among nursing students?

Searches were conducted across three major databases: ProQuest, MEDLINE with full text (EBSCO), and PubMed. A Structured search strategy was employed, incorporating Medical Subject Headings (MeSH) and relevant keywords. To locate relevant literature, a comprehensive search strategy was developed using the Population–Concept–Context (PCC) framework. For the population, terms such as “Nursing Student”, “Students”, “Pupil Nurse”, “Undergraduate students”, “baccalaureate students”, “Pre-licensure”. Boolean operators (AND and OR) are applied to combine search terms, ensuring comprehensive and systematic search across the selected databases (*Table 1*). The inclusion criteria were limited to peer-reviewed articles published in English between 2015 and 2025.

All retrieved records were imported into Covidence platform (Systematic Review Software, Veritas Health Innovation, Melbourne, Australia). Duplicate records were automatically removed. Title and abstract screening were performed independently by two reviewers, followed by full-text assessment using predefined inclusion and exclusion criteria. No discrepancies occurred throughout the screening process, and all decisions were reached by consensus.

Data extraction was conducted in Covidence using a structured form to capture key information, including authors, year, country, study objectives, measurement tools, study design and sample, learning activities, debriefing methods, and major findings. Extracted data were organized and synthesized thematically to identify patterns and trends in debriefing practices and their impact on clinical judgment. The PRISMA extension for scoping reviews was used to guide transparent reporting, and the study selection

process is illustrated in Figure 1.

Table 1. PCC to determine and develop keywords in the database

Population			Concept	Context
Nursing Students, pupil OR undergraduate OR students	Student OR nursing nurse OR students OR baccalaureate OR Pre-licensure)	OR	Debriefing OR debrief OR AND Clinical judgment	Nursing education, OR clinical placement OR clinical practice, OR simulation laboratory

RESULT

Study Characteristics

Targeted database searches and thorough full-text screening resulted in the inclusion of 14 articles, as presented in Table 2. These studies originated from diverse countries, including the United States (n = 3), Brazil (n = 2), South Korea (n = 2), Australia (n = 2), Palestine (n = 1), Norway (n = 1), France (n = 1), China (n = 1), and the United Kingdom (n = 1). The three studies from the United States (Alanezi et al., 2025; Davis & Wood, 2022; Hines & Wood, 2016) reported on debriefing but employed different debriefing methods. The included studies were published between 2016 and 2024, with a noticeable increase in publications over the past five years, indicating growing scholarly interest in this topic. Various research methodologies were employed, including qualitative (n = 2), quantitative (n = 8), and mixed methods designs (n = 4).

The sample sizes ranged from 19 to 319 participants, with most studies involving undergraduate nursing students at different academic levels. Specifically, the samples included second-year (e.g., Høegh-Larsen et al., 2023), third year (e.g., Johnston et al., 2019; Yang et al., 2024), fourth year (e.g., Janicas & Narchi, 2019), and final-year students (e.g., Dix et al., 2021; Jang & Moon, 2021). This variation illustrates the broad relevance and adaptability of debriefing strategies throughout the progression of nursing education.

Consistent with the purpose of a scoping review, no critical appraisal tool was used, as the aim was to map existing evidence without excluding studies based on methodological quality or risk of bias (Peters et al., 2020). The detailed findings of the included studies are presented in Table 2.

Table 2. Literature review results

No.	Authors details, Year	Country	Objectives and Measurement Tools	Study Design and Sample	Learning activity	Debriefing method	Findings
1	Rita de Cassia Silva Vieira Janicas, Nádia Zanon Narchi (2019)	Brazil	To compare the clinical performance of nursing students in learning scenarios with and without debriefing in a simulation centre. Tools: Clinical performance test (Exame de Desempenho Clínico - EDC).	Longitudinal randomized crossover study with a quantitative approach. Sample: 120 nursing students in 4 th semester. Intervention group: n=59, control group n=61.	Simulation in clinical performance scenarios with and without debriefing	Structured Debriefing with 4 phases: welcoming, synthesis, discussion, and summary, after simulation.	Debriefing with clinical scenarios effectively enhances nursing students' clinical performance, supporting its use as a valuable teaching strategy.
2	Thierry Secheresse (2021)	French	To compare explicit (highly guided debriefing with direct teaching of content) with implicit (low-guided debriefing) in nursing education. Tools: Declarative Knowledge questionnaire, Self-efficacy questionnaire, and Self-confidence questionnaire.	Randomized prospective study. Sample: 136 nursing students participated during 46 simulation sessions.	High fidelity Simulation (46 simulation sessions)	Explicit and implicit debriefing after simulation. Debriefing in 20 minutes.	Explicit, guided debriefing with direct instruction was more effective for knowledge acquisition than implicit, reflective debriefing.
3	Bortolato-Major (2019)	Brazil	Evaluate the contribution of debriefing after simulations for nursing students. Tools: debriefing evaluation scale that assesses psychosocial, cognitive, and affective aspects.	Quantitative study. Sample: Nursing students. In year 2	High fidelity simulation.	Debriefing with good judgment techniques in 15 minutes (average) after simulation (National league or Jefferies simulation theory)	Debriefing served as a reflective exercise that supported the development of essential competencies, particularly in leadership, care relationships, and decision-making. The cognitive domain showed the strongest agreement in learning outcomes.
4	Ae Ri Jang & Jeong Eun Moon (2021)	South Korea	To determine the effectiveness of established nursing care simulations by evaluating, through video, a select number of nursing students in scenarios that simulate nursing care for Increased Intracranial Pressure (IICP) patients. Tools: anxiety level using STAI-X; critical thinking disposition scale; confidence; theoretical knowledge; clinical performance; and clinical judgment by video analysis with National Council of State Boards of Nursing (NCSBN) clinical judgment framework (qualitative analysis)	Mixed Method-Non-equivalent, with pre and post-test. Sample: 77 final year Nursing students (control 39, intervention 38)	High fidelity simulation	Not clearly described	Simulation-based nursing care effectively enhances students' clinical judgment, theoretical knowledge, confidence, and clinical performance.

5	Samantha Dix, Julia Morphet, Tamsin Jones, Noelleen Kiprillis, Monica O'Halloran, Katie Piper, Kelli Innes (2021)	Australia	To explore final year nursing student's ability to transfer clinical judgement skills to the clinical practice setting following immersive simulation Tools: Interview with Tanner's Clinical Judgment Mode (TCJM) as theoretical framework	Qualitative research with intervention. Sample: 319 Final year nursing students	Phase 1: Immersive High-Fidelity Simulation workshop with 2 clinical scenarios. Phase 2: 160 hour of clinical placement at healthcare services.	DML to guide discussion based on TCJM.	Simulation effectively develops clinical judgment by exposing students to realistic scenarios, encouraging questioning, and enhancing decision-making under pressure.
6	Anne Mette Høegh -Larsen, Marianne Thorsen Gonzalez, Inger Åse Reiersen, Sissel Iren Eikeland Husebø2, Dag Hofoss and Monika Ravik (2023)	Norway	to compare the same group of students' self-assessment of clinical judgment with an evaluator's assessment in both simulation and clinical settings Tools: LCJR-Norwegian used for self-assessments and evaluator assessments	Quantitative comparative design. Sample: 23 second-year bachelor's nursing students	High-Fidelity Simulation and clinical placement	DML based on TCJM for 45 minutes	Student self-assessment alone may not reliably reflect clinical judgment, especially among those with lower performance levels — indicating the Dunning-Kruger effect.
7	Fahad Zeed Alanezi, Caroline F. Morrison, Robin Wagner, Benjamin Kelcey, Elaine Miller (2025)	United States	To explore the experiences of undergraduate nursing students regarding hot and cold debriefings following Basic Life Support (BLS) training. Tools: Interview use Kolb's Experiential Learning Theory (ELT).	Qualitative research. Sample: 44 third- and fourth-year bachelor's nursing students	BLS training	Hot and cold debriefing for 10-20 minutes, used same structure, open-ended questions, with 6-8 students. Hot debriefing: within minutes to hours after the simulation. Cold debriefing: within hour to weeks after the simulation.	Integrating simulation followed by debriefing into the nursing curriculum—especially for teaching BLS—is highly beneficial. Debriefing enhances nursing students' skills and knowledge, and recommendations were provided to improve debriefing strategies.
8	Ahmad Ayed, Inaam A. Khalaf, Imad Fashafsheh, Ali Saleh, Hala Bawadi, Jamila Abuidhail, Imad Thultheen, Hasan Joudallah, (2022)	Palestine	to evaluate the influence of using HFS as a teaching method on clinical judgment among paediatric nursing students Tools: LCJR	Quasi experimental. Sample: 150 Baccalaureate Paediatric nursing students	High fidelity simulation and traditional lecture class	Debriefing discusses the positive aspect of performance for 10 minutes	High-fidelity simulation effectively enhances clinical judgment, theoretical knowledge, confidence, and performance in paediatric nursing students.
9	Jian Yang, Wen Jie Zhou, Si Chen Zhou, Dan Luo, Qian Liu, Ai-Ling Wang, Si-Hong Yu, Xiao-Ping Zhu, Xue Yu He, Fen Hu, Bing Xiang Yang and Jie Chen	China	To evaluate the effect of an integrated non-immersive virtual simulation and high-fidelity face-to-face simulation program on enhancing nursing students' clinical judgment ability and understanding of nursing	Sequential exploratory mixed-methods study. Quantitative: pre-test/post-test with control group. Qualitative: semi-structured interviews to	Non immersive Virtual simulation in high fidelity simulation program and High-fidelity simulation program	30 minutes of debriefing after simulation	Combining virtual and face-to-face simulation effectively enhances nursing students' clinical judgment, as confirmed by both quantitative and qualitative data.

	(2024)		students' experiences of the combined simulation.	explore student perceptions.			
			Tools: LCJR, Simulation Design Scale (SDS) and focus group interview.	Sample: 122 3rd Year nursing students			
10	Johnston, Sandra, Nash, Robyn, & Coyer, Fiona (2019)	Australia	To explore the effect of a simulated clinical experience and debriefing based on learning transfer principles, on perceptions of clinical reasoning and the transfer of this learning, in third year undergraduate nursing students enrolled in their final clinical semester. Tools: Nurses Clinical Reasoning Scale (NCRS) and focus group interview	Mixed method design. Sample: 256 3 rd year nursing students.	Simulation	Intervention Group: simulation debriefing guided by principles of transfer of learning, based on the theory of Salomon and Perkins (1989). Control: standard debriefing based on Pendleton's (1984) model, commonly used in the study institution. 20 minutes debriefing, after simulation	Applying learning transfer principles in simulation debriefing may enhance clinical reasoning, particularly through improved reflection and conceptual understanding.
11	Yun-Jeong Oh, Hee-Young Kang, Yeoungsuk Song, dan Ruth Lindquis (2021)	South Korea	To compare the effects of Transformative Learning Theory (TLT) based on Mezirow's that uses critical reflection in providing care to patients versus non-TLT debriefing protocol on knowledge, critical thinking disposition, problem-solving process, and clinical judgment. Tools: Problem-Solving questionnaire, Critical Thinking Disposition Scale, LCJR by observation	Randomized controlled trial Sample: 56 junior nursing students	Simulation	Intervention: Debriefing protocols based on Mezirow's TLT after simulation Control: Gather-Snalyze-Summarize (GAS)–based debriefing after simulation	The TLT debriefing approach in simulation can be tailored to improve problem-solving, critical thinking, and clinical judgment outcomes, which are vital to nursing education related to the provision of care to patients
12	Patrick Lavoie, Jacinthe Pepin, Sylvie Cossette (2017)	United Kingdom	To describe how nursing students perceived that the Reflective dEBriefing after a PatieNt Deterioration simulation (REsPoND) fostered learning and how it contributed to their clinical judgment in patient deterioration simulation Tools: Interview use REsPoND framework build by Lavoie based on Experiential Learning Theory, Theory	Sequential explanatory mixed-methods study. Sample: 19 students who showed the greatest clinical judgment score variation in a randomized controlled trial of the effectiveness of REsPoND	High-fidelity simulation (three times)	DML for 30 minutes. Open ended question align with TCJM.	Clinical judgment might be improved when a systematic assessment approach is used to structure debriefing. The relationship between reflection and self-assessment during debriefing remains to be disentangled

of reflection, and TCJM.							
13	Rebecca G. Davis, and Felecia G. Wood (2022)	United States	To examine the impact of post clinical pharmacology-focused reflective debriefing sessions on clinical judgment in prelicensure senior nursing students. Tools: LCJR by observer, measured in the beginning, middle, and at the end of semester.	Non-randomised experimental study Sample: 128 senior-level baccalaureate nursing students	Clinical placements	Intervention group: two reflective debriefing sessions focused on students' pharmacology-related clinical experiences during 12-week critical care rotation (1 hour). Control group: participated only in standard post-conference activities	Clinical experiences support the development of clinical judgment in nursing students; educators should implement and evaluate strategies to foster this growth.
14	Cheryl B. Hines and Felecia G. Wood (2016)	United States	To investigate whether a standard debriefing script, based on TCJM, could foster clinical judgment Tools: LCJR used in self-assessment and by observation.	Quasi experiment. Sample: 53 final year nursing students	2 Simulation and 6 clinical learning experiences	Standardized debriefing script based on TCJM within 30-45 minutes.	Students and instructors reported that standardized debriefing scripts improved perceptions of clinical judgment especially in noticing, interpreting, and reflecting—supported the development of reflective thinking.

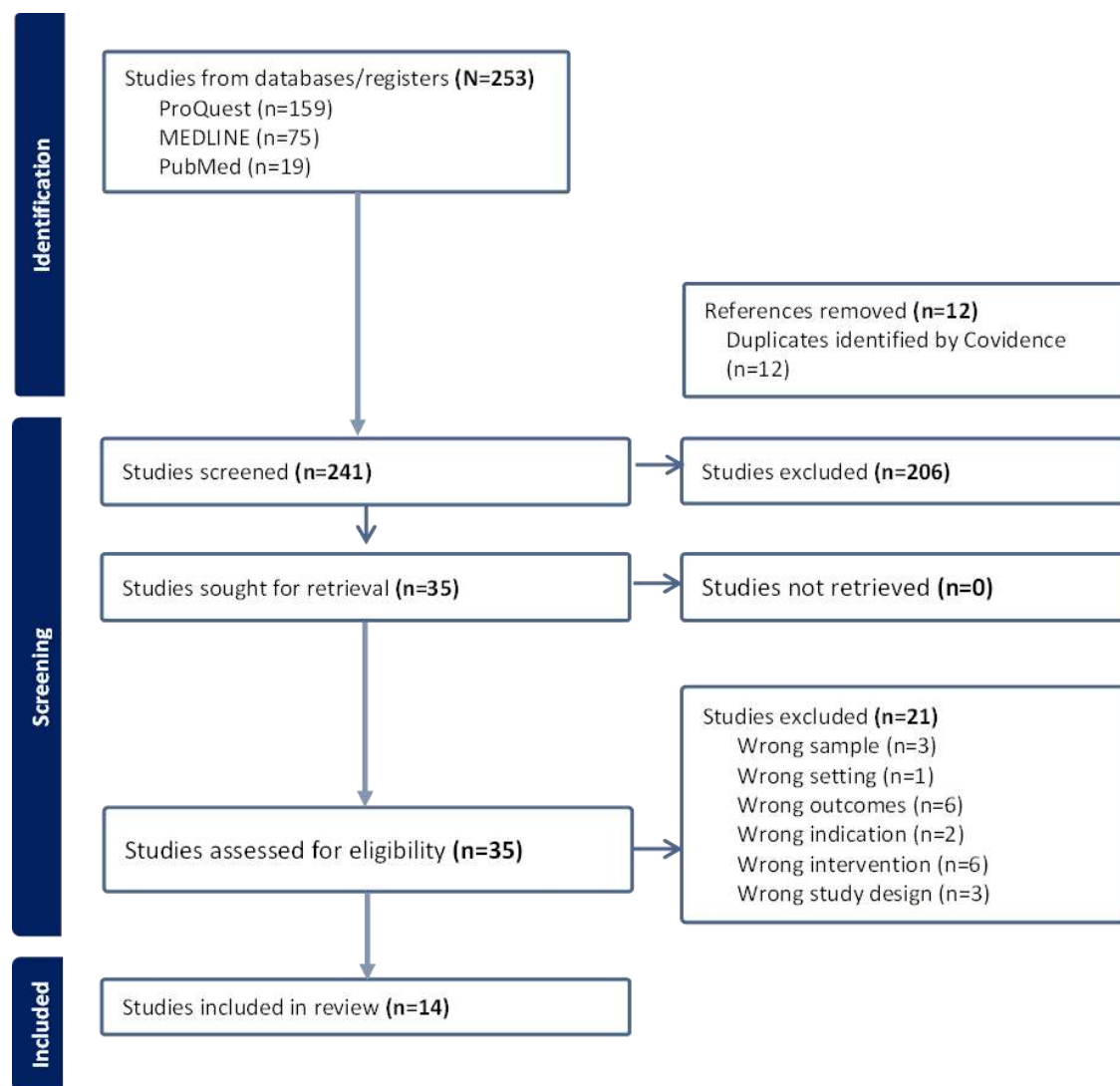


Figure 1. PRISMA Flow Diagram

Debriefing Methods Utilized in Nursing Education

This review identified a wide range of debriefing techniques aimed at enhancing clinical judgment in undergraduate nursing students (Table 3). Although these approaches varied in structure, facilitation style, and theoretical underpinnings, they shared a common goal of fostering critical thinking and informed clinical decision-making. The most frequently employed method was structured debriefing (Davis & Wood, 2022; Hines & Wood, 2016; Janicas & Narchi, 2019; Lavoie et al., 2017; Dix et al., 2021; Høegh-Larsen et al., 2023), while three studies did not specify their procedures due to differing research focus.

Most debriefing sessions occurred after simulation activities; however, one study conducted debriefing following clinical placement (Davis & Wood, 2022), three combined simulation and clinical learning (Dix et al., 2021; Hines & Wood, 2016; Høegh-Larsen et al., 2023), and one followed a training session (Alanezi et al., 2025).

Several studies employed theoretical frameworks to guide

debriefing, with TCJM being the most cited (Dix et al., 2021; Hines & Wood, 2016; Høegh-Larsen et al., 2023; Lavoie et al., 2017). Others used TLT (Oh et al., 2021), Kolb's Experiential Learning (Alanezi et al., 2025; Lavoie et al., 2017), learning transfer principles (Johnston, 2019), and Jefferies' simulation theory (Bortolato-Major et al., 2019), enriching the reflective process and clinical reasoning.

Instructional design-focused techniques included four-phase debriefing (Janicas & Narchi, 2019) and techniques comparing explicit versus implicit facilitation (Secheresse et al., 2021), emphasizing the value of guided facilitation and feedback. Innovative methods such as pharmacology-based reflection (Davis & Wood, 2022), hot vs. cold formats (Alanezi et al., 2025), and learning transfer-based debriefing (Johnston, 2019) expanded debriefing practices beyond traditional simulation contexts, incorporating variable timing and clinical applications.

Debriefing with good judgment (Bortolato-Major et al., 2019) offered a holistic approach, addressing emotional, cognitive, and interpersonal aspects crucial to clinical decision-making.

Overall, the findings demonstrate that structured, theory-informed, and reflective debriefing methods are most effective in cultivating clinical judgment. The integration of conceptual models and intentional facilitation strategies plays a central role in preparing nursing students for complex clinical situations.

Table 3. Debriefing Methods and Their Measured Outcomes in Nursing Education

Debriefing Technique	Study	Key Features	Measurement Tool	Main Outcomes
Structured debriefing (Structured debriefing; standardized script based on TCJM; REsPoND Reflective Debriefing; Pharmacology-Focused Debriefing, and DML guided by TCJM)	Janicas & Narchi (2019)	After simulation performance, consist of four phases: welcoming, synthesis, discussion, summary	Clinical performance test scores	Structured debriefing group showed significant improvement in clinical performance ($p < 0.001$).
	Hines & Wood (2016)	After simulation and clinical placement; guided by TCJM	LCJR	Improvement in clinical judgment's stage noticing, interpreting, reflecting
	Lavoie et al. (2017)	After high-fidelity simulation; Structured assessment and reflective questioning	LCJR, Qualitative Themes	Improved judgment through structured reflection
	Davis & Wood (2022)	After clinical placement; structured session during clinical rotation; focused on medication-related decision making and reflection	LCJR	Significant increase of clinical judgment score for all respondents.
	Dix et al. (2021)	After high fidelity simulation; six phase debriefing model applied by trained facilitators	Thematic analysis	Enhanced clinical judgment through realistic simulation, improved data interpretation, emotional intelligence, and recognition of role-based challenges.
	Høegh-Larsen et al. (2023)	After high-fidelity simulation and clinical placement; six-phase debriefing model applied by trained facilitators; 45-minute debriefing.	LCJR from evaluator and students' self-assessment	Discrepancy between self and evaluator-assessed clinical judgment; low performing students overestimated abilities, indicating Dunning-Kruger effect.
Hot vs Cold Debriefing	Alanezi et al. (2025)	After BLS training; structured prompts and open-ended questions; timing variation	Thematic analysis	Enhanced reflection, feedback, and learning experience
Explicit vs Implicit Debriefing	Secheresse et al. (2021)	After high fidelity simulation, guidance in debriefing, 20 minutes.	Knowledge, self-efficacy, and Self-confidence questionnaire	Higher knowledge gain in explicit debriefing group; no difference in self-efficacy.
TLT	Oh et al. (2021)	After simulation, focused on reflection, problem-solving, critical thinking	LCJR and Critical Thinking Scale	Improved clinical judgment, critical thinking, and problem solving
Debriefing based on learning transfer principles	Johnston (2019)	After simulation; based on Salomon & Perkins theory; backward and forward reflection	NCRS and qualitative theme	Significant improvement in clinical reasoning and decision-making; enhanced reflection and use of structured frameworks.
Debriefing with Good Judgment	Bortolato-Major et al. (2019)	After high fidelity simulation, evaluated psychosocial, cognitive, affective domains	Debriefing Evaluation Scale	High scores in cognitive, psychosocial, and affective domains.
	Jang & Moon (2021)	After high fidelity simulation as a main intervention.	Critical Thinking Disposition Scale Confidence, theoretical knowledge, clinical performance, and clinical judgment by video analysis with NCSBN (qualitative analysis)	
	(Ayed et al., 2022)	High-fidelity simulation as a main intervention; Discuss the positive aspect of performance	LCJR	
	Yang et al. (2024)	After non-immersive virtual simulation as a main intervention; 30 minutes.	LCJR, Simulation Design Scale, and focus group interview	Debriefing not used as the main intervention
Not clearly describe				

The Outcomes of Applying Debriefing in Nursing Education

All included studies reported positive outcomes following the use of debriefing in nursing education, particularly in terms of enhancing clinical judgment (*Table 3*). This review highlights a variety of debriefing strategies used in undergraduate nursing programs, each contributing to clinical judgment development through distinct learning mechanisms. Across the studies, the outcomes consistently showed that structured, theory-based, and reflective debriefing techniques are associated with measurable improvements in multiple domains of clinical judgment.

Debriefing models grounded in theoretical frameworks such as TLT (Oh et al., 2021) and TCJM (Dix et al., 2021; Hines & Wood, 2016; Hoegh-Larsen et al., 2023) were linked to enhanced reflection, problem-solving, and critical thinking. Improvements were documented in specific domains such as noticing, interpreting, and reflecting, using measurement tools such as the Lasater Clinical Judgment Rubric (LCJR) and thematic analysis.

Similarly, REsPoND reflective debriefing (Lavoie et al., 2017) and pharmacology-focused reflective sessions (Davis & Wood, 2022) facilitated structured assessment and repeated reflection, resulting in progressive gains in clinical judgment over time. The use of learning transfer principles (Johnston et al., 2019) also supported the development of structured reasoning, with qualitative findings indicating improved use of conceptual frameworks.

Studies employing explicit and guided debriefing formats (Secheresse, 2021; Janicas & Narchi, 2019) demonstrated significant improvements in knowledge acquisition and clinical performance, reinforcing the value of facilitated and intentionally structured reflective dialogue. Meanwhile, hot versus cold debriefing (Alanezi et al., 2025) and debriefing with good judgment (Bortolato-Major, 2019) emphasized emotional processing and multidimensional learning, contributing to psychosocial, cognitive, and affective development.

Overall, the findings demonstrate that the effectiveness of debriefing in enhancing clinical judgment is closely tied to its structure, theoretical foundation, and reflective depth. Techniques that incorporate guided questioning, conceptual models, and repeated reflection consistently yield stronger outcomes across cognitive, affective, and behavioural domains.

Learning Activities That Enhance Clinical Judgment in Nursing Students

The synthesis of the reviewed studies shows that simulation-based learning combined with structured debriefing is the most prominent approach for strengthening clinical judgment in undergraduate nursing education (*Table 4*). Activities such as high-fidelity

simulation, reflective debriefing, and the application of theoretical frameworks like TCJM, TLT, and DML consistently demonstrated positive outcomes. These strategies enhanced key components of clinical judgment, including noticing, interpreting, and reflecting, while also strengthening problem-solving and critical thinking skills. For example, Janicas and Narchi (2019) reported significant improvements in clinical performance through structured debriefing, while Oh et al. (2021) demonstrated that TLT-based debriefing promotes the development of both clinical judgment and problem-solving abilities.

Furthermore, integrating simulation with extended clinical placements and virtual components, as seen in studies by Dix et al. (2021) and Yang et al. (2024), facilitated the transfer of judgment skills to real-world practice. Systematic and reflective debriefing models, such as REsPoND and standardized scripts based on TCJM, were also shown to enhance students’ ability to analyse complex clinical situations and engage in reflective thinking. Collectively, these findings highlight the value of experiential, theory-driven, and reflective learning activities in fostering strong and sustainable clinical judgment skills among nursing students.

Table 4. Learning activities supporting clinical judgment

Study	Activity Type	Clinical Judgment Support
Janicas & Narchi (2019)	Simulation with structured debriefing	Significantly improved clinical performance and clinical judgment in nursing care.
Johnston et al. (2019)	Debriefing based on learning transfer principles	Improved the clinical reasoning score.
Jang & Moon (2021)	Simulation for nursing care of IICP patients	Identified 10 clinical judgment processes; improved confidence and performance.
Oh et al. (2021)	Debriefing based on TLT	Improved problem-solving, critical thinking, and clinical judgment.
Dix et al. (2021)	High-fidelity simulation + debriefing + 160h placement	Helped transfer clinical judgment skills to practice; emphasized emotional intelligence.
Hoegh-Larsen et al. (2023)	Simulation with DML model + clinical placement	Highlighted discrepancy in clinical judgment assessment between students and evaluator.
Ayed et al. (2022)	High-fidelity simulation with paediatric case + debriefing	Significantly improved clinical judgment compared to control group.
Lavoie et al. (2017)	Reflective debriefing using REsPoND model	Systematic assessment approach improved clinical judgment.
Yang et al. (2024)	Virtual and face-to-face simulation	Greater improvement in Clinical judgment from both activity
Hines & Wood (2016)	Standardized debriefing script based on TCJM	Improved noticing, interpreting, and reflecting aspect in clinical judgment; promoted reflective thinking.

DISCUSSION

Debriefing has become a cornerstone of nursing education, particularly in simulation-based learning, due to its well-documented ability to promote reflective thinking, clinical reasoning, and clinical judgment (Reiersen et al., 2017). The findings of this scoping review demonstrate that undergraduate nursing programs employ a wide range of debriefing approaches, each grounded in different theoretical models and facilitated through distinct structures and styles.

Structured and Theory-Based Debriefing

Structured debriefing methods were the most frequently utilized across the reviewed studies. These approaches often followed a defined framework and were facilitated by trained educators. For instance, DML, grounded in TCJM, was widely adopted to guide reflective discourse and promote clinical reasoning (Dix et al., 2021; Høegh-Larsen et al., 2023). Likewise, standardized debriefing scripts based on Tanner's model were applied in both simulation and clinical teaching environments to support systematic reflection (Hines & Wood, 2016).

The emphasis on structured debriefing aligns with evidence from Reiersen et al. (2017), who demonstrated that structured debriefing enhances feedback specificity, reflection depth, and psychological safety. Their study showed that students participated more actively in reflective discourse when the debriefing session followed an organized sequence and incorporated supportive tools such as observation guides and video review (Reiersen et al., 2017).

Additionally, reflective debriefing models such as REsPoND (Lavoie et al., 2017) and pharmacology-focused debriefing (Davis & Wood, 2022) extended the scope of debriefing beyond simulation, integrating clinical experiences and promoting deeper reflection on decision-making processes. This approach aligns with findings from a systematic review of randomized controlled trials, which concluded that combining simulation with other educational strategies—such as reflective training, mobile applications, or structured feedback—enhances the effectiveness of clinical reasoning development in nursing students (Pérez-Perdomo & Zabalegui, 2024).

Extending Debriefing Beyond Simulation: Clinical Practice Applications

Debriefing has been effectively adapted for clinical placements. Vreugdenhil et al. (2024) introduced a peer-led model based on illness script theory, enhancing clinical reasoning during hospital internships through contextual reflection, structured questioning, and safe learning environments. Similarly, Davis and Wood (2022) applied reflective debriefing during clinical rotations focused on pharmacological decisions, showing progressive improvement in students' judgment. Hines and Wood (2016) used TCJM-based scripts in both simulation and clinical settings to foster reflective thinking and response accuracy. Høegh-Larsen et al. (2023)

implemented DML-based debriefing across contexts, revealing discrepancies between students' self-assessments and evaluator ratings, thus highlighting the importance of guided reflection in clinical practice.

These studies support integrating debriefing into clinical education, aligning with the NLN's "Debriefing Across the Curriculum" initiative (NLN, 2015, as cited in Morse et al. 2021) which promotes reflective dialogue throughout nursing programs to bridge theory and practice.

The Outcomes of Applying Debriefing in Nursing Education

This review confirms that structured, theory-based debriefing significantly enhances clinical judgment in nursing education. Approaches grounded in TCJM and TLT improve students' abilities in noticing, interpreting, and reflecting (Dix et al., 2021; Hines & Wood, 2016; Oh et al., 2021).

Reflective strategies like REsPoND and pharmacology-focused sessions foster progressive development through guided reflection (Davis & Wood, 2022; Lavoie et al., 2017), while explicit formats improve performance and psychological safety (Janicas & Narchi, 2019; Secheresse et al., 2021). Moreover, evidence shows that guided self-reflection in pre-clinical settings can enhance critical thinking, especially when supported by structured rubrics and feedback (Merduaty & Arum, 2023). This suggests that reflective strategies are beneficial across both academic and clinical stages.

LCJR, derived from Tanner's model, provides a validated framework for assessing clinical judgment. It enables structured feedback, self-evaluation, and shared language among educators and learners (Lasater, 2011). Its application in clinical orientation programs has been shown to improve preceptor confidence, communication, and evaluation objectivity (Lazzara, 2020). Overall, combining guided questioning, conceptual models, and structured reflection that supported by tools like LCJR, yields stronger outcomes across cognitive, affective, and behavioural domains.

Learning Activities That Enhance Clinical Judgment in Nursing Students

Simulation-based learning with structured debriefing remains a key strategy for developing clinical judgment. High-fidelity simulations, reflective debriefing, and theoretical models like TCJM and TLT consistently enhance students' noticing, interpreting, and reflecting skills (Dix et al., 2021; Hines & Wood, 2016; Oh et al., 2021). Jessee (2021) noted that simulation and debriefing provide a psychologically safe space for decision-making and personalized coaching. Extended clinical placements and virtual simulations further facilitate the transfer of judgment skills into real clinical settings (Dix et al., 2021; Yang et al., 2024) (Dix et al., 2021; Yang et al., 2024).

The LCJR, derived from TCJM, is a widely validated tool for assessing clinical judgment across simulation, practice, and

journaling. It facilitates formative feedback and reflective learning (Jessee, 2021). Gonzalez and Nielsen (2024) identified LCJR as the most used tool in clinical education, serving both assessment and instructional purposes through concept-based learning, journaling, and debriefing. Its integration enhances feedback, metacognition, and educator-student alignment.

Pouralizadeh et al. (2017) identified five key factors influencing clinical judgment: thoughtful behaviour, professional ethics, evidence-based care, learning environment, and educator roles—highlighting the value of experiential and reflective strategies. Combining experiential learning with structured tools like LCJR, grounded in theory, effectively prepares students for safe, competent practice in complex healthcare settings.

Despite its benefits, several gaps remain. Few studies employed randomized controlled designs to directly compare debriefing methods. Interprofessional debriefing, cultural adaptations, and the long-term impact of debriefing on professional competence also remain underexplored. These areas represent important directions for future research to inform curriculum development.

This review has limitations: small sample sizes, non-randomized designs, inconsistent use of tools like LCJR, and lack of standardized facilitator training may affect outcomes (Daneshfar & Moonaghi, 2025). In addition, the exclusion of grey literature and non-English publications may introduce selection bias. Larger trials using standardized protocols are needed to strengthen the evidence base (Park et al., 2025).

CONCLUSION

This scoping review demonstrates that debriefing is a highly effective educational strategy for enhancing clinical judgment in undergraduate nursing education. Structured and theory-based debriefing methods, particularly those grounded in TCJM, TLT, and DML, consistently improve students' abilities in noticing, interpreting, reflecting, and making sound clinical decisions. Learning activities such as high-fidelity simulation, reflective debriefing, and integrated clinical placements further strengthened the development and transfer of clinical judgment to real practice settings. The use of validated tools like the LCJR enhances both assessment and reflective learning. However, inconsistencies in implementation, limited use in clinical settings, and lack of standardized facilitator training remain challenges that must be addressed to optimize the impact of debriefing on clinical competence.

To maximize the benefits of debriefing, nurse educators are encouraged to routinely employ structured, theory-based models such as DML and LCJR and to participate in formal debriefing-facilitation training to ensure consistency and effectiveness. Future research should investigate the longitudinal impact of debriefing, explore interprofessional and culturally adapted models, and

examine its sustained influence on clinical competence and readiness for professional practice.

ACKNOWLEDGEMENT

This study is supported by Faculty of Nursing and Universitas Pelita Harapan.

REFERENCES

- Alanezi, F. Z., Morrison, C. F., Wagner, R., Kelcey, B., & Miller, E. (2025). The effect of hot and cold debriefing on basic life support competence and reflection in undergraduate nursing students: A qualitative study. *Nurse Education in Practice*, 83(February), 104292. <https://doi.org/10.1016/j.nepr.2025.104292>
- Arksey, H., & O'Malley, L. (2005). Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology: Theory and Practice*, 8(1), 19–32. <https://doi.org/10.1080/1364557032000119616>
- Ayed, A., Khalaf, I. A., Fashafsheh, I., Saleh, A., Bawadi, H., Abuidhail, J., Thultheen, I., & Joudallah, H. (2022). Effect of high-fidelity simulation on clinical judgment among nursing students. *Inquiry (United States)*, 59, 1–6. <https://doi.org/10.1177/00469580221081997>
- Bortolato-Major, C., Mantovani, M. de F., Felix, J. V. C., Boostel, R., da Silva, A. T. M., & Caravaca-Morera, J. A. (2019). Debriefing evaluation in nursing clinical simulation: A cross-sectional study. *Revista Brasileira de Enfermagem*, 72(3), 788–794. <https://doi.org/10.1590/0034-7167-2018-0103>
- Bussard, M. E., Jessee, M. A., El-Banna, M. M., Cantrell, M. A., Alrimawi, I., Marchi, N. M., Gonzalez, L. I., Rischer, K., Coy, M. L., Poledna, M., & Lavoie, P. (2024). Current practices for assessing clinical judgment in nursing students and new graduates: A scoping review. *Nurse Education Today*, 134. <https://doi.org/10.1016/j.nedt.2023.106078>
- Daneshfar, M., & Moonaghi, H. K. (2025). The impact of clinical simulation on bridging the theory–practice gap in nursing education: A systematic review. *BMC Medical Education*, 25(1), 1–12. <https://doi.org/10.1186/S12909-025-07790-8/TABLES/1>
- Davis, R. G., & Wood, F. G. (2022). Cultivating clinical judgment in pharmacological decision-making through reflection on practice. *Journal of Nursing Education*, 61(3), 143–146. <https://doi.org/10.3928/01484834-20211128-10>
- Dix, S., Morphet, J., Jones, T., Kiprillis, N., O'Halloran, M., Piper, K., & Innes, K. (2021). Perceptions of final year nursing students transfer of clinical judgement skills from simulation to clinical practice: A qualitative study. *Nurse Education in Practice*, 56(September). <https://doi.org/10.1016/j.nepr.2021.103218>

- Dreifuerst, K. T. (2015). Getting started with debriefing for meaningful learning. *Clinical Simulation in Nursing*, 11(5), 268–275. <https://doi.org/10.1016/j.ecns.2015.01.005>
- Fisher, M. E. M., & Oudshoorn, A. (2019). Debriefing for professional practice placements in nursing: A concept analysis. *Nursing Education Perspectives*, 40(4), 199–204. <https://doi.org/10.1097/01.NEP.0000000000000487>
- Gonzalez, L., & Nielsen, A. (2024). An integrative review of teaching strategies to support clinical judgment development in clinical education for nurses. *Nurse Education Today*, 133(April 2023), 106047. <https://doi.org/10.1016/j.nedt.2023.106047>
- Hines, C. B., & Wood, F. G. (2016). Clinical judgment scripts as a strategy to foster clinical judgments. *Journal of Nursing Education*, 55(12), 691–695. <https://doi.org/10.3928/01484834-20161114-05>
- Høegh-Larsen, A. M., Gonzalez, M. T., Reiersen, I. Å., Husebø, S. I. E., Hofoss, D., & Ravik, M. (2023). Nursing students' clinical judgment skills in simulation and clinical placement: A comparison of student self-assessment and evaluator assessment. *BMC Nursing*, 22(1), 1–10. <https://doi.org/10.1186/s12912-023-01220-0>
- INACSL Standards Committee, Decker, S., Alinier, G., Crawford, S. B., Gordon, R. M., Jenkins, D., & Wilson, C. (2021). Healthcare simulation standards of best practice™ the debriefing process. *Clinical Simulation in Nursing*, 58, 27–32. <https://doi.org/10.1016/j.ecns.2021.08.011>
- International Council of Nursing. (n.d.). *Current nursing definitions | ICN - International Council of Nurses*. Retrieved May 19, 2025, from <https://www.icn.ch/resources/nursing-definitions/current-nursing-definitions>
- Jang, A. R., & Moon, J. E. (2021). The effect of nursing simulation on the clinical judgment of nursing care for patients with increased intracranial pressure (IICP). *Iranian Journal of Public Health*, 50(10), 2055–2064. <https://doi.org/10.18502/ijph.v50i10.7506>
- Janicas, R. de C. S. V., & Narchi, N. Z. (2019). Evaluation of nursing students' learning using realistic scenarios with and without debriefing. *Revista Latino-Americana de Enfermagem*, 27. <https://doi.org/10.1590/1518-8345.2936.3187>
- Jessee, M. A. (2021). An update on clinical judgment in nursing and implications for education, practice, and regulation. *Journal of Nursing Regulation*, 12(3), 50–60. [https://doi.org/10.1016/S2155-8256\(21\)00116-2](https://doi.org/10.1016/S2155-8256(21)00116-2)
- Johnston, S. (2019). An evaluation of simulation debriefings on student nurses' perceptions of clinical reasoning and learning transfer: A mixed methods study. *International Journal of Nursing Education Scholarship*, 16(1). <https://doi.org/10.1515/IJNES-2018-0045>
- Johnston, S., Coyer, F., & Nash, R. (2017). Simulation debriefing based on principles of transfer of learning: A pilot study. *Nurse Education in Practice*, 26, 102–108. <https://doi.org/10.1016/j.nepr.2017.08.002>
- Kavanagh, J. M., & Szveda, C. (2017). A crisis in competency: The strategic and ethical imperative to assessing new graduate nurses' clinical reasoning. *Nursing Education Perspectives*, 38(2), 57–62. <https://doi.org/10.1097/01.NEP.0000000000000112>
- Lasater, K. (2011). Clinical judgment: The last frontier for evaluation. *Nurse Education in Practice*, 11(2), 86–92. <https://doi.org/10.1016/j.nepr.2010.11.013>
- Lavoie, P., Pepin, J., & Cossette, S. (2017). Contribution of a reflective debriefing to nursing students' clinical judgment in patient deterioration simulations: A mixed-methods study. *Nurse Education Today*, 50, 51–56. <https://doi.org/10.1016/j.nedt.2016.12.002>
- Lazzara, L. (2020). Implementation of the lasater clinical judgment rubric as a progress review tool. *Nursing DNP Projects*, 35. <https://openriver.winona.edu/nursingdnp/35>
- Liou, S. R., Liu, H. C., Tsai, S. L., Chu, T. P., & Cheng, C. Y. (2020). Performance competence of pregraduate nursing students and hospital nurses: A comparison study. *Journal of Clinical Nursing*, 29(13–14), 2652–2662. <https://doi.org/10.1111/jocn.15287>
- Lomuscio, S., Capogna, E., Sironi, S., Sguanci, M., Morales Palomares, S., Cangelosi, G., Ferrara, G., Mancin, S., Amodeo, A., Destrebecq, A., Parozzi, M., & Dal Bello, S. (2025). Debriefing methodologies in nursing simulation: An exploratory study of the italian settings. *Nursing Reports*, 15(1), 1–13. <https://doi.org/10.3390/nursrep15010007>
- Merduaty, R. C., & Arum, A. addillah. (2023). How guided self-reflection improves critical thinking of nursing students in the pre-clinical stage? *Journal of Holistic Nursing*, 10(2), 111–117. <https://doi.org/10.31603/nursing.v0i0.8876>
- Morse, K. J., Fey, M. K., & Forneris, S. G. (2021). Evidence-based debriefing. *Annual Review of Nursing Research*, 39(1), 129–148. <https://doi.org/10.1891/0739-6686.39.129>
- Oh, Y. J., Kang, H. Y., Song, Y., & Lindquist, R. (2021). Effects of a transformative learning theory based debriefing in simulation: A randomized trial. *Nurse Education in Practice*, 50(December 2020), 102962. <https://doi.org/10.1016/j.nepr.2020.102962>
- Park, Y. S., Lee, S. J., & Hur, Y. (2025). Facilitators, barriers, and future direction of high-fidelity simulation in nursing education: a qualitative descriptive study. *BMC Nursing*, 24(1), 1–10. <https://doi.org/10.1186/S12912-025-03541-8/TABLES/1>
- Pérez-Perdomo, A., & Zabalegui, A. (2024). Teaching strategies for developing clinical reasoning skills in nursing students: A systematic review of randomised controlled trials. *Healthcare (Switzerland)*, 12(1). <https://doi.org/10.3390/healthcare12010090>

- Peters, M. D. J., Godfrey, C., McInerney, P., Munn, Z., Tricco, A. C., & Khalil, H. (2020). Chapter 11: Scoping reviews (2020 version). In: Aromataris E, Munn Z (Editors). *The Joanna Briggs Institute, March*, 32. <https://doi.org/https://doi.org/10.46658/JBIRM-20-01>
- Pouralizadeh, M., Khankeh, H., Ebadi, A., & Dalvandi, A. (2017). Factors influencing nursing students' clinical judgment: A qualitative directed content analysis in an Iranian context. *Journal of Clinical and Diagnostic Research*, 11(5), JC01–JC04. <https://doi.org/10.7860/JCDR/2017/25753.9822>
- Reed, S. J. (2020). Measuring learning and engagement during debriefing: A new instrument. *clinical simulation in nursing*, 46, 15–21. <https://doi.org/10.1016/j.ecns.2020.03.002>
- Reiersen, I. Å., Haukedal, T. A., Hedeman, H., & Bjørk, I. T. (2017). Structured debriefing: What difference does it make? *Nurse Education in Practice*, 25, 104–110. <http://dx.doi.org/10.1016/j.nepr.2017.04.013>
- Secheresse, T., Lima, L., & Pansu, P. (2021). Focusing on explicit debriefing for novice learners in healthcare simulations: A randomized prospective study. *Nurse Education in Practice*, 51, 102914. <https://doi.org/10.1016/j.nepr.2020.102914>
- Shinnick, M. A., Woo, M., Horwich, T. B., & Steadman, R. (2011). Debriefing: The most important component in simulation? *Clinical Simulation in Nursing*, 7(3), e105–e111. <https://doi.org/10.1016/J.ECNS.2010.11.005>
- Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., ... Straus, S. E. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. *Annals of Internal Medicine*, 169(7), 467–473. <https://doi.org/10.7326/M18-0850>
- Vreugdenhil, J., Broeksma, L., Teuwen, C., Custers, E., Reinders, M., Dobber, J., & Kusurkar, R. A. (2024). Debriefing to nurture clinical reasoning in nursing students: A design-based research study. *Nurse Education Today*, 143(September). <https://doi.org/10.1016/j.nedt.2024.106402>
- Yang, F., Wang, Y., Yang, C., Zhou, M. H., Shu, J., Fu, B., & Hu, H. (2019). Improving clinical judgment by simulation: A randomized trial and validation of the Lasater clinical judgment rubric in Chinese. *BMC Medical Education*, 19(1), 1–6. <https://doi.org/10.1186/s12909-019-1454-9>
- Yang, J., Zhou, W. J., Zhou, S. C., Luo, D., Liu, Q., Wang, A. L., Yu, S. H., Zhu, X. P., He, X. Y., Hu, F., Yang, B. X., & Chen, J. (2024). Integrated virtual simulation and face-to-face simulation for clinical judgment training among undergraduate nursing students: A mixed-methods study. *BMC Medical Education*, 24(1), 1–17. <https://doi.org/10.1186/s12909-023-04988-6>

Original Research

Nursing Students' Learning Through ACLS Simulation: A Scoping Review

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ARTICLE INFO

Keywords:

Advanced cardiac
life support
Nursing education
Nursing students
Simulation training

ABSTRACT

Simulation learning is widely used in nursing education to improve clinical competence and emergency preparedness. In Advanced Cardiac Life Support (ACLS), simulation provides nursing students with realistic scenarios to enhance decision-making, teamwork, and technical competencies. This scoping review aimed to explore: (1) the learning experiences of nursing students participating in ACLS simulation and (2) the barriers to its implementation in nursing education. Although numerous studies support the effectiveness of simulation, there remains limited synthesis on how nursing students learn through ACLS simulations, the challenges involved, and the outcomes achieved. These methods used a scoping review that followed the Joanna Briggs Institute guidelines and the PRISMA flowchart. English-language articles published between 2015 and 2025 were retrieved from three electronic databases. Five studies met the inclusion criteria and were critically appraised using the Quality Assessment with Diverse Studies (QuADS) tool. A total of five studies met the inclusion criteria and were included in the review. Three overarching themes emerged: (1) learning processes encompassing cognitive, psychomotor, and non-technical skills development; (2) student experiences characterized by increased confidence and emotional growth; and (3) barriers such as emotional distress, limited team communication, and technological constraints. These findings show that ACLS simulations provide valuable experiential learning but require supportive facilitation. The Conclusion ACLS simulation significantly supports the learning experience of nursing students, improving clinical judgment, skills, and confidence. However, barriers, including emotional strain, communication challenges, and limited institutional resources, must be addressed to ensure effective implementation and sustained learning outcomes. Recommendation is that educators should promote emotional safety, structured debriefing, and ensure equitable access to simulation resources to maximize the learning outcome.

Received 04 June 2025;

Received in revised form 08 August 2025;

Accepted 29 September 2025

<https://doi.org/10.19166/nc.v13i2.9899>

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INTRODUCTION

Simulation learning has become an increasingly essential approach in modern nursing education. One critical area of

its development is the use of simulation in Advanced Cardiac Life Support (ACLS) training, which aims to enhance nursing students' ability to respond to cardiovascular emergencies (AHA, 2020; Koukourikos et al, 2021). With the global rise in cardiac arrest incidence,

rapid and accurate response skills have become essential competencies for future nurses (WHO, 2021; Feng et al., 2024). In this context, simulation learning, particularly through high-fidelity simulation (HFS), provides a learning environment that closely replicates real clinical situations. Students not only learn the ACLS algorithms theoretically but also practice essential skills such as rhythm interpretation, airway management, medication administration, and teamwork during resuscitation (Li et al, 2021; Peng & Wu, 2024). Simulation allows students to repeatedly engage in critical scenarios in a safe setting, fostering reflective learning and sound clinical decision-making (Kassabry, 2023).

The NLN Jeffries Simulation Theory emphasizes that effective simulation-based learning relies on three critical pillars, which are instructional design, active learner participation, and skilled facilitation (Jeffries et al., 2015). These elements are particularly relevant in ACLS scenarios, where students must demonstrate rapid clinical judgment, prioritize interventions efficiently, and coordinate team-based responses under intense time pressure (Kim, 2018; Al Gharibi et al., 2022).

Simulation provides a realistic yet safe environment where students can apply theoretical knowledge, practice psychomotor skills, and develop essential non-technical skills such as communication and leadership (Alharbi et al., 2024). A growing body of evidence supports the effectiveness of simulation in improving nursing students’ clinical knowledge, technical competencies, self-confidence, and performance under stress (Bisholt & Blomberg, 2023; Kim et al., 2020). These outcomes are especially significant in ACLS training, which requires mastery not only of protocols but also of critical thinking, situational awareness, and interprofessional collaboration.

However, while numerous studies confirm the positive impact of simulation on measurable learning outcomes, there is a lack of comprehensive understanding about how nursing students actually learn through simulation, especially in the cognitively demanding and emotionally charged context of ACLS. Learning through simulation is a multifaceted process involving not only the

acquisition of technical skills but also the development of clinical reasoning, reflection-in-action, and affective learning. These processes can be further supported through structured debriefing and guided reflection, which help students process their experiences, correct misconceptions, and build deeper clinical insight (Guerrero et al., 2022).

Moreover, the types of simulation modalities employed in ACLS education are highly variable. These include manikin-based high-fidelity simulations, standardized patient interactions, virtual and screen-based simulations, and emerging technologies such as augmented or mixed reality (Sundler et al., 2015). The diversity of simulation methods reflects both pedagogical innovation and the need for flexible delivery formats, especially in the aftermath of the COVID-19 pandemic, which accelerated the adoption of digital simulation platforms (Harley et al., 2023). However, this variability also presents challenges in standardizing educational practices and evaluating learning effectiveness across different institutional contexts.

Therefore, a scoping review is needed to provide a comprehensive overview of the simulation learning strategies used in ACLS education, the teaching methods applied, and the learning outcomes observed. Such a review will contribute to the development of more effective, evidence-based educational strategies to better prepare nursing students for real-life cardiac emergencies (Billings & Halstead, 2024; Kim, 2018).

METHOD

Scoping reviews are designed to identify existing research on a topic, the types of evidence available, knowledge gaps or strengths, and the key concepts relevant to the area of interest (Peters et al., 2020). The scoping review protocol is published on Open Science Framework (OSF) (<https://osf.io/xy8ve/>). The review process followed the Joanna Briggs Institute (JBI) Manual for Evidence Synthesis (Peters et al, 2020). Data collection and reference gathering were conducted using the following online databases: PubMed, MEDLINE with Full Text, and ERIC.

Table 1. PCC (Population, Concept, Context) Grid for Search Strategy

Component	Major Term		Alternate Term1		Alternate Term2	Search Strategy
Population	Nursing students	OR	student, nursing	OR	Pupil Nurse	((Nursing students) OR (students, nursing)) OR (pupil nurse)
						AND
Concept	Simulation training	OR	Interactive learning	OR		(simulation training) OR (interactive learning)

	Advanced Cardiac Life Support	OR	Life Support, Advanced Cardiac	OR	Cardiac Life Support, Advanced	AND ((advanced cardiac life support) OR (life support, advanced cardiac)) OR (cardiac life support, advanced)
						AND (nursing education) OR (education, nursing)
Context	Nursing Education	OR	Education, Nursing			

The keywords used for this scoping review were ((((((nursing students)) OR (student, nursing)) OR (pupil nurse)) AND ((Simulation training) OR (Interactive learning))) AND (((advanced cardiac life support) OR (life support, advanced cardiac)) OR (cardiac life support, advanced))) AND ((nursing education) OR (education, nursing)). The source selection followed the PRISMA Extension for Scoping Reviews guidelines (Patino & Ferreira, 2018). Inclusion criteria were: (1) original research articles published between 2015 and 2025, (2) full-text availability, (3) open-access publication, and (4) written in English. Studies were excluded if they were non-empirical literature reviews or unrelated to nursing student simulation in ACLS. All retrieved records from electronic databases were imported into Covidence, which automatically removed duplicates. Title and abstract screening were then conducted systematically based on the predetermined inclusion and exclusion criteria. This step was essential to ensure that only relevant studies aligned with the research objectives and review questions were selected. All potentially eligible articles were then subjected to a full-text review to confirm their inclusion. At this stage, reasons for exclusion (e.g., wrong population, setting, focus) were carefully documented and illustrated using a PRISMA 2020 flow diagram to maintain transparency and reproducibility.

To assess methodological quality, the Quality Assessment with Diverse Studies (QuADS) tool was employed (Harrison et al., 2021). This tool was selected due to its flexibility and robustness in appraising heterogeneous sources of evidence, including quantitative, qualitative, and mixed methods studies common in simulation education literature. QuADS evaluates 13 key domains such as clarity of research aims, justification of methodology, transparency in data collection and analysis, and relevance of outcomes to the research question. Each domain is scored from 0 (not at all) to 3 (complete), yielding a maximum total score of 39. Scores were then converted into percentages to allow easier comparison and interpretation across studies. Quality appraisal was conducted independently by two reviewers who were trained in the use of the QuADS tool. To minimize bias and improve inter-rater reliability, both reviewers independently assessed each study and resolved any discrepancies through discussion or, when necessary, with input from a third reviewer. In accordance with scoping review methodology, no studies were excluded based solely on quality scores, as the objective was to capture the breadth of available evidence rather than to evaluate methodological rigor (Peters et al., 2020). Quality ratings were used descriptively to highlight limitations and guide interpretation.

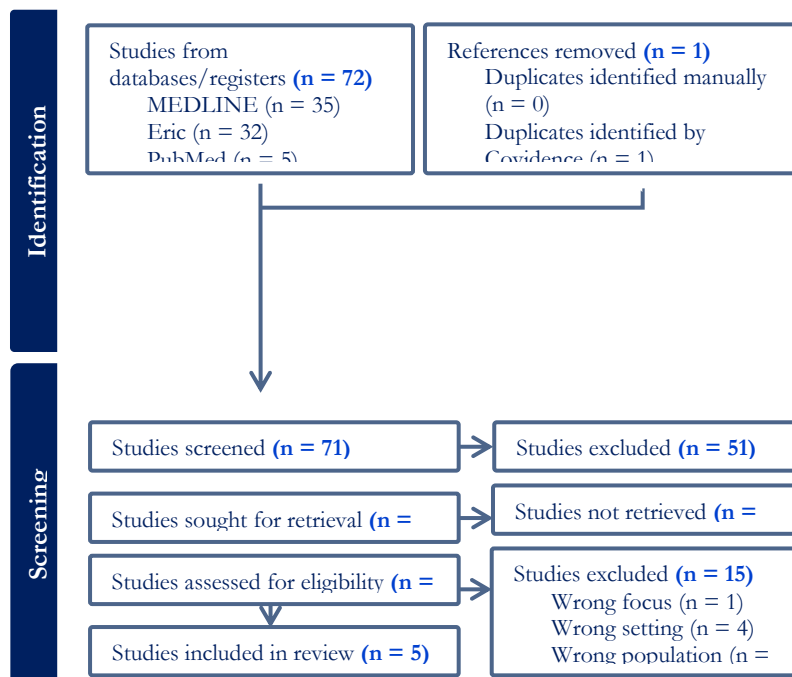


Fig. 1. Search strategy and PRISMA flow chart of search results and study selection

RESULT

A systematic literature search was conducted using three major electronic databases are MEDLINE, ERIC, and PubMed. The literature was managed using Covidence, a web-based platform that streamlines screening, data extraction, and quality assessment by automatically removing duplicates and supporting independent reviewer collaboration. This search yielded a total of 72 records: 35 from MEDLINE, 32 from ERIC, and 5 from PubMed. No additional records were identified through citation tracking, grey literature, or other sources. After duplicate removal using Covidence, 71 unique studies remained for screening. During the screening phase, titles and abstracts were reviewed for relevance to the review question. As a result, 51 studies were excluded for not meeting the inclusion criteria. The full texts of the remaining 20 articles were assessed for eligibility. Of these, 15 studies were

excluded due to the following reasons: wrong focus (n=1), wrong setting (n=4), wrong population (n=9), and pediatric population (n=1).

In total, five studies met all inclusion criteria and were included in the final scoping review. These studies were appraised for quality using the Quality Assessment with Diverse Studies (QuADS) tool, which was specifically developed to enable consistent evaluation of heterogeneous research designs. The tool includes 13 criteria scored from 0 to 3, with a maximum total score of 39. In this review, the included studies demonstrated generally high quality, with QuADS scores ranging from 32 to 37. Although quality ratings were considered during data extraction and synthesis, no studies were excluded based on their quality scores, consistent with the principles of scoping review methodology.

Table 2. Summary of Studies Included

Studi ID	Author (Year)	Country	Study Design	Participant s	Total N	Aim of Study	Main Findings	Reported Barriers	Quads Score
#86	Chen et al. (2022)	Taiwan	Mixed methods, crossover design	18 medical & 36 nursing students	54	Comparing outcomes of interprofessional vs single-profession simulation	Interprofessional Education (IPE) and Single Profession Education (SPE) both improved team and task performance; IPE fostered interprofessional learning	Communication difficulties across disciplines	36
#5	Molina et al. (2015)	UK	Descriptive and correlational design	Undergrad nursing students	246	To assess the association of we based Electrocardiogram (ECG) simulation with learning outcomes	Improved Electrocardiogram (ECG) knowledge and engagement; small group differences found	Some students did not benefit equally from web modules	32
#4	Arrogante et al. (2021)	Spain	Cross-sectional study	Third-year undergraduate nursing students	106	To examine students' competency acquisition and satisfaction with the simulation	85.6% acquired core competencies; most were satisfied	Stress and difficulty staying calm under pressure	33
#3	Kang & Lee (2025)	South Korea	Non-randomized experimental study	Third-year nursing students	34	To evaluate the effectiveness of blended learning in the Advanced Cardiac Life Support (ACLS) simulation	Improved knowledge, performance, confidence, and satisfaction	Not specified	37
#2	Gutiérrez-Puertas et al. (2021)	Australia	Qualitative research	Nursing students (Basic life support course)	54	To explore students' experiences and perceptions in Advanced Life Support (ALS) simulation practice	Students felt emotional distress but gained awareness and preparedness	Emotional distress, limited clinical exposure, lack of realism	36

Table 3. Theme and Sub-theme

Theme			Sub-theme	Key Finding
Learning Process Through ACLS Simulation			Cognitive Improvement	<ul style="list-style-type: none"> •Significant improvement in knowledge •Enhanced clinical task performance •Better time-sensitive task management
			Non-technical Skills	<ul style="list-style-type: none"> •Improved communication, leadership, and teamwork •Interprofessional formats aid decision making
			Varied Learning Methods	<ul style="list-style-type: none"> • Web-based and hybrid simulations are effective for Electrocardiogram (ECG) interpretation •Perceived benefits vary across simulation formats
Student Experiences	During Simulation		Increased self-confidence	<ul style="list-style-type: none"> •Simulation enhances self-confidence •Emotional stress coexists with growth •Contributes to professional development
Barriers in Implementing ACLS Simulation			Emotional and Psychological Challenges	<ul style="list-style-type: none"> •Anxiety and fear hinder effective learning •Highlights need for structured pre-briefing and debriefing
			Ineffective Team Communication	<ul style="list-style-type: none"> •Communication issues persist despite the simulation •Emphasizes the importance of iterative feedback and team reflection
			Pedagogical and Technological Constraints	<ul style="list-style-type: none"> •High resource requirements limit implementation •Digital inequality affects access and engagement •Faculty development and support needed

DISCUSSION

This scoping review aimed to explore (1) the learning experiences of nursing students participating in ACLS simulation and (2) the barriers to its implementation in nursing education. The analysis of five selected studies revealed three major themes with corresponding sub-themes, offering comprehensive insights that both align with and expand upon previous literature. Themes were identified by extracting key findings from each study, comparing similarities, and grouping them into overarching categories (learning process, student experiences, and barriers) with related sub-themes.

Theme 1: Learning Process Through ACLS Simulation

The findings consistently demonstrate that ACLS simulation enhances both technical and non-technical competencies among nursing students.

Sub-theme 1.1: Cognitive Improvement

Across the reviewed studies, learning outcomes were systematically assessed through validated instruments. Kang and Lee (2025) employed an ACLS knowledge test, confidence and competence scale, as well as performance checklists based on the 2020 Korean ACLS guidelines to measure students' learning, clinical

performance, and self-confidence. Chen et al. (2022) applied a 54-item medical task performance checklist, a 10-item Team STEPPS observation tool, and self-reported surveys on teamwork and patient safety attitudes. In addition, emotional and psychological responses such as fear, panic, empathy, and respect were captured through reflective qualitative surveys. These varied approaches demonstrate that assessment in ACLS simulation extends beyond knowledge and technical skills, encompassing confidence, teamwork, and emotional challenges, thereby providing a more holistic picture of students' learning experience.

Sub-theme 1.2: Non-technical Skills Enhancement

Three studies (Chen et al., 2022; Arrogante, 2021; Kang, 2025) emphasized how simulation supports the development of communication, leadership, and teamwork skills essential for effective clinical judgment. These findings align with Jeffries (2016), who identified team coordination and interpersonal communication as central outcomes of simulation-based learning. The distinct contribution of this review lies in its focus on interprofessional simulation formats (nurse–physician collaboration) and how these experiences influence decision-making clarity and team dynamics during ACLS interventions, a dimension rarely explored in prior research.

Sub-theme 1.3: Varied Learning Methods

Molina et al. (2015) demonstrated the effectiveness of web-based and hybrid simulations in supporting ECG interpretation and learner engagement. While earlier research predominantly emphasized in-person simulations (Diaz et al, 2019), the inclusion of digital platforms presents a growing trend toward flexible, learner-centered pedagogies. However, this review also noted variability in students perceived benefit from such formats, suggesting a need to tailor simulation modalities to individual learning styles and technological readiness.

Theme 2: Student Experiences During Simulation

Understanding the subjective experiences of students adds depth to the evaluation of ACLS simulation effectiveness.

Sub-theme 2.1: Increased Self-confidence

The reviewed studies demonstrate that learning in simulation was assessed not only through objective tools such as knowledge tests, competence scales, and structured performance checklists (Kang, 2025), but also through qualitative reflections that captured students' emotional and psychological experiences (Puertas, 2021). This dual approach highlights that simulation-based education evaluates both technical competence and affective outcomes, including self-confidence, clinical judgment, and the ability to manage stress in emergency contexts.

Theme 3: Barriers in Implementing ACLS Simulation

Despite its benefits, several barriers can compromise the impact of simulation-based education.

Sub-theme 3.1: Emotional and Psychological Challenges

Emotional discomfort, such as anxiety and fear, as reported by Arrogante (2021), can hinder optimal learning if not addressed. Prior studies (e.g., Levett-Jones & Lapkin, 2014) similarly acknowledged emotional barriers but did not explore them as thoroughly within ACLS contexts. This review emphasizes the importance of structured pre-briefing and debriefing to reduce psychological stress and enhance learner receptivity.

Sub-theme 3.2: Ineffective Team Communication

Persistent communication barriers were observed even after interprofessional simulations (Chen et al., 2022; Erica et al., 2022; Shin et al., 2015). This suggests that one-time simulation exposure may be insufficient to establish collaborative competence. Compared to earlier findings that often reported only positive communication outcomes, the present study uniquely identifies the nuance that simulation without iterative feedback may fail to address ingrained communication styles and unclear role definitions.

Sub-theme 3.3: Pedagogical and Technological Constraints

Chen et al. (2022) reported technological and logistical challenges in implementing simulation programs. This includes high resource demands, unequal access to digital simulations, and faculty

readiness. These findings echo those of Shin et al. (2015) but highlight the compounded effect when simulations are introduced without adequate faculty training or institutional support.

CONCLUSION

This scoping review addressed two core questions: (1) the learning experiences of nursing students in ACLS simulation and (2) the barriers to its implementation in nursing education. The review found that ACLS simulation significantly enhances nursing students' cognitive, psychomotor, and non-technical skills, while also fostering self-confidence and professional readiness through structured, experiential learning. However, several barriers, such as emotional distress, communication difficulties within interprofessional teams, and limited access to simulation resources, can hinder its effectiveness. These findings highlight that educators should promote emotional safety, conduct structured debriefing, and ensure equitable access to simulation resources to optimize learning outcomes.

ACKNOWLEDGEMENT

The authors would like to express their sincere gratitude to Universitas Pelita Harapan for the support provided in conducting and completing this study.

REFERENCES

- Alharbi, A., Nurfianti, A., Mullen, R. F., McClure, J. D., & Miller, W. H. (2024). The effectiveness of simulation-based learning (SBL) on students' knowledge and skills in nursing programs: a systematic review. *BMC Medical Education*, 24(1), 1099. <https://doi.org/10.1186/s12909-024-06080-z>
- American Heart Association. (2020). Pedomon CPR dan ECC.
- Arrogante, O., Jiménez-Gómez, M. A., & Sáez de Asteasu, M. L. (2021). Are you prepared to save a life? Nursing students' experience in advanced life support practice. *Nurse Education Today*, 100, 104837. <https://doi.org/10.1016/j.nedt.2021.104837>
- Billings, D. M., & Halstead, J. A. (Eds). (2024). Teaching in nursing: A guide for faculty. 7th edition. Elsevier.
- Chen, H. W., O'Donnell, J. M., Chiu, Y. J., Chen, Y. C., Kang, Y. N., Tuan, Y. T., Kuo, S. Y., & Wu, J. C. (2022). Comparison of learning outcomes of interprofessional education simulation with traditional single-profession education simulation: A mixed-methods study. *BMC Medical Education*, 22, 651. <https://doi.org/10.1186/s12909-022-03640-z>
- Díaz Agea, J. L., Megías Nicolás, A., García Méndez, J. A., Adánez Martínez, M. de G., & Leal Costa, C. (2019). Improving simulation performance through Self-Learning Methodology

- in Simulated Environments (MAES©). *Nurse Education Today*, 76(December 2018), 62–67. <https://doi.org/10.1016/j.nedt.2019.01.020>
- Erica, B., Chiara, A., Silvia, C., Carmela, R., Eleonora, G., Barisone, M., Luigi, I. P., Paolo, M., Flavia, P., Daniela, S., Maria, G. C., Patrizia, Z., Alberto, D. M., & Massimiliano, P. (2022). The Impact of an Interprofessional Simulation-Based Education Intervention in Healthy Ageing: A Quasi-Experimental Study. *Clinical Simulation in Nursing*, 64, 1–9. <https://doi.org/10.1016/j.ecns.2021.11.003>
- Feng, J., Zhang, Y., & Zhang, J. (2024). Epidemiology and Burden of Heart Failure in Asia. *JACC: Asia*, 4(4), 249–264. <https://doi.org/10.1016/j.jacasi.2024.01.013>
- Guerrero, J. G., Tungpalan-Castro, G. M., & Pingue-Raguini, M. (2022). *Impact of simulation debriefing structure on knowledge and skill acquisition for postgraduate critical care nursing students: Three-phase vs. multiphase*. *BMC Nursing*, 21, 318. <https://doi.org/10.1186/s12912-022-01100-z>
- Erica, B., Chiara, A., Silvia, C., Carmela, R., Eleonora, G., Barisone, M., Luigi, I. P., Paolo, M., Flavia, P., Daniela, S., Maria, G. C., Patrizia, Z., Alberto, D. M., & Massimiliano, P. (2022). The Impact of an Interprofessional Simulation-Based Education Intervention in Healthy Ageing: A Quasi-Experimental Study. *Clinical Simulation in Nursing*, 64, 1–9. <https://doi.org/10.1016/j.ecns.2021.11.003>
- Kassabry, M. F. (2023). The effect of simulation-based advanced cardiac life support training on nursing students' self-efficacy, attitudes, and anxiety in Palestine: a quasi-experimental study. *BMC Nursing*, 22(1), 1–9. <https://doi.org/10.1186/s12912-023-01588-z>
- Koukourikos, K., Tsaloglidou, A., Kourkouta, L., Papathanasiou, I. V., Iliadis, C., Fratzana, A., & Panagiotou, A. (2021). Simulation in clinical nursing education. *Acta Informatica Medica*, 29(1), 15–20. <https://doi.org/10.5455/AIM.2021.29.15-20>
- Li, Z., Huang, F. F., Chen, S. L., Wang, A., & Guo, Y. (2021). The Learning Effectiveness of High-Fidelity Simulation Teaching Among Chinese Nursing Students: A Mixed-Methods Study. *Journal of Nursing Research*, 29(2), E141. <https://doi.org/10.1097/JNR.0000000000000418>
- Molina, G. J., Fernández, S. C., López, D. E., Hernández, P. J. M., Preto, L. S. R., & Castro-Sánchez, A. M. (2015). Effects of web-based electrocardiography simulation on strategies and learning styles. *Revista da Escola de Enfermagem da USP*, 49(4), 645–651. <https://doi.org/10.1590/S0080-623420150000400016>
- Harley, J. M., Bilgic, E., Lau, C. H. H., Gorgy, A., Marchand, H., Lavoie-Tremblay, M., & Fried, G. M. (2023). Nursing students reported more positive emotions about training during Coronavirus Disease 2019 (COVID-19) after using a virtual simulation paired with an in-person simulation. *Clinical Simulation in Nursing*, 81, 101420. <https://doi.org/10.1016/j.ecns.2023.04.006>
- Harrison, R., Jones, B., Gardner, P., & Lawton, R. (2021). Quality assessment with diverse studies (QuADS): an appraisal tool for methodological and reporting quality in systematic reviews of mixed- or multi-method studies. *BMC Health Services Research*, 21(1), 144. <https://doi.org/10.1186/s12913-021-06122-y>
- Kang, K. A., & Lee, M. (2025). Effectiveness of a blended (distance and face-to-face) learning program for ACLS using the PARTNER model in nursing students: A quasi-experimental study. *BMC Nursing*, 24, 25. <https://doi.org/10.1186/s12912-024-02684-y>
- Erica, B., Chiara, A., Silvia, C., Carmela, R., Eleonora, G., Barisone, M., Luigi, I. P., Paolo, M., Flavia, P., Daniela, S., Maria, G. C., Patrizia, Z., Alberto, D. M., & Massimiliano, P. (2022). The Impact of an Interprofessional Simulation-Based Education Intervention in Healthy Ageing: A Quasi-Experimental Study. *Clinical Simulation in Nursing*, 64, 1–9. <https://doi.org/10.1016/j.ecns.2021.11.003>
- Kassabry, M. F. (2023). The effect of simulation-based advanced cardiac life support training on nursing students' self-efficacy, attitudes, and anxiety in Palestine: a quasi-experimental study. *BMC Nursing*, 22(1), 1–9. <https://doi.org/10.1186/s12912-023-01588-z>
- Koukourikos, K., Tsaloglidou, A., Kourkouta, L., Papathanasiou, I. V., Iliadis, C., Fratzana, A., & Panagiotou, A. (2021). Simulation in clinical nursing education. *Acta Informatica Medica*, 29(1), 15–20. <https://doi.org/10.5455/AIM.2021.29.15-20>
- Li, Z., Huang, F. F., Chen, S. L., Wang, A., & Guo, Y. (2021). The Learning Effectiveness of High-Fidelity Simulation Teaching Among Chinese Nursing Students: A Mixed-Methods Study. *Journal of Nursing Research*, 29(2), E141. <https://doi.org/10.1097/JNR.0000000000000418>
- World Health Organization. (2021). Cardiovascular Diseases. World Health Organization. Diakses dari: <https://www.who.int/health-topics/cardiovascular-diseases/>
- Yoo, H. B., Park, J. H., & Ko, J. K. (2012). An effective method of teaching advanced cardiac life support (ACLS) skills in simulation-based training. *Korean Journal of Medical Education*, 24(1), 7–14. <https://doi.org/10.3946/kjme.2012.24.1.7>

Original Research

Differences In the Intention to Receive the Human Papillomavirus (HPV) Vaccine For Cervical Cancer Prevention Among Women with Different Types of Decision-Making Roles

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ARTICLE INFO

Keywords:

HPV

Intention

Decision Making
Vaccination

ABSTRACT

Despite the availability of cervical cancer prevention programs through Human Papillomavirus (HPV) vaccination in Indonesia, the overall immunization coverage remains limited. One of the main contributing factors is the low intention among the community to receive the HPV vaccine. Low intention may lead to limited vaccination uptake. This study aims to compare differences in intention to get HPV vaccination among three groups of female decision makers, namely, adult women who take their own vaccine decisions, adolescent girls who rely on their parents to decide on vaccination, and parents who help make decisions regarding HPV vaccination for their daughters. This study employed a quantitative approach with a cross-sectional design. Each group of decision makers consisted of 147 people, with a total of 441 respondents. The data collected were analyzed using Kruskal-Wallis test. The statistical analysis confirmed significant differences in intention among the three groups ($p < 0.001$). The highest mean intention rank was in the adult women group (mean-rank=273.55), followed by parents (mean-rank=214.37), and the lowest in adolescent girls (mean-rank=175.09). Women's intention to receive the HPV vaccine is influenced by their level of independence in decision-making. Adult women with full decision-making autonomy demonstrated the highest intention. These findings highlight the need for tailored approaches in promoting HPV vaccination based on decision-making roles to improve vaccination uptake.

Received 7 May 2025;

Received in revised form 18 October 2025;

Accepted 11 November 2025

<https://doi.org/10.19166/nc.v13i2.9788>

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INTRODUCTION

Cervical cancer remains a major reproductive health problem in Indonesian women. Data indicate that cervical

cancer ranks as the second leading cause of cancer-related death in women after breast cancer, with 36,633 new cases and 21,003 deaths each year (World Health Organization, 2022). The predominant etiology of this cancer is persistent

infection by Human Papillomavirus (HPV), particularly types 16 and 18, which are responsible for up to 70% of cervical cancer case (World Health Organization, 2020). With the identification of HPV as the cause of Cervical Cancer, preventive efforts can be made through a vaccination program that has been implemented nationally in Indonesia. HPV vaccination is recommended by the World Health Organization (WHO) and has been proven safe and effective in preventing viral infection. (World Health Organization, 2020). This immunization is particularly recommended for women who have never engaged in sexual intercourse to achieve optimal effectiveness.

Indonesia's national HPV vaccination program has been implemented since 2021 for fifth- and sixth-grade elementary school students and is included in the School Children Immunization Month (BIAS) program, where the vaccine is provided free of charge. First-dose HPV vaccination coverage among girls in grades 5–6 in 2022 reached 91% due to mandatory administration in schools, whereas coverage among women over 15 years old was only 6% (World Health Organization, 2023). Outside school age, women may obtain the HPV vaccine at their own expense in healthcare facilities such as hospitals, community health centers, or reproductive clinics. The HPV vaccination initiative is one of the key preventive strategies supporting Indonesia's national cervical cancer elimination program for 2023–2030 (Kementerian Kesehatan Republik Indonesia, 2023).

Although cervical cancer prevention programs through HPV vaccination are available in Indonesia, overall immunization coverage remains limited. One major contributing factor is the low intention or willingness among the community to receive HPV vaccination, which serves as a key theoretical construct in predicting health behavior, despite its crucial role as a preventive measure before risk-related behaviors occur (Ajzen, 1991; Elgzar et al., 2022). Intentions to perform various behaviors can be predicted with high accuracy from attitudes toward the behavior, subjective norms, and perceived behavioral control; these intentions, together with perceived behavioral control, explain substantial variance in actual behavior (Ajzen, 1991). Intention reflects a person's readiness or desire to perform a particular action in the near future. Low intention to receive the HPV vaccine consequently results in low vaccination uptake.

The active HPV vaccination measure is influenced by the decision-making process to receive the vaccine, which in practice, is not always determined by the individual woman herself (Sisson & Wilkinson, 2019). Among adult women, decisions regarding vaccination are typically made independently because they possess the competence and autonomy to make health decision (Osamor & Grady, 2016; Watson et al., 2023). In contrast, adolescent girls often rely on others, particularly parents, to decide whether they should receive the vaccine (Dempsey et al., 2006; Lam et al., 2023; Zimet

et al., 2021).

This issue highlights the dynamics of vaccination decision-making across several groups of women, involving different roles and levels of intention and motivation to get vaccinated (Samaria et al., 2025). Given this complexity, it is important to understand how intentions to vaccinate against HPV may differ across different types of decision-making groups, such as: (1) adult women who decide to vaccinate themselves, (2) adolescent girls who are assisted in deciding to receive vaccination, and (3) parents of adolescent girls who make vaccination decisions on behalf of their children (Samaria et al., 2025). Information regarding these differences in decision-making roles is valuable for formulating targeted, evidence-based health promotion policies, particularly to increase HPV vaccine uptake in urban settings such as Jakarta.

Theory of Planned Behavior (TPB) was implemented in this study. TPB explains that an individual's intention to perform an action is the primary predictor of actual behavior (Ajzen, 1991). Intention itself is influenced by three main components, namely: first, attitude towards behavior (which reflects the perception of the results and value of the behavior); second, subjective norms which include social pressure from the environment or people closest to them; and third, perceived behavioral control, including confidence in one's ability to perform an action. In the context of HPV vaccination, attitudes relate to perceptions of vaccine effectiveness and safety, subjective norms involve social support from parents or peers, and perceived control relates to vaccine access and confidence in making health decisions. Differences in these three components may occur among groups with different roles in vaccination decision-making.

This study is important because it provides empirical insights into differences in vaccination intention based on decision-making roles, a research area that remains limited in Indonesia. The results of this study can be used as a foundation in designing health promotion strategies that are more specific to the characteristics and needs of each target group. The practical contribution of this study lies in strengthening risk communication and family-based interventions to increase HPV vaccine uptake. The theoretical contribution relates to the application of TPB across social groups with varying roles in health decision-making. Therefore, the research questions in this study are: (1) Are there differences in the intention to receive the HPV vaccine in adult women, adolescent girls, and parents of adolescent girls? (2) Which decision-making group has the highest intention to implement HPV vaccination? and (3) How can different roles in decision-making influence the intention to vaccinate?

METHOD

This study was conducted using a comparative quantitative approach with a cross-sectional design. This approach was selected because it is suitable for comparing vaccination intentions across three groups representing different decision-making roles. Data collection was carried out in

Jakarta during May–June 2023.

This study involved adult women, adolescent girls, and parents of adolescent girls in the Jakarta area, with each group consisting of 147 individuals. Thus, the total number of respondents was 441. The inclusion criteria were: adolescent girls aged 9–17 years, young adult women aged 18–26 years (in accordance with HPV vaccine eligibility criteria), and parents of adolescent girls who played an active role in vaccination decision-making for their daughters. Prospective respondents were selected using a consecutive sampling method through health facilities and schools in the Jakarta area.

The intention variable in this study was measured using an intention questionnaire created by Stout et al. (Stout et al., 2020). This questionnaire consisted of 5 favorable questions measured using a 7-point Likert scale with answer choices of very unlikely, unlikely, somewhat unlikely, undecided, somewhat likely, and very likely. The questionnaire had been tested for validity and reliability on 30 people with the results of the validity test: r count (0.836-0.962) > r table (0.361), hence the instrument was valid. Reliability testing showed a Cronbach’s alpha value greater than 0.6 (0.950 > 0.6), demonstrating good reliability (Samaria et al., 2024).

This study adhered to ethical research principles, including confidentiality, voluntariness, and ensuring no harm to participants. All respondents participated voluntarily after receiving a complete explanation of the study procedures and signing informed consent forms. This research protocol also received ethical clearance from the Ethics Committee of Universitas Pembangunan Nasional Veteran Jakarta under approval number 205/V/2023/KEPK.

Respondents’ demographic data were analyzed using descriptive statistics. Bivariate analysis was then conducted

using the Kruskal–Walli’s test because the data were not normally distributed. Subsequent analyses compared intention scores across the three groups to determine whether significant differences existed.

RESULT

Table 1 shows that most respondents had a junior high school educational background (195 respondents; 44.2%), followed by high school (159 respondents; 36.1%), higher education (79 respondents; 17.9%), and only a small proportion completed elementary school (8 respondents; 1.8%). These data indicate that the majority of respondents had a medium level of education. Of the 441 women, approximately half were employed (224 respondents; 50.8%), while the remaining respondents were unemployed (217 respondents; 49.2%). This proportion was nearly balanced, reflecting a relatively even distribution of employment status among respondents. However, differences emerged in monthly income, with most respondents earning below Jakarta’s Regional Minimum Wage (UMR) in 2023 (247 respondents; 56%).

The Kruskal-Wallis test was applied to examine the data and the results were in accordance with Table 2 below. Table 2 reveals that there was a significant difference in the intention to get HPV vaccination among the three groups, namely adult women, adolescent girls and parents of adolescent girls (p value <0.01). In addition, The adult women group had the highest intention to get vaccinated, followed by parents, and then adolescent girls. This pattern reflects the role of independence and health literacy among adults, which may contribute to their higher intention to receive the HPV vaccine. Based on the mean ranks, it can be inferred that adult women, who make their own decisions regarding HPV vaccination, showed the highest intention compared to the other two groups. Meanwhile, parents who assisted their daughters in making vaccination decisions demonstrated a moderate level of intention, and adolescent girls had the lowest intention.

Table 1. Demographic Characteristics (n=441)

Variables	Group			Total (%)
	Adult Females n(%)	Adolescent Girls n(%)	Parents n(%)	
Education Level				
Elementary School	1(0,2)	4(0.9)	3(0.7)	8(1.8)
Junior High School	2(0.5)	142(32.2)	51(11.6)	195(44.2)
Senior High School	81(18.04)	1(0,2)	77(17.5)	159(36.1)
Higher Education	63(14.3)	0(0)	16(3,6)	79(17.9)
Working Status				
Not Working	10(2,3)	147(33.3)	60(13.6)	217(49.2)
Working	137(31.1)	0(0)	87(19.7)	224(50.8)

Variables	Group			Total (%)
	Adult Females n(%)	Adolescent Girls n(%)	Parents n(%)	
Education Level				
Elementary School	1(0,2)	4(0.9)	3(0.7)	8(1.8)
Junior High School	2(0.5)	142(32.2)	51(11.6)	195(44.2)
Senior High School	81(18.04)	1(0,2)	77(17.5)	159(36.1)
Higher Education	63(14.3)	0(0)	16(3,6)	79(17.9)
Monthly Income				
Low (<Regional Minimum Wage)	75(17)	79(17.9)	93(21.1)	247(56)
Height (>Regional Minimum Wage)	72(16.3)	68(15.4)	54(12.2)	194(44)
HPV Vaccine Intention				
Low (1-11)	0(0)	6(1,4)	3(0.7)	9(2)
Medium (12-24)	21(4.8)	87(19.7)	71(16.1)	179(40.6)
High (25-35)	126(28.6)	54(12.2)	73(16.6)	253(57.4)

Table 2. Kruskal-Wallis Test Results (n=441)

Dependent Variable	Decision Maker Type	Mean Ranks	Mean \pm SD	CI 95%	P-Value
Intention to get HPV Vaccine	Adult female	273.55			
	Teenage Girls	175.09	26.33 \pm 5.65	0.000-0.007	<0.001
	Parent	214.37			

DISCUSSION

The results of this study indicated a strong relationship between decision-making control for HPV vaccination and the intention to undergo immunization. Adult women who have full autonomy in making vaccination decisions for themselves demonstrated a significantly higher willingness to be vaccinated. This can be explained using the TBP framework (Ajzen, 1991), which states that intention is influenced by perceived behavioral control. The greater a person's perceived ability to act independently, the stronger their intention to perform the action.

On the other hand, parents who make vaccination decisions for their children showed lower intentions compared to adult women. This may be influenced by factors such as uncertainty about vaccine benefits, concerns about possible side effects, and cultural or religious considerations when making decisions for their children (Myhre et al., 2020). Although parents have the authority to decide on behalf of their children, their doubts or limited information can reduce their intention to vaccinate (Samaria et al., 2025).

Adolescent girls who do not have full control over their own vaccination decisions showed the lowest intentions. This may be because their role in the decision-making process is more passive, and they are highly dependent on parental approval (Balogun & Omotade, 2022; Leite e Sousa et al., 2018). In addition, adolescent girls often have limited understanding of cervical cancer risks and the benefits of HPV vaccination, which aligns with common concerns about vaccination procedures, such as

injections (Beyen et al., 2022; Lismidiati et al., 2022). These findings highlight the need for education-based approaches that empower adolescents to understand and communicate their own health needs.

The findings of this study are consistent with previous research showing that adult women tend to have higher intentions to receive HPV vaccination when they feel they have full control over their health-related decisions (Waller et al., 2006, 2023). Other studies have also highlighted the importance of parents and the need for family-targeted educational interventions to increase HPV vaccination coverage in adolescent girls (Balogun & Omotade, 2022; Baumann et al., 2019; López et al., 2022; Thanasas et al., 2022). These findings indicate the need for educational interventions with tailored content according to the decision-making role of each group.

The results of this study have important implications for HPV vaccination promotion policies and strategies in Indonesia. Programs aimed at the needs of adolescents and parents need to focus on improving health literacy, empowering decision-making, and providing research-based information to increase perceived benefits and reduce concerns related to vaccination. Meanwhile, for adult women, their need to get affordable access to vaccination needs to be facilitated because their intention to get vaccinated is already quite high (Samaria et al., 2025).

Although the findings of this study were significant, several limitations should be noted. First, the sample was limited to the Jakarta area, which poses challenges to generalizing the results to

regions with different socio-cultural and economic characteristics. Second, this study did not include other variables that may influence individual's intention to receive vaccination, such as knowledge, perceptions, or access to vaccination services. Therefore, future studies are recommended to address these limitations by including and controlling for potential confounding variables that may influence the vaccination decision-making process.

CONCLUSION

This study provides new evidence that there are significant differences in HPV vaccination intentions among adult women who make their own vaccination decisions, adolescent girls who rely on their parents for their decision-making, and parents who assist their children in making vaccination decisions. The study also found that adult women had the highest intentions among the three groups, followed by parents with moderate intentions and adolescent girls with the lowest intentions.

Regarding the findings of this study, several recommendations can serve as valuable input for stakeholders. First, our recommendation would be addressed to nurses and other professional healthcare related to health promotion. The delivery of health promotion related to HPV vaccination needs to be differentiated based on the target group because each group has different demographic characteristics and levels of intention. For adult women, promotional content should focus on improving access to vaccination. In contrast, for parents and adolescent girls, educational content should prioritize enhancing health literacy and empowering individuals in health decision-making. In addition, healthcare workers involved in HPV vaccination programs should receive training to deliver informative and communicative education, enabling them to build confidence among parents and adolescent girls regarding the benefits and importance of HPV vaccination. Furthermore, future research with a longitudinal design is recommended, as it may provide a clearer understanding of the causal relationship between decision-making control and actual vaccination behavior.

ACKNOWLEDGEMENT

The authors express their sincere gratitude to all groups of women who participated in this research.

REFERENCES

- Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/https://doi.org/10.1016/0749-5978(91)90020-T)
- Balogun, F. M., & Omotade, O. O. (2022). Parental intention to vaccinate adolescents with HPV vaccine in selected communities in Ibadan, Southwest Nigeria: an application of Integrated Behavioral Model. *Human Vaccines and Immunotherapeutics*, 18(5). <https://doi.org/10.1080/21645515.2022.2069959>
- Baumann, A., Andersen, B., Østergaard, L., & Larsen, M. B. (2019). Sense & sensibility: Decision-making and sources of information in mothers who decline HPV vaccination of their adolescent daughters. *Vaccine: X*, 2. <https://doi.org/10.1016/j.jvax.2019.100020>
- Beyen, M. W., Bulto, G. A., Chaka, E. E., Debelo, B. T., Roga, E. Y., Wakgari, N., Danusa, K. T., & Fekene, D. B. (2022). Human papillomavirus vaccination uptake and its associated factors among adolescent school girls in Ambo town, Oromia region, Ethiopia, 2020. *PLoS ONE*, 17(7 July). <https://doi.org/10.1371/journal.pone.0271237>
- Dempsey, A. F., Zimet, G. D., Davis, R. L., & Koutsky, L. (2006). Factors that are associated with parental acceptance of human papillomavirus vaccines: A randomized intervention study of written information about HPV. *Pediatrics*, 117(5), 1486–1493. <https://doi.org/10.1542/peds.2005-1381>
- Elgzar, W. T., Alshahrani, M. A., Nahari, M. H., Al-Thubaity, D. D., Ibrahim, H. A., Sayed, S. H., & El Sayed, H. A. (2022). Intention and self-efficacy for pap smear screening and Human Papilloma Virus vaccination among Saudi women at Najran city, KSA. *African Journal of Reproductive Health*, 26(7s), 61–73. <https://doi.org/10.29063/ajrh2022/v26i7s.7>
- Kementerian Kesehatan Republik Indonesia. (2023). *National Cervical Cancer Elimination Plan for Indonesia 2023-2030*.
- Lam, E. W. H., Ngan, H. Y. S., Kun, K. Y., Li, D. F. H., Wan, W. Y., & Chan, P. K. S. (2023). Awareness, perceptions, and acceptance of human papillomavirus vaccination among parents in Hong Kong. *Hong Kong Medical Journal = Xianggang Yi Xue Za Zhi*. <https://doi.org/10.12809/hkmj2210470>
- Leite e Sousa, P. D., Takiuti, A. D., Baracat, E. C., Sorpreso, I. C. E., & de Abreu, L. C. (2018). Knowledge and acceptance of HPV vaccine among adolescents, parents and health professionals: Construct development for collection and database composition. *Journal of Human Growth and Development*, 28(1), 58–68. <https://doi.org/10.7322/jhgd.143856>
- Lismidiati, W., Hasyim, A. V. F., Parmawati, I., & Wicaksana, A. L. (2022). Self-Efficacy to Obtain Human Papillomavirus Vaccination among Indonesian Adolescent Girls. *Asian Pacific Journal of Cancer Prevention*, 23(3), 789–794. <https://doi.org/10.31557/APJCP.2022.23.3.789>

- López, N., Salamanca de la Cueva, I., Vergés, E., Suárez Vicent, E., Sánchez, A., López, A. B., Panizo-Santos, M. B., Garcés-Sánchez, M., Montesdeoca, A., Rivera, A. J., & Cotarelo, M. S. (2022). Factors influencing HPV knowledge and vaccine acceptability in parents of adolescent children: results from a survey-based study (KAPPAS study). *Human Vaccines and Immunotherapeutics*, 18(1). <https://doi.org/10.1080/21645515.2021.2024065>
- Myhre, A., Xiong, T., Vogel, R. I., & Teoh, D. (2020). Associations between risk-perception, self-efficacy and vaccine response-efficacy and parent/guardian decision-making regarding adolescent HPV vaccination. *Papillomavirus Research*, 10(100204), 1–6. <https://doi.org/10.1016/j.pvr.2020.100204>
- Osamor, P. E., & Grady, C. (2016). Women's autonomy in health care decision-making in developing countries: A synthesis of the literature. In *International Journal of Women's Health* (Vol. 8, pp. 191–202). Dove Medical Press Ltd. <https://doi.org/10.2147/IJWH.S105483>
- Samaria, D., Berthy Tallutondok, E., Simanjorang, C., & Imanuel, I. (2025). Comparison of Self-Efficacy and Knowledge of Human Papillomavirus Vaccination among Various Types of Decision Makers in Indonesia: A Cross-Sectional Study. *International Journal of Community-Based Nursing and Midwifery*, 13(1), 1–12. <https://doi.org/10.30476/ijcbtnm.2024.101802.2448>
- Samaria, D., Desmawati, D., Mawaddah, F., Mizka, N. Z., & Dwinova, R. (2024). Self-efficacy, intention, and attitude toward human papillomavirus vaccination among urban females in indonesia: a cross-sectional study. *Jurnal Ners*, 19(2), 197–205. <https://doi.org/10.20473/jn.v19i2.50595>
- Sisson, H., & Wilkinson, Y. (2019). An Integrative Review of the Influences on Decision-Making of Young People About Human Papillomavirus Vaccine. In *Journal of School Nursing* (Vol. 35, Issue 1, pp. 39–50). SAGE Publications Inc. <https://doi.org/10.1177/1059840518805816>
- Stout, M. E., Christy, S. M., Winger, J. G., Vadaparampil, S. T., & Mosher, C. E. (2020). Self-efficacy and HPV Vaccine Attitudes Mediate the Relationship Between Social Norms and Intentions to Receive the HPV Vaccine Among College Students. *Journal of Community Health*, 45(6), 1187–1195. <https://doi.org/10.1007/s10900-020-00837-5>
- Thanasas, I., Lavranos, G., Gkogkou, P., & Paraskevis, D. (2022). The Effect of Health Education on Adolescents' Awareness of HPV Infections and Attitudes towards HPV Vaccination in Greece. *International Journal of Environmental Research and Public Health*, 19(1), 1–11. <https://doi.org/10.3390/ijerph19010503>
- Waller, J., Marlow, L. A. V., & Wardle, J. (2006). Mothers' attitudes towards preventing cervical cancer through human papillomavirus vaccination: A qualitative study. *Cancer Epidemiology Biomarkers and Prevention*, 15(7), 1257–1261. <https://doi.org/10.1158/1055-9965.EPI-06-0041>
- Waller, J., Waite, F., & Marlow, L. (2023). Awareness and knowledge about HPV and primary HPV screening among women in Great Britain: An online population-based survey. *Journal of Medical Screening*. <https://doi.org/10.1177/09691413231205965>
- Watson, D., Mhlaba, M., Molelekeng, G., Chauke, T. A., Simao, S. C., Jenner, S., Ware, L. J., & Barker, M. (2023). How do we best engage young people in decision-making about their health? A scoping review of deliberative priority setting methods. In *International Journal for Equity in Health* (Vol. 22, Issue 1). BioMed Central Ltd. <https://doi.org/10.1186/s12939-022-01794-2>
- World Health Organization. (2020). *Global strategy to accelerate the elimination of cervical cancer as a public health problem*. World Health Organization. <https://www.who.int/publications/i/item/9789240014107>
- World Health Organization. (2022). *Indonesia Global Cancer Observatory* 2022. <https://Gco.Iarc.Who.Int/Media/Globocan/Factsheets/Populations/360-Indonesia-Fact-Sheet.Pdf>. <https://gco.iarc.who.int/media/globocan/factsheets/populations/360-indonesia-fact-sheet.pdf>
- World Health Organization. (2023). *Human Papillomavirus (HPV) vaccination coverage*. [https://immunizationdata.who.int/global/wiise-detail-page/human-papillomavirus-\(hpv\)-vaccination-coverage?CODE=IDN&ANTIGEN=HPV_FEM1&YEAR=](https://immunizationdata.who.int/global/wiise-detail-page/human-papillomavirus-(hpv)-vaccination-coverage?CODE=IDN&ANTIGEN=HPV_FEM1&YEAR=)
- Zimet, G. D., Silverman, R. D., Bednarczyk, R. A., & English, A. (2021). Adolescent Consent for Human Papillomavirus Vaccine: Ethical, Legal, and Practical Considerations. *Journal of Pediatrics*, 231, 24–30.

Original Research

The Relationship Between Peer Conformity and Bullying Behavior Among Students in A Public Senior High School in Jakarta

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ARTICLE INFO

Keywords:

Bullying
Peer conformity
Student
Behavior

ABSTRACT

In Indonesia, approximately 25% of reported violence cases are related to the education sector, with 1,480 documented incidents of bullying in schools. Bullying behavior among adolescents may be influenced by peer conformity, in which individuals seek social acceptance by adapting to group norms and expectations. This study aimed to examine the relationship between peer conformity and bullying behavior among students. An analytical correlational design with a cross-sectional approach was employed, involving 139 respondents. Data was collected using two questionnaires: the Peer Conformity Questionnaire and the Bullying Behavior Questionnaire. The results indicated a significant association between peer conformity and bullying behavior ($\chi^2 = 29.165$, $p = 0.023$). Based on these findings, it is recommended that teachers implement weekly student briefings, conduct monthly behavioral evaluations, provide positive reinforcement for students who demonstrate awareness and prevention of bullying, and apply disciplinary warnings for those involved in bullying. Moreover, anti-bullying education should be strengthened, and participation in extracurricular activities focused on bullying prevention should be encouraged, particularly for Grade X students.

Received 20 November 2024;

Received in revised form 21 July 2025;

Accepted 29 October 2025

<https://doi.org/10.19166/nc.v13i2.9041>

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INTRODUCTION

Bullying is a negative behavior carried out repeatedly by an individual or group through the misuse of power imbalance to harm the victim, both physically and psychologically (Andriani et al., 2011). According to the Semai Jiwa Amini Foundation, one of the reasons perpetrators engage in bullying is low self-confidence,

which they compensate for by exerting dominance over others. By bullying, perpetrators experience a sense of power and social superiority among peers. As a result, bullies are often perceived as “strong” and “powerful,” while victims are labeled as “weak” and “inferior” (Nirmalasari, 2020).

The phenomenon of bullying among adolescents is increasingly

visible and frequently reported in print and electronic media (Andriani et al., 2021). In the United States, data from 2009 showed bullying prevalence of 20.8% physical, 53.6% verbal, 51.4% social, and 13.6% electronic bullying (Liu & Graves, 2011). According to research by the Semai Jiwa Amini Foundation related to bullying violence in three major cities in Indonesia, namely Yogyakarta, Surabaya, and Jakarta, it was found that cases of violence at the high school (SMA) and junior high school (SMP) levels were 67.9% and 66.1%, respectively. Peer violence was reported by 41.2% of junior high school students and 43.7% of high school students, with psychological rejection being the most common form, followed by verbal (sarcasm) and physical aggression (hitting). In terms of self-reported violence, 77.5% of students in Yogyakarta, 59.8% in Surabaya, and 61.1% in Jakarta acknowledged experiencing or witnessing violence (Nirmalasari, 2020).

Other national data also confirm that violence against children remains a serious concern in Indonesia. A national survey by the Central Statistics Agency (BPS) reported a prevalence rate of 3.02%, meaning that for every 10,000 Indonesian children, 302 have experienced violence (Kurniasari et al., 2017). The Indonesian Child Protection Commission (KPAI) has similarly documented high rates of violence, particularly within educational settings (KPAI, 2014).

Peer conformity, defined as a change in behavior or beliefs to align with group norms due to social pressure, is one contributing factor to bullying. Adolescents may engage in bullying to gain acceptance and recognition within their peer group (Ningrum et al., 2019). A study by Febriyani and Indrawati (2016) found a significant positive correlation between peer conformity and bullying behavior: the higher the peer conformity, the higher the likelihood of bullying, and vice versa.

An initial survey conducted in 2016 revealed an example of bullying at a senior high school in Jakarta, in which six female students in Grade XII bullied a Grade X student during an evening school event. The victim was forced to bow and was verbally abused using harsh language. This incident illustrates the role of peer group dynamics in reinforcing bullying behavior. Therefore, this study aims to examine the relationship between peer conformity and bullying behavior among students at X Public Senior High School in Jakarta, with the goal of providing evidence-based recommendations for prevention efforts and promoting a safer, more supportive school environment.

METHOD

This study employed a quantitative research design with a cross-sectional approach. The study population consisted of all active Grade X students at a public senior high school, totaling 212 students. A sample of 139 students was selected based on inclusion criteria, which required participants to be enrolled as Grade X students, present

during data collection, and willing to participate as respondents.

Peer conformity was measured using the Peer Conformity Questionnaire developed by (Dewi, 2015) which consists of 24 items covering three domains: cohesion (items 1–9), agreement (items 10–17), and obedience (items 18–22). The instrument contains both positive (favourable) and negative (unfavourable) statements, rated on a four-point Likert scale: strongly agree (SA) scored 4 for positive statements and 1 for negative statements, agree (A) scored 3 for positive statements and 2 for negative statements, disagree (D) scored 2 for positive statements and 3 for negative statements, and strongly disagree (SD) scored 1 for positive statements and 4 for negative statements. The interpretation of scores was categorized as very high (>67.95), high ($67.95–62.65$), moderate ($62.65–57.35$), low ($57.35–52.05$), and very low (≤ 52.05).

Bullying behavior was measured using the Bullying Behavior Questionnaire developed by (Dewi, 2015) which consists of 34 items categorized into physical bullying (items 1–7), verbal bullying (items 8–27), and psychological bullying (items 28–34). The questionnaire used the same four-point Likert scale and scoring format as the peer conformity instrument. The interpretation of bullying behavior scores was classified as very high (≥ 83.55), high ($83.55–71.85$), moderate ($71.85–60.15$), low ($60.15–48.45$), and very low (≤ 48.45). The peer conformity scale demonstrated good reliability (Cronbach's $\alpha = 0.909$), and the bullying behavior scale demonstrated excellent reliability (Cronbach's $\alpha = 0.935$) (Dewi, 2015).

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 26. This study obtained ethical approval from the Health Research Ethics Committee of the Immanuel Bandung College of Health Sciences (No. 038/KEPK/STIKI/V/2022).

RESULT

Characteristics Respondents

Table 1 presents the demographic distribution of respondents based on gender and age. The majority of participants were male, totaling 119 individuals (85.6%), while female respondents numbered 20 individuals (14.4%). In terms of age, most students (113 respondents; 81.3%) were in the early adolescent stage (12–16 years), whereas 26 respondents (18.7%) were in the late adolescent stage (17–25 years). These findings indicate that the sample was predominantly male and within the early teenage age range.

Table 1. Demographic Characteristics of Respondents (n=139)

Characteristics Respondents	Frequency	Percentage (%)
Gender		
Male	119	85,6
Female	20	14,4
Age		
12-16 Years	113	81,3
17-25 Years	26	18,7

Peer Conformity

As shown in Table 2, the majority of respondents exhibited a very high level of peer conformity (43.9%), followed by those in the high category (24.5%). A smaller proportion demonstrated a moderate level (19.4%), while only a few respondents fell into the low (6.5%) or very low (5.8%) categories. These results suggest that most students tend to strongly conform to peer influence.

Table 2. Levels of Peer Conformity Among Respondents (n=139)

No.	Category	Frequency	Percentage (%)
1.	Very High	61	43,9
2.	High	34	24,5
3.	Moderen	27	19,4
4.	Low	9	6,5
5.	Very Low	8	5,8
Total		139	100

Bullying Behavior

Table 3 shows the frequency distribution of bullying behavior among the 139 respondents. The largest proportion of students (36.7%) demonstrated very high levels of bullying behavior, followed by 29.5% in the high category. Approximately 20.1% of respondents reported moderate levels, while only 10.1% and 3.6% exhibited low and very low levels of bullying behavior, respectively. This indicates that bullying behavior was generally high among the students assessed.

Table 3. Levels of Bullying Behavior Among Respondents (n=139)

No.	Category	Frequency	Percentage (%)
1.	Very High	51	36,7
2.	High	41	29,5
3.	Moderate	28	20,1
4.	Low	14	10,1
5.	Very Low	5	3,6
Total		139	100

The Relationship between Peer Conformity and Bullying Behavior of Students at Public Senior High School

The results of the chi-square test (Table 4) show a statistically significant relationship between peer conformity and bullying behavior, with $X^2 = 29.165$, $p = 0.023 < 0.05$. These findings indicate that the level of peer conformity is significantly associated with bullying behavior among students at the public senior high school. Therefore, the research hypothesis (H1) is accepted, while the null hypothesis (H0) is rejected.

Table 4. Relationship peer conformity with bullying behavior (n=139)

	Bullying Behavior	
	X ²	P-Value
Peer Conformity	29,165	0,023

DISCUSSION

Peer conformity

Peer conformity refers to an individual's tendency to adjust thoughts, attitudes, or behaviors to align with group expectations, particularly during adolescence when the need for social acceptance is heightened (Rahmi & Nurmina, 2019). Previous studies have mentioned that peer conformity can be influenced by several factors, including the desire to be liked, fear of being bullied, the desire to feel correct, and cognitive consequences. The desire to be liked is considered a key factor because, fundamentally, most individuals appreciate compliments and positive recognition, which can make them more likely to adapt to group expectations. Fear of rejection is also shaped by the need to be accepted by peers, while the desire to feel correct and the influence of cognitive consequences further reinforce the tendency toward peer conformity (Zakiyah et al., 2017).

Several studies support the role of peer conformity in shaping adolescent behavior. Febriyani and Indrawati (2016) reported that 63% of Grade XI students at a public high school demonstrated high levels of conformity, which was associated with increased bullying behavior. Similarly, a study by Yulia & Prima reported that peer conformity among early adolescents in Padang City was mostly in the moderate category, with 31 out of 80 participants (38.75%) showing this level. Pratiwi and Karneli (2020) confirmed that peer conformity is a significant predictor of bullying behavior and may negatively affect peer group dynamics.

There are three types of conformity, with two commonly observed in individuals: compliance and acceptance. Compliance occurs when individuals conform due to a desire to gain rewards or avoid punishment, and this behavior persists only as long as the rewards

are received or the punishment is avoided. In contrast, acceptance is a form of conformity rooted in personal beliefs, where individuals adopt behaviors in line with social norms because they genuinely agree with them (Rahmi & Nurmina, 2019). Similarly, a study by Adiputra (2018) confirmed that peer groups significantly influence students' self-esteem. Thus, higher levels of peer conformity tend to emerge when adolescents strongly desire approval, fear exclusion, or believe conformity is the "correct" choice. When these factors are weaker, conformity decreases.

Bullying Behavior

Bullying is defined as intentional and repeated behavior aimed at harming others, carried out by an individual or group that perceives itself as more powerful than the victim (Dewi, 2015). In this study, it was found that most engaged in bullying at a moderate intensity, with a total of 51 respondents (36.7%). According to the Amini Inner Soul Seedling Foundation (Zakiyah et al., 2017), Bullying manifests in three forms: (1) Physical bullying, such as hitting, pushing, and kicking; (2) Verbal bullying, such as using rude language, ridicule, and laughter; and (3) Psychological bullying, such as ostracizing, sneering, and terrorizing.

The causes of bullying can be grouped into five factors: family, school, peer group, social environment, and mass media (television and print). The peer group factor is often a driving force behind bullying behavior, as students and adolescents may feel pressured to bully in order to be accepted by their group (Dewi, 2015; Zakiyah et al., 2017). Research by Fitriani and Septiyanah (2020) found that most respondents had a high level of peer conformity, with 41 students (68.3%), followed by 19 students (31.7%) in the moderate category, and no students in the low category. This indicates that the dominant level of bullying behavior among respondents was in the high category (68.3%). Similarly, Sulfemi and Yasita (2020) also found that students at SMA Taruna Andhiga Bogor were more likely to engage in bullying.

In contrast, a previous study by Husna et al. (2021) showed that bullying behavior among Grade VIII students at SMP Negeri 13 Banjarmasin was mostly in the low category (58 students or 50.4%), followed by the moderate category (56 students or 48.7%), and only one student (9%) in the high category. Furthermore, Pratiwi & Karneli (2020) found that most students who experienced bullying fell into the high category (40%), followed by the moderate category (37.8%), and the low category (13.4%). Only 4.4% of students were in the very low category, and another 4.4% in the very high category. Overall, the average level of bullying behavior was in the high category. Based on this discussion, bullying behavior often arises from the need to be accepted by peers. The higher the desire for acceptance, the greater the risk of engaging in bullying behavior, while lower levels of this desire may reduce the likelihood of bullying.

The Relationship Between Peer Conformity and Bullying Behavior

The results of this study support previous findings showing a significant relationship between peer conformity and bullying behavior. Pratiwi and Karneli (2020) demonstrated that peer conformity significantly contributes to bullying among students, while Husna et al. (2021) found a similar pattern among junior high school students in Banjarmasin. Mustika Cahyani and Partini Msi (2019) reported a positive association, indicating that higher conformity is linked to higher bullying involvement. This means that the higher the level of peer conformity, the higher the occurrence of bullying behavior, and conversely, the lower the level of peer conformity, the lower the occurrence of bullying behavior.

In addition, family and environmental influences may reinforce this pattern. Children who are exposed to aggressive behavior at home may normalize violence and replicate it within peer groups (Novrian, 2017). Novan Ardy (2018) further emphasized that adolescents with strong conformity tendencies are more likely to imitate group behavior, including bullying. Supporting this, Widyorini and Rahayu (2021) found a significant linear relationship between peer conformity and bullying behavior among adolescents. Similarly, Sari and Budiman (2021) reported a moderate, positive, and significant relationship, indicating that higher peer influence is associated with higher bullying behavior, and lower peer influence corresponds to lower bullying behavior.

CONCLUSION

Based on the findings, it can be concluded that 61 respondents demonstrated a high level of peer conformity, while 51 respondents showed a high level of bullying behavior, and there is a significant relationship between peer conformity and bullying behavior. It is expected that teachers conduct weekly briefings during joint ceremonies and evaluate student behavior monthly by giving rewards to students who show good understanding of bullying prevention and issuing warnings to those who engage in bullying. In addition, education about bullying should be strengthened, and all Grade X students should be required to participate in available anti-bullying extracurricular programs.

REFERENCES

- Adiputra, S. (2018). Influence of peer groups to the self-esteem of Lampung and Javanese students. *International Journal of Psychology and Educational Studies*, 5(1), 15-22.
- Andriani, E. L., Simatupang, M., & Riza, W. L. (2021). Konformitas teman sebaya dan perilaku bullying di SMP Negeri 6 Karawang. *Psikologi Prima*, 4(1), 12-19.
- Andriani, N., Elita, V., Rahmalia, S., Keperawatan, I., & Riau, U. (2011). Hubungan bentuk prilaku bullying dengan tingkat stres. *Program Study Ilmu Keperawatan*, 426-435.

- Dewi, C. K. (2015). Pengaruh konformitas teman sebaya terhadap perilaku bullying pada siswa SMA Negeri 1 Depok Yogyakarta. *Jurnal Bimbingan dan Konseling*, 10(4), 2.
- Febriyani, Y. A., & Indrawati, E. S. (2016). Konformitas teman sebaya dan perilaku bullying pada siswa kelas XI IPS. *Jurnal Empati*, 5(1), 138-143.
- Fitriani, A., & Septiyanah, S. (2020). Kecerdasan Emosi dan Konformitas Teman Sebaya dengan Perilaku Bullying. *Psyche: Jurnal Psikologi*, 2(1), 78-93.
- Husna, H., Sultani, A., & Aminah, A. (2021). Hubungan Antara Interaksi teman Sebaya Dengan Perilaku Bullying Siswa Kelas VIII di SMP Negeri 13 Banjarmasin. *Jurnal Mahasiswa BK An-Nur: Berbeda, Bermakna, Mulia*, 7(2), 1.
- Kurniasari, A., Widodo, N., Yusuf, H., Susantyo, B., Wismayanti, Y. F., & Irmayani, N. R. (2017). Prevalensi kekerasan terhadap anak laki-laki dan anak perempuan di Indonesia. *Sosio Konsepsia: Jurnal Penelitian dan Pengembangan Kesejahteraan Sosial*, 6(3), 287-300.
- Liu, J., & Graves, N. (2011). Childhood bullying: A review of constructs, concepts, and nursing implications. *Public health nursing*, 28(6), 556-568.
- Mustika Cahyani, I., & Partini Msi, P. (2019). *Hubungan Antara Konformitas Teman Sebaya Dengan Perilaku Perundungan Pada Siswa Sma Universitas Muhammadiyah Surakarta*.
- Ningrum, R. E. C., Matulessy, A., & Rini, R. A. P. (2019). Hubungan antara konformitas teman sebaya dan regulasi emosi dengan kecenderungan perilaku bullying pada remaja. *Insight: Jurnal Pemikiran Dan Penelitian Psikologi*, 15(1), 124.
- Nirmalasari, N. (2020). *Fenomena bullying pada teman sebaya di SDN No 123 Tanassang Universitas Islam Ahmad Dahlan*.
- Novan Ardy, W. (2018). Save Our Children from School Bullying. In: Ar-Ruzz Media.
- Novrian, A. (2017). *Hubungan Antara Fungsi Keluarga Dengan Kecenderungan Perilaku Bullying Pada Remaja Muslim Kelas Ix Smp Negeri 3 Palembang Uin Raden Fatah Palembang*.
- Pratiwi, R., & Karneli, Y. (2020). The contribution of online gaming and peer conformity to student bullying behavior. *Jurnal Aplikasi IPTEK Indonesia*, 4(3), 155-161.
- Rahmi, M., & Nurmina, N. (2019). Hubungan Konformitas Teman Sebaya Dengan Perilaku Bullying Siswa Smpn 2 Kota Solok. *Jurnal Riset Psikologi*, 2019(1).
- Sari, S. I., & Budiman, A. (2021). Hubungan faktor teman sebaya dengan perilaku bullying pada remaja di SMP Negeri 5 Samarinda. *Borneo Studies and Research*, 2(2), 950-957.
- Sulfemi, W., & Yasita, O. (2020). Dukungan Sosial Teman Sebaya Terhadap Perilaku BullyinG. *Jurnal Pendidikan*, 21, 133-147. <https://doi.org/10.33830/jp.v21i2.951.2020>
- Widyorini, E., & Rahayu, E. (2021). Harga diri, konformitas teman sebaya, dan perilaku perundungan pada remaja. *Jurnal Psikologi Volume 14 No. 1, Juni 2021*, 14(1), 62-73.

Original Research

The Role of Laboratory Simulation in The Development of Caring Behavior in Nursing Students: A Scoping Review

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ARTICLE INFO

Keywords:

Caring behavior

Empathy

High-fidelity

Nursing
students

Simulation

ABSTRACT

Caring behavior is a fundamental value in nursing practice and education. Simulation has emerged as an effective strategy to enhance not only clinical competence but also empathy, communication, and self-awareness in nursing students. This scoping review aims to explore the role of laboratory simulation in developing caring behaviors among nursing students and to identify the types of simulation used and related outcomes. Following the Joanna Briggs Institute (JBI) methodology, literature was searched in four databases (PubMed, EBSCO, ScienceDirect, and ProQuest) for studies published between 2015 and 2025. Inclusion criteria focused on nursing students, simulation-based learning, and caring or empathy outcomes. Twelve studies were included, predominantly quantitative in design ($n = 10$), along with one qualitative and one mixed-method study. Sample sizes ranged from 26 to 248 participants. Simulations used included high-fidelity ($n = 4$), virtual reality ($n = 3$), standardized patients ($n = 3$), and low-fidelity or role-play ($n = 2$). Most studies showed positive effects on empathy, communication skills, and caring behavior, especially with immersive or high-fidelity simulations. Overall, simulation-based learning, particularly high-fidelity and immersive methods, supports the development of caring behavior in nursing students. Its integration into nursing curricula is essential to prepare nurses for patient-centered, empathetic care.

Received 05 June 2025;

Received in revised form 03 November 2025;

Accepted 13 November 2025

<https://doi.org/10.19166/nc.v13i2.9927>

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INTRODUCTION

The use of simulation in nursing programs is a common practice and continues to evolve due to its well-documented benefits (Koukourikos et al., 2021). Both high- and low-fidelity simulations in nursing education have been shown to support the development of Non-Technical Skills (NTS), such as caring and empathy, both individually and within teams, through experiential and

reflection-based learning approaches (Kaur, 2022; Juniarta et al., 2024). As educational tools, high- and low-fidelity simulations can enhance caring or empathic responses to patients, as well as promote more effective team collaboration in nursing practice (Hayden et al., 2014; Raghunathan et al., 2025; Thorp and Bassendowski, 2018; Liebrecht & Montenery, 2016; Ayed et al., 2021).

Literature indicates that the most frequently researched NTS in

laboratory simulation learning are communication and teamwork skills, while the caring aspect has received comparatively little attention (Raghunathan et al., 2025). Low levels of caring behavior and respect for patients’ rights among nursing students have been reported by Putri et al. (2023), whereas Rakinaung (2023) found that students’ caring behavior in the “being with” dimension was relatively low. However, caring is an essential component of nursing practice that significantly influences the quality of care and patient satisfaction (Watson, 2018; Wuwung et al., 2020). Accordingly, Leach et al. (2021) emphasize that the implementation of simulations integrated with caring science has the potential to provide substantial benefits for academia, healthcare systems, and patients, while also strengthening the development of Evidence-Based Practice (EBP) in nursing.

Despite its potential, efforts in nursing education to develop caring behavior through simulation have faced several challenges (Jafarian-Amiri et al., 2020). Factors such as environmental pressure and stress during initial interactions with educators may diminish caring values during simulation activities (Ben-Ahmed et al., 2024). Moreover, students’ caring behavior may be negatively affected by fear, feelings of insecurity, communication limitations, and negative experiences that emerge during the simulation process (Putri et al., 2023).

The limited emphasis of previous studies on the role of simulation in developing caring behavior suggests a clear knowledge gap. Therefore, this scoping review aims to identify the types of laboratory simulations (SimLab) used in nursing education and to examine their role in fostering caring behavior among nursing students based on the existing literature. Accordingly, this review addresses the following research questions:

1. What types of laboratory simulations have been used in nursing education to improve *students'* caring behavior?
2. What is the role of laboratory simulation (Simlab) in developing caring behavior in nursing students as reported in the literature?

METHOD

Search strategy

The search strategy was designed to find both published evidence relevant to the topic. An initial limited search was first conducted on PubMed to identify articles on the subject. The initial search strategy for PubMed was developed using text words from relevant article titles, abstracts, and index terms. The search strategy, which included all identified keywords and index terms, was tailored to each database and information source included. Reference lists of included sources of evidence were also examined for further studies. Only English-language studies were considered. Studies published between 2015

and 2025 were included. The databases searched included PubMed, EBSCO Full Text, ScienceDirect, and ProQuest. The search applied Boolean operators (AND, OR) to combine keywords. Table 1 presents the main concepts, context, and population used in the search strategy.

Table 1. Framework Research Question PCC

Criteria	Details
Population (P)	Nursing Student OR Nursing Students OR Student, Nursing OR Pupil Nurse OR Baccalaureate Education
Concept (C)	Caring OR Empathy OR Attitude
Context (C)	Simulation-learning OR High-Fidelity Simulation Training OR Patient Simulation OR Simulation Training

The search strategy was designed to identify primary research studies employing quantitative, qualitative, or mixed methods approaches. Only articles published in English within the last 10 years (2015–2025) were considered eligible. To ensure comprehensive coverage, Boolean operators (AND, OR) were applied to combine keywords. The final Boolean search string was constructed as follows: (*Nursing Student OR Nursing Students OR Student, Nursing OR Pupil Nurse OR Baccalaureate Education*) AND (*Caring OR Empathy OR Attitude*) AND (*Simulation-learning OR High-Fidelity Simulation Training OR Patient Simulation OR Simulation Training*).

Study/Source of Evidence Selection

All citations obtained from the search results were collected and entered the Covidence platform, with duplicates removed before screening. All sources deemed potentially relevant were initially screened. Subsequently, two reviewers conducted a full-text review of each selected citation to confirm eligibility. A clearly documented rationale accompanied any sources excluded during the selection process. In cases of disagreement between reviewers, the issue was resolved through discussion. The final scoping review included a comprehensive report of the search results and study selection process, accompanied by a flowchart following the PRISMA-ScR (Figure 1) guidelines (the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews) as described by Tricco et al (2018).

Quality appraisal

The included studies were appraised using the Quality Assessment with Diverse Studies (QuADS) tool, a validated instrument designed to evaluate the methodological and reporting quality of diverse study types within systematic reviews (Harrison et al., 2021).

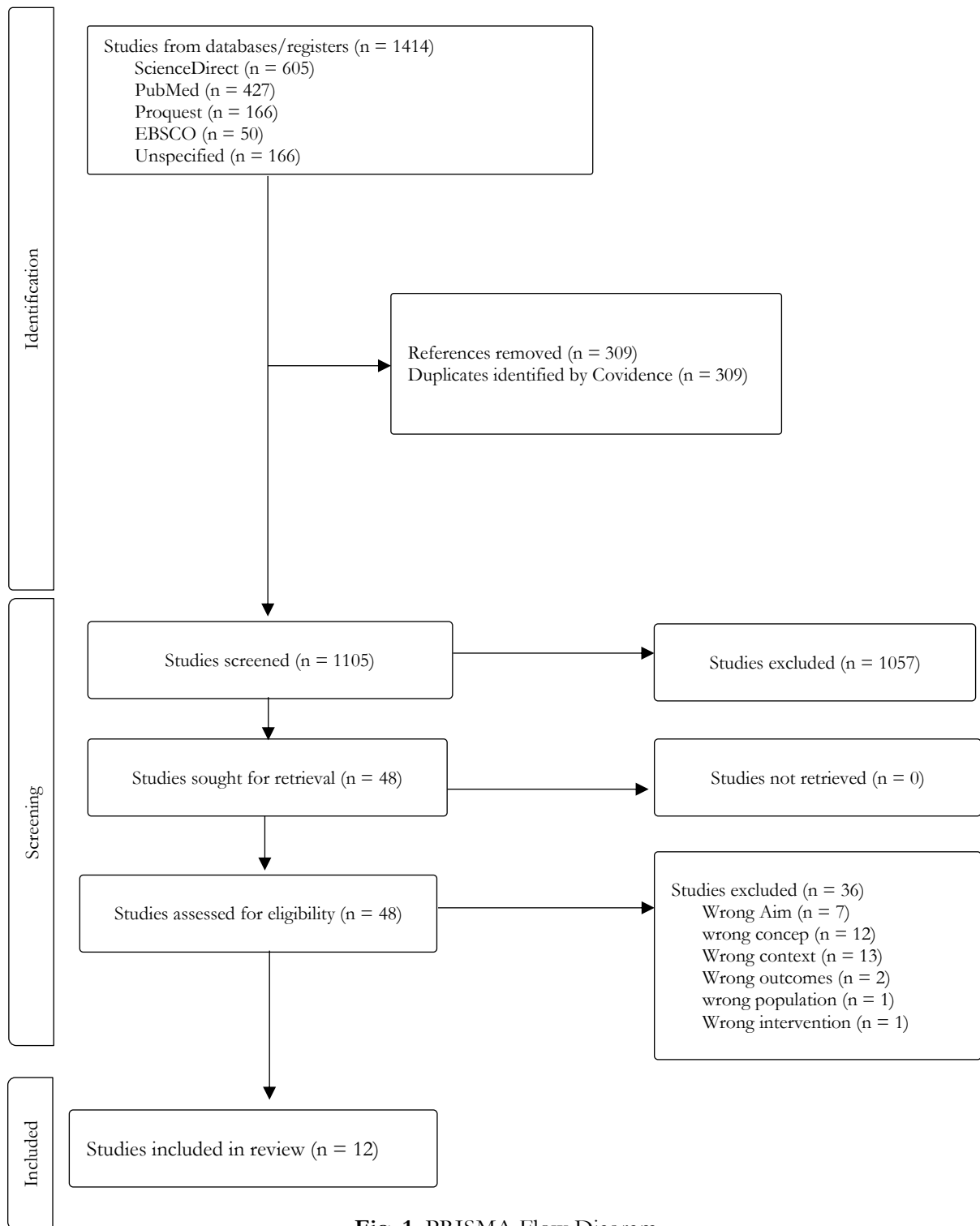


Fig. 1. PRISMA Flow Diagram

The QuADS tool employs a scoring system ranging from zero to three across 13 criteria, with a maximum possible score of 39. Each criterion assesses key aspects such as clarity of aims, appropriateness of study design, data collection methods, and relevance to the review question. The total score is subsequently converted into a percentage to facilitate comparison across studies. Furthermore, a

critical appraisal of each source of evidence was conducted using the QuADS tool to assess the methodological rigor and relevance of the included studies. The appraisal protocol is openly available on OSF <https://doi.org/10.17605/OSF.IO/65NJH>.

Data Extraction

Two independent reviewers extracted data from the articles included in this scoping review using pre-developed data extraction tools. The extracted data included information on study participants, key concepts explored, contextual details, research methodologies employed, and principal findings relevant to the research question. The extraction tools were refined iteratively throughout the review process to ensure consistency and completeness, and any modifications were transparently reported in the final review. In cases of discrepancies between reviewers, resolution was achieved through discussion.

RESULT

A total of 12 articles were included following rigorous screening based on eligibility criteria focused on the population, context, and the core concept of caring behavior among nursing students. These articles were identified through a combination of database searches and full-text screening. The characteristics of the included studies are summarized in Table 2. Geographically, the studies originated from diverse settings: the United States (n = 6), China (n = 2), Spain (n = 2), Oman (n = 1), and Palestine (n = 1), reflecting a broad international perspective on simulation-based learning in nursing education. Methodologically, most of the studies employed quantitative approaches (n = 10), while one adopted a qualitative design (n = 1) and another utilized a mixed-methods approach (n = 1). Common research designs included pretest–posttest studies without control groups (n = 9), a correlational descriptive study (n = 1), and a mixed-methods study that incorporated thematic analysis and statistical testing (n = 1).

Type of Simulation Used to Assess Caring Behavior

The included studies employed a variety of simulation modalities to examine the development of caring behaviors among nursing students. These simulation strategies, summarized in Table 2, varied in both fidelity and interactivity. High-Fidelity Simulations (HFS) (n = 4) were commonly used because of their realistic clinical scenarios and ability to replicate actual patient care environments. Role-playing activities (n = 2) were applied to strengthen interpersonal and empathetic skills in settings with lower technological dependence. Standardized patients (n = 3) provided opportunities for students to practice therapeutic communication in realistic yet controlled encounters. Virtual simulations (n = 3), including immersive digital platforms, enabled flexible and interactive learning, particularly in remote or hybrid educational contexts. Low-fidelity simulations (n = 1) were also utilized, often serving as introductory exercises for basic skill development.

The Role of Simulation in Developing Nursing Students' Caring Behaviour

The included studies highlighted the significant role of simulation-based learning in nurturing caring behavior among nursing students. Simulation was found to be an effective educational strategy for cultivating empathy, self-awareness, communication, and teamwork, which are core components of caring in nursing practice. Several studies emphasized the importance of simulation in enhancing both cognitive (perspective-taking) and affective (empathic concern) empathy, enabling students to understand and respond more sensitively to patients' experiences (n = 6). Some studies focused on encouraging self-awareness through guided reflection and analysis of patient encounters, helping students internalize caring attitudes and ethical sensitivity (n = 2). Other simulations provided immersive experiences where students assumed the roles of elderly, patients with dementia, or individuals with mental illness, fostering deeper understanding and compassion toward vulnerable populations (n = 4). Additionally, simulation activities were designed to strengthen interpersonal communication and therapeutic relationships by promoting active listening, empathy, and trust-building (n = 2). Interprofessional simulations further contributed to the development of caring behavior by encouraging collaboration, teamwork, and mutual respect among healthcare professionals (n = 2).

DISCUSSION

Figure 2 summarizes the key findings discussed in this section.

Various Simulation Approaches in Nursing Education to Improve Caring

HFS were commonly used because of their realistic clinical scenarios and ability to replicate actual patient care environments however, when compared to VR simulations, HFS present several limitations, including higher costs, technical constraints (Park et al., 2025), longer preparation and implementation time (Jacobs et al., 2019), and the potential to foster overconfidence among students (Massoth et al., 2019). In recent years, various simulation technologies, including virtual reality (VR), immersive VR simulations, and game-based learning simulations, have been increasingly utilized in nursing education. Although evidence from optometry education, virtual simulation has been identified as a valuable training and assessment strategy due to its ability to provide contextual, cognitive, functional, task, and psychological fidelity (Edgar et al., 2022). These technologies create an immersive experience that helps students understand the patient's condition more deeply, thus encouraging caring behaviour. Simulations such as the Virtual Dementia Tour (VDI) or auditory hallucination simulations allow students to experience firsthand the perspectives of patients with dementia or psychiatric disorders, which can significantly enhance empathy and compassion (Fernández-Gutiérrez et al., 2022; Liu et al., 2024)

Depth and Rigour of Simulation

The Role of Simulation in Developing Nursing Students' Caring Behaviour

Strengthening Student Empathy

Simulation is an effective method for improving the cognitive and affective empathy of nursing students. When students play the role of patients, they gain a deeper understanding of the patient's experiences and emotions (Deprey and Kobiske, 2023; Al Yazeedi et al., 2025). This process enables students to view caregiving from a personal perspective, often by relating patient experiences to those of loved ones, thereby strengthening their caring identity (Fitzgerald & Ward, 2019). Caring behaviour can be physical, mental, or emotional, verbal or non-verbal, empathy, and support (Cho and Kim, 2024).

Self-Awareness and Reflection Development

Through reflective simulations, students are encouraged to recognize their personal and professional values. As aspiring nurses, nursing students must be aware of and able to apply professional values in decision-making when faced with ethical challenges that arise in the field of healthcare (Poorchangizi et al., 2019). Such self-awareness is fundamental to the development of compassionate and empathetic nursing practice (Ayed et al., 2021; Liu et al., 2024). The development of student self-awareness through reflection can increase concern for patient needs through appropriate nursing care (Tseng et al., 2025).

Immersive Experience of Patient Condition

Simulations provide hands-on experience in understanding patient conditions such as dementia or sensory disorders, which strengthens students' situational empathy (Witherspoon et al., 2023). Human patient simulation, as an evolving educational strategy, allows learners to develop, refine, and apply knowledge and skills in realistic clinical contexts through interactive learning experiences designed to meet specific educational objectives.

Table 2. Results of the Literature Characteristics

Study	Country	Study aim	Study design and participants	Type of Simulation	Quality Appraisal result %
(Huang et al., 2025)	United States	Investigates the influence of VR and perspective-taking on affective empathy in nursing education, focusing on 4 psychological factors: perceived self-location, narrative transportation, emotional engagement, and affective empathy.	Pre-posttest experimental design with a control group. Sample size: 26 nursing students	Virtual Reality (VR) narrative media	90
(Holland et al., 2024)	United States	Explore nursing students' experiences in empathy-based interprofessional Simulation, and how these experiences may shape their future practice.	Exploratory qualitative design. 31 final year nursing students	Patient standards	85
(Deprey & Kobiske, 2023)	United States	Assessing the impact of the dementia simulation experience on nursing and physical therapy students' empathy	Cross-sectional descriptive design. Sample 248 nursing student	Virtual Dementia Tour (VDT)	92
(Qu et al., 2024)	China	Compare the effects of Simulation with problem-based learning (SPBL) and Problem-based learning (PBL) in nursing ethics education on nursing students' moral sensitivity, empathy, critical thinking, test scores, and teaching satisfaction.	Quasi-experimental, non-equivalent control group pre-post design. Sample: 61 Nursing students	Patient Standard Make Simulation Base Learning (SPBL)	87
(Sideras et al., 2015)	United State	Assess the impact of a two-stage simulation on nursing students' attitudes, empathy, behavioural intentions, and knowledge towards individuals with schizophrenia.	Quasi-experimental, pre-post test with control group. Sample: 145, 80 Interventions and control 65	Auditory hallucination simulation (Hearing Voices) dan Standardized Patient (SP)	87

(Haley et al., 2017)	United State	Testing the effect of Advancing Care Excellence for Seniors (ACES) simulation on improving active listening, self-awareness, empathy, and patient-centred care (PCC) in nursing students.	Randomised Controlled Trial (RCT) with 3 measurements (baseline, post-intervention, and 4-week follow-up) Sample: 53	High fidelity simulation (HFS)	90
(Liu et al., 2024)	Hongkong	This study aims to evaluate the impacts of IVR-assisted experiential learning on the empathy of undergraduate health care students toward older people with cognitive impairment as the primary outcome (objective 1), on their learning experience (objective 2), and on their attainment of learning outcomes as the secondary outcomes (objective 3).	Thematic qualitative mixed-methods and t-test	Immersive Virtual Reality (IVR):	90
(Witherspoon et al., 2023)	United State	Assessing the impact of patient-role Simulation on nursing students' empathy using Comprehensive State Empathy Scale (CSES)	quasi-experimental, pre-post test Sampel: 83	a role-play patient simulation	87
(Al Yazeedi et al., 2025)	Oman	To determine the effectiveness of high-fidelity Simulation on self-awareness and empathy in undergraduate nursing students.	quasi-experimental with one group pre-posttest, one-way ANCOVA Sample: 67 nursing students	HFS	79
(Arrogante et al., 2022)	Spanyol	To evaluate the effects of high-fidelity simulation training on attitudes towards older people and empathy among undergraduate nursing students.	Quasi experimental longitudinal design with a single group and a pre and post-intervention Sample: 80 nursing students	HFS	84
(Fernández-Gutiérrez et al., 2022)	Spanyol	Develop a multimodal intervention according to the NLN Jeffries Simulation Theory, planned to improve attitudes and empathy towards older adults in undergraduate nursing students using theoretical contents, age simulation suits, and storytelling of old participants, and (2) to	crossover randomised controlled trial with an experimental group, a control group (that transitions to a delayed experimental group) Sample: 83 Nursing Student	Multimodal Simulation dan low Fidelity	95

(Ayed et al., 2021)	Palestina	<p>evaluate the influence of the simulation flow on the effectiveness of this intervention in improving attitudes and empathy towards older adults</p> <p>Evaluate the effect of high-fidelity Simulation on students' perception of self-awareness, empathy, and patient-centered care at pre- and post-intervention in undergraduate' pediatric nursing students at Arab American University in Palestine.</p>	<p>Quasi experiment one group of pretest-posttest design was used.</p> <p>Sample: 83 Nursing Student</p>	High Fidelity Simulation	79
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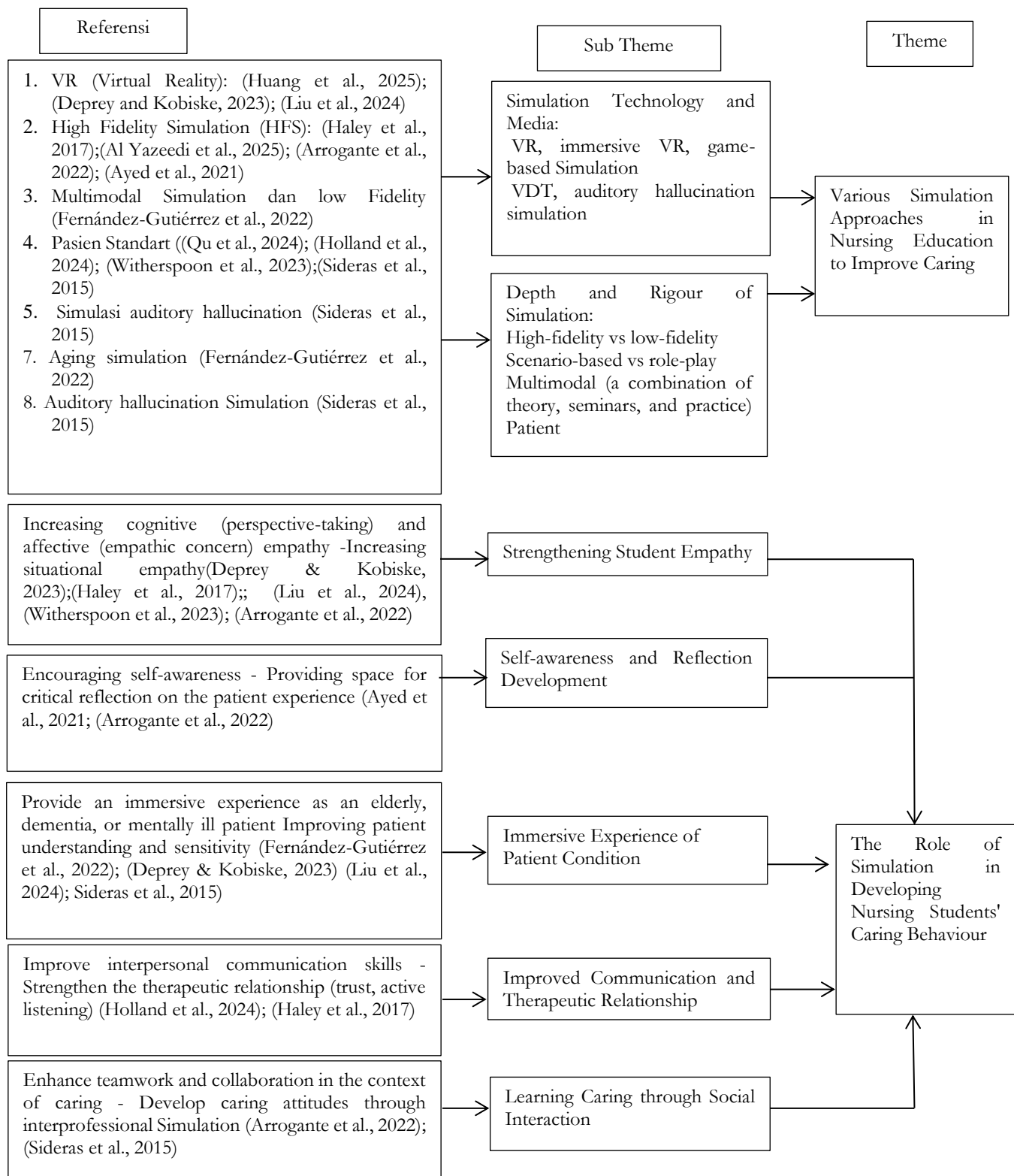


Fig. 2. Mapping themes: Various Simulation Approaches in Nursing Education to Improve Caring

Improved Communication and Therapeutic Relationships

Simulation plays an important role in helping nursing students develop effective therapeutic communication skills, including active listening skills and person-centered care approaches (Haley et al., 2017; Ayed et al., 2021). Active listening is one of the most powerful and meaningful communication tools for expressing concern and empathy. Caring expressions in communication are shaped by individual characteristics, which influence perspectives and word choices (Mercan & Mersin, 2025). Effective communication skills have been shown to significantly influence students' caring behavior (Inocian et al., 2022). In addition, standardized intradisciplinary communication is essential to improve the quality of nursing services and enhance patient safety (Durham, 2008).

Caring Learning through Social Interaction

Group simulation allows students to learn the values of caring through social interaction, including teamwork, caring for others, and interprofessional relationships (Hovland et al., 2024). This approach also enhances advocacy and fosters deeper interpersonal and social empathy, along with greater awareness (Holland et al., 2024). In addition, Holst et al. (2017) stated that good interpersonal relationships between patients, students, and supervisors can improve cooperation, mutual respect, and independence.

The literature review shows that simulation-based learning effectively enhances nursing students' caring behavior by improving empathy, self-awareness, communication, and teamwork. High-fidelity and immersive simulations, such as virtual reality and standardized patients, are particularly effective in promoting empathy and reflective understanding of patients.

Limitations

This study has several limitations. The number of included studies was relatively small, with most employing quasi-experimental designs and self-reported measures, which may introduce response bias. Variations in simulation types, duration, and assessment tools also limit direct comparisons across studies. Additionally, most research was conducted in high-income countries, potentially limiting the generalizability of the findings. Future studies should use standardized tools, larger samples, and diverse settings to strengthen evidence on the long-term impact of simulation on caring behavior.

Implications

Simulation should be integrated as a core learning strategy in nursing education to develop students' caring behavior. By using HFS and immersive technologies such as VR and simulated patients, educators can create realistic learning experiences that enhance empathy, communication, and self-awareness. Nursing curricula should include reflective sessions after simulations to help students internalize caring values and ethical sensitivity. Additionally, simulation-based learning can prepare students to deliver holistic, patient-centered care while improving their

confidence and clinical decision-making skills in a safe and supportive environment.

CONCLUSION

Simulation in nursing education, especially those using high technology such as VR and simulated patients, is effective in developing students' caring behavior. Through immersive and reflective learning, students can enhance their empathy, self-awareness, therapeutic communication skills, and holistic understanding of patients. Simulation also offers a safe environment for hands-on practice without risking real patients. Therefore, simulation is an essential teaching method for shaping nurses who are compassionate, competent, and patient-centered. Future research should involve larger and more diverse samples to strengthen the generalizability of findings on simulation-based learning and caring behavior.

ACKNOWLEDGEMENT

This research was funded by Universitas Pelita Harapan (UPH) through institutional research support.

REFERENCES

- Arrogante, O., Velarde-García, J.F., Blázquez-González, P., Nieves Moro-Tejedor, M., 2022. The effects of high-fidelity simulation training on empathy and attitudes toward older people among undergraduate nursing students: A quasi-experimental study. *Nurse Education in Practice* 64, 103441. <https://doi.org/10.1016/j.nepr.2022.103441>
- Ayed, A., Malak, M.Z., Al-amer, R.M., Batran, A., Salameh, B., 2021. Effect of high-fidelity simulation on perceptions of self-awareness, empathy, and patient-centered care among university pediatric nursing classes. *Clinical Simulation in Nursing* 56, 84–90. <https://doi.org/10.1016/j.ecns.2021.04.005>
- Durham, K.R.A., 2008. Chapter 51. Enhancing patient safety in nursing education through patient simulation. in: hughes rg, editor. *Patient safety and quality: An evidence-based handbook for nurses*. rockville (md): Agency for Healthcare Research and Quality (US); 2008 Apr. Chapter 51. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK2628/>
- Cho, M.-K., & Kim, M.Y., 2024. Effectiveness of simulation-based interventions on empathy enhancement among nursing students: a systematic literature review and meta-analysis. *BMC Nursing* 23, 319. <https://doi.org/10.1186/s12912-024-01944-7>
- Deprey, S.M., & Kobiske, K.R., 2023. Dementia simulation impact on empathy of nursing and physical therapy students: A

- quantitative study. *Clinical Simulation in Nursing* 81, 101412. <https://doi.org/10.1016/j.ecns.2023.03.005>
- Edgar, A.K., Macfarlane, S., Kiddell, E.J., Armitage, J.A., Wood-Bradley, R.J., 2022. The perceived value and impact of virtual simulation-based education on students' learning: a mixed methods study. *BMC Medical Education* 22, 823. <https://doi.org/10.1186/s12909-022-03912-8>
- Fernández-Gutiérrez, M., Bas-Sarmiento, P., del Pino-Chinchilla, H., Poza-Méndez, M., Marín-Paz, A.J., 2022. Effectiveness of a multimodal intervention and the simulation flow to improve empathy and attitudes towards older adults in nursing students: A crossover randomised controlled trial. *Nurse Education in Practice*, 64, 103430. <https://doi.org/10.1016/j.nepr.2022.103430>
- Fitzgerald, M. & Ward, J., 2019. Using standardized actors to promote family-centered care. *Journal of Pediatric Nursing*, 45, 20–25. <https://doi.org/10.1016/j.pedn.2018.12.002>
- Haley, B., Heo, S., Wright, P., Barone, C., Rettigantid, M.R., Anders, M., 2017. Effects of Using an Advancing Care Excellence for Seniors Simulation Scenario on Nursing Student Empathy: A Randomized Controlled Trial. *Clinical Simulation in Nursing* 13, 511–519. <https://doi.org/10.1016/j.ecns.2017.06.003>
- Harrison, R., Jones, B., Gardner, P., Lawton, R., 2021. Quality assessment with diverse studies (QuADS): an appraisal tool for methodological and reporting quality in systematic reviews of mixed- or multi-method studies. *BMC Health Services Research* 21, 144. <https://doi.org/10.1186/s12913-021-06122-y>
- Hayden, J. K., Smiley, R.A., Alexander, M., Kardong-Edgren, S., Jeffries, P.R., 2014. The NCSBN national simulation study: A longitudinal, randomized, controlled study replacing clinical hours with simulation in prelicensure nursing education. *Journal of Nursing Regulation* 5, S3–S40. [https://doi.org/10.1016/S2155-8256\(15\)30062-4](https://doi.org/10.1016/S2155-8256(15)30062-4)
- Holland, T., Walter, L., Langevin, K., Bourgoin, A., McKelvey, M., Kirk, C., Thomas, C., 2024. Nursing students' experience of a poverty simulation and its impact on empathy and social justice awareness: A descriptive qualitative study. *Creative Nursing* 30, 65–73. <https://doi.org/10.1177/10784535241229143>
- Holst, H., Ozolins, L.-L., Brunt, D., Hörberg, U., 2017. The learning space—interpersonal interactions between nursing students, patients, and supervisors at developing and learning care units. *International Journal of Qualitative Studies on Health and Well-being* 12, 1368337. <https://doi.org/10.1080/17482631.2017.1368337>
- Hovland, C., Gergis, M., Milliken, B., DeBoth Foust, K., Niederriter, J., 2024. The value of learning virtual interprofessional collaboration during a pandemic and the future “new normal”: health professions students share their experiences. *Journal of Interprofessional Care* 38, 87–94. <https://doi.org/10.1080/13561820.2023.2232401>
- Huang, K.T., & Ma, Z., Yao, L., 2025. Media-Induced and Psychological Factors That Foster Empathy Through Virtual Reality in Nursing Education: 2×2 Between-Subjects Experimental Study. *JMIR Medical Education* 11. <https://doi.org/10.2196/59083>
- Inocian, E.P., Hill, M.B., Felicilda-Reynaldo, R.F.D., Kelly, S.H., Paragas, E.D., Turk, M.T., 2022. Factors in the clinical learning environment that influence caring behaviors of undergraduate nursing students: An integrative review. *Nurse Education in Practice* 63, 103391. <https://doi.org/10.1016/j.nepr.2022.103391>
- Jacobs, S., Taylor, C., Dixon, K., Wilkes, L., 2019. The advantages and disadvantages of using High Fidelity Simulation as an environment to observe undergraduate nurses' actions and their alignment with clinical judgement characteristics. *Clinical Nursing Studies* 8, 15. <https://doi.org/10.5430/cns.v8n1p15>
- Jafarian-Amiri, S., Zabihi, A., Qalehsari, M., 2020. The challenges of supporting nursing students in clinical education. *Journal of Education and Health Promotion* 9, 216. https://doi.org/10.4103/jehp.jehp_13_20
- Juniarta, Eka, N.G.A., Ferawati Sitanggang, Y., 2024. Empathy in nursing students: a scoping review. *Journal of Holistic Nursing* 42, S59–S86. <https://doi.org/10.1177/08980101231163966>
- Kaur, A., 2022. All about simulation in nursing: The Indian scenario. *Bulletin of Environment, Pharmacology and Life Sciences*, 11(Special Issue 4), 190–197
- Koukourikos, K., Tsaloglidou, A., Kourkouta, L., Papathanasiou, I., Iliadis, C., Fratzana, A., Panagiotou, A., 2021. Simulation in clinical nursing education. *Acta Informatica Medica* 29, 15. <https://doi.org/10.5455/aim.2021.29.15-20>
- Liu, J.Y.W., Mak, P.Y., Chan, K., Cheung, D.S.K., Cheung, K., Fong, K.N.K., Kor, P.P.K., Lai, T.K.H., Maximo, T., 2024. The effects of immersive virtual reality–assisted experiential learning on enhancing empathy in undergraduate health care students toward older adults with cognitive impairment: Multiple-Methods Study. *JMIR Medical Education* 10, e48566. <https://doi.org/10.2196/48566>

- Massoth, C., Röder, H., Ohlenburg, H., Hessler, M., Zarbock, A., Pöpping, D.M., Wenk, M., 2019. High-fidelity is not superior to low-fidelity simulation but leads to overconfidence in medical students. *BMC Medical Education* 19, 29. <https://doi.org/10.1186/s12909-019-1464-7>
- Mercan, N., Mersin, S., 2025. Evaluating the therapeutic communication skills of nursing students in the clinical setting: The experiences of students, patients, and patients' relatives. *Heliyon* 11, e41677. <https://doi.org/10.1016/j.heliyon.2025.e41677>
- Park, Y., Lee, S.-J., Hur, Y., 2025. Facilitators, barriers, and future direction of high-fidelity simulation in nursing education: a qualitative descriptive study. *BMC Nursing* 24, 881. <https://doi.org/10.1186/s12912-025-03541-8>
- Poorchangizi, B., Borhani, F., Abbaszadeh, A., Mirzaee, M., Farokhzadian, J., 2019. The importance of professional values from nursing students' perspective. *BMC Nurs* 18, 26. <https://doi.org/10.1186/s12912-019-0351-1>
- Qu, Z., Sun, J., Li, L., Zhao, L., Jiang, N., Fan, J., Zhang, J., Liang, B., 2024. The effect of simulated problem learning in nursing ethics on moral sensitivity, empathy and critical thinking of nursing students: A quasi-experimental study. *Nurse Education in Practice* 80, 104119. <https://doi.org/10.1016/j.nepr.2024.104119>
- Raghuathan, K., Houghty, G.S., Siswadi, Y., Eka, N.G.A., Bourke, S., Cardwell, R., Copnell, B., Duncan, R., Moss, C., 2025. The use of simulation to improve non-technical skills in undergraduate nurse education: A scoping review. *Clinical Simulation in Nursing* 99, 101686. <https://doi.org/10.1016/j.ecns.2025.101686>
- Sideras, S., McKenzie, G., Noone, J., Dieckmann, N., Allen, T.L., 2015. Impact of a simulation on nursing students' attitudes toward schizophrenia. *Clinical Simulation in Nursing* 11, 134–141. <https://doi.org/10.1016/j.ecns.2014.11.005>
- Tseng, T.-J., Ray, M.A., Wu, C.-J., 2025. Examining nursing students' learning through reflective analysis using ray's transcultural caring dynamics in nursing and health care theory. *BMC Medical Education* 25, 559. <https://doi.org/10.1186/s12909-025-07123-9>
- Witherspoon, M., Pankonien, C.A., Baldwin, J., Hunter, C., 2023. The impact of a role-play patient simulation on nursing students as measured by the comprehensive state empathy scale. *Teaching and Learning in Nursing* 18, e79–e83. <https://doi.org/10.1016/j.teln.2023.04.016>
- Yazeedi, B., Azri, Z., Prabhakaran, H., John, S.E., Shakman, W. L.M., Raghavan, D., Roach, E.J., Sabari, S., Arulappan, J., 2025. Efficacy of high-fidelity pediatric simulation on nursing students' self-awareness and empathy in a Middle Eastern Country. *Heliyon* 11, e42524. <https://doi.org/10.1016/j.heliyon.2025.e42524>

Original Research

Factors Associated with The Willingness of Women of Childbearing Age to Undergo Visual Inspection with Acetic Acid (VIA) At Curug Primary Health Center

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ARTICLE INFO

Keywords:

IVA Test

Willingness

Women of
Childbearing
Age

ABSTRACT

Cervical cancer is the second leading cause of death for women in Indonesia. One method of early detection is the Visual Inspection with Acetic Acid (VIA) test. This study aimed to identify factors influencing the willingness of women of childbearing age to undergo VIA testing in the working area of Curug Health Center, Tangerang Regency. The study population consisted of 34,290 women of childbearing age. An analytical cross-sectional design was employed, and 395 participants were selected using an accidental sampling technique. Data were analyzed using univariate analysis, bivariate analysis with the chi-square test, and multivariate analysis using multiple logistic regression. The Results of education ($p = 0.038$), knowledge ($p = 0.026$), attitudes ($p = 0.007$), and husbands' support ($p < 0.001$) were significantly associated with the willingness to undergo VIA testing. Husbands' support emerged as the most dominant factor influencing willingness to participate in VIA screening. The conclusion is that education level, knowledge, attitudes, and husbands' support were identified as key factors influencing women's willingness to undergo VIA testing. Recommendations are that Efforts to improve awareness and understanding of early cervical cancer detection among women of childbearing age in the Curug Health Center working area are essential to increase participation in VIA screening.

Received 19 February 2025;

Received in revised form 14 June 2025;

Accepted 16 December 2025

<https://doi.org/10.19166/nc.v13i2.9495>

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INTRODUCTION

Cervical cancer is a condition characterized by uncontrolled cell growth in the cervical region, primarily caused by persistent infection with the Human Papillomavirus (HPV). Common signs and symptoms include postcoital bleeding, foul-smelling vaginal

discharge, persistent vaginal bleeding, and pelvic or genital pain (Novalia, 2023). Several risk factors associated with cervical cancer include early onset of sexual activity (particularly before the age of 16), multiple sexual partners, long-term contraceptive use, immunocompromised conditions such as HIV infection, and smoking (Oktafiah et al., 2023).

According to Irwan (2016), the progression of cervical cancer is often asymptomatic and slow, typically taking 10–20 years to develop, which results in late-stage diagnosis and higher mortality rates. Early detection is therefore a crucial preventive strategy to reduce cervical cancer morbidity and mortality. Several screening methods are available, including colposcopy, cervical biopsy, Pap smear testing, and Visual Inspection with Acetic Acid (VIA). In Indonesia, VIA screening has been adopted as a national policy to enhance early detection and reduce cervical cancer incidence. According to the World Health Organization (WHO, 2022), there were approximately 604,000 new cases of cervical cancer worldwide in 2020, with 342,000 related deaths.

Data from The Global Cancer Observatory (GLOBOCAN, 2020) indicate that cervical cancer ranks second among the most common cancers in Indonesia, with 36,633 cases, accounting for approximately 9.2% of all cancer cases. In Tangerang Regency, 334 cases of cervical cancer were reported in 2022, based on data from the local Health Office (Dinas Kesehatan Kabupaten Tangerang, 2022). Despite the increasing incidence of cervical cancer, participation in early detection programs among women of childbearing age remains low. Previous studies have consistently reported that education level, knowledge, attitudes, and husbands' support are key factors influencing women's willingness to undergo VIA screening (Sagita & Rohmawati, 2020; Musallina, 2020; Mardianti, 2019; Izah et al., 2022; Nasution, 2021).

According to the Ministry of Health of the Republic of Indonesia (Kemenkes RI, 2022), 89% of districts and cities in Indonesia have implemented cervical cancer early detection programs. In Tangerang Regency, VIA and Clinical Breast Examination (SADANIS) screenings were conducted among 18,478 women of childbearing age between 2019 and 2021 (Dinas Kesehatan Kabupaten Tangerang, 2020). The highest screening coverage was reported at Bojong Kamal Community Health Center (13.6%), whereas coverage at Curug Community Health Center was only 5.1%, far below the national target. Data from Curug Community Health Center indicate that 34,290 women aged 15–49 years reside within its service area, spread across four villages and two sub-districts. Between January and March 2023, only 130 women underwent VIA screening, all with negative results.

An initial survey conducted through interviews with 20 women of childbearing age at Curug Community Health Center revealed limited awareness of cervical cancer and VIA screening. Only six respondents were aware of cervical cancer; among them, four were familiar with the VIA test, while two were not. Only one respondent had ever undergone a VIA test, with a negative result.

These findings indicate that the majority of women of childbearing age in the Curug Community Health Center working area have not participated in early cervical cancer detection through VIA screening. Contributing factors include low educational attainment,

limited knowledge, indifferent attitudes toward screening, and lack of husbands' support. Based on these observed conditions, this study aims to examine the factors influencing the willingness of women of childbearing age to undergo VIA testing in the working area of Curug Health Center, Tangerang Regency.

METHOD

Prior to data collection, ethical approval was obtained from the Ethics Committee of the Faculty of Nursing, Pelita Harapan University (No. 021/KEPFON/I/2024). Following ethical clearance, a research permit was issued by the Faculty of Nursing and subsequently approved by the Tangerang Regency Health Office, Banten Province. The study was then conducted at Curug Community Health Center, Tangerang Regency.

This study employed a quantitative analytical survey with a cross-sectional design. The study population consisted of women of childbearing age (15–49 years) residing in the working area of Curug Community Health Center, Tangerang Regency. A total of 395 participants were recruited using an accidental sampling technique. Inclusion criteria were married women living with their husbands who agreed to participate in the study, while women diagnosed with cervical cancer were excluded.

This study employed a quantitative analytical survey with a cross-sectional design. The study population consisted of women of childbearing age (15–49 years) residing in the working area of Curug Community Health Center, Tangerang Regency. A total of 395 participants were recruited using an accidental sampling technique. Inclusion criteria were married women living with their husbands who agreed to participate in the study, while women diagnosed with cervical cancer were excluded.

Data were collected using a structured, closed-ended questionnaire adapted from previous research conducted by Lestari (2016), entitled *"Factors Influencing the Willingness of Women of Childbearing Age to Undergo Early Detection of Cervical Cancer at Manahan Community Health Center, Surakarta."* The questionnaire had previously undergone validity and reliability testing. The knowledge variable consisted of 14 items, with a Cronbach's alpha of 0.864, indicating good reliability; all item correlation coefficients exceeded the r-table value of 0.468. The attitude variable included 10 items, with a Cronbach's alpha of 0.892, while the husbands' support variable consisted of seven items, with a Cronbach's alpha of 0.847. All items demonstrated acceptable validity, with correlation coefficients exceeding the r-table value of 0.468.

Data collection was conducted between March and April 2024 in the working area of Curug Community Health Center. Data were collected in three stages: research preparation, field data collection, and data completion. During the field stage, participants were recruited through door-to-door visits accompanied by community

health cadres, as well as during activities at Integrated Service Posts (Posyandu) and the Community Health Center. Participants were informed of the study objectives, and assistance was provided during questionnaire completion when needed.

Data analysis was performed using univariate analysis to describe frequency distributions, bivariate analysis using the Chi-square test, and multivariate analysis using multiple logistic regression. Throughout the research process, ethical principles were upheld, including respect for persons, beneficence, non-maleficence, and justice. This study was conducted in accordance with ethical standards and approved by the Ethics Committee of the Faculty of Nursing, Pelita Harapan University (No. 021/KEPFON/I/2024).

RESULT

Respondent Characteristics

This study described several respondent characteristics, including age, employment status, number of children, and contraceptive use.

Table 1. Frequency Distribution of Characteristics (n=395)

Characteristics	Frequency (n)	Percentage (%)
Age		
15-24 years	25	63
25-34 years	167	42.3
35-44 years	143	36.2
45-49 years	60	15.2
Working		
Not employed	347	87.8
Employed	48	12.2
Number of Children		
Don't have children yet	15	3.8
1 Child	91	23
2 Children	168	42.6
3 Children	91	23
More than 3 Children	30	7.6
Contraceptive Use		
Not using birth control	149	37.7
Using birth control	246	62.3

Based on Table 1, a total of 395 women of childbearing age participated in the study. The majority of respondents were aged 25–34 years (42.3%). Regarding employment status, most respondents were unemployed (87.8%). In terms of parity, most respondents had two children (42.6%). With respect to contraceptive use, 246 respondents (62.3%) reported using contraception, while 149 respondents (37.7%) did not use any contraceptive method.

Table 2. Frequency Distribution of Willingness to IVA Test (n=395)

Category	Frequency (n)	Percentage (%)
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Table 7. The Bivariate Analysis Examining Factors Associated with Willingness to Undergo IVA Testing

Factors	Willingness for IVA test				Total	Percentage (%)	<i>p-value</i>
	Willing		Not Willing				
	n	%	n	%			

Not Willingness	183	46.3
Willingness	212	53.7
Total	395	100

Of the 395 respondents, 212 women (53.7%) were willing to undergo the IVA test, while 183 women (46.3%) were not willing.

Table 3. Education Frequency Distribution (n=395)

Category	Frequency (n)	Percentage (%)
Low	174	44.1
High	221	55.9
Total	395	100

Table 3 presents the distribution of respondents based on educational level. Of the 395 respondents, 221 women (55.9%) had a higher educational level (senior high school/vocational school to university), while 174 women (44.1%) had a lower educational level.

Table 4. Frequency Distribution of Knowledge (n=395)

Category	Frequency (n)	Percentage (%)
Good	88	22.3
Enough	156	39.5
Not Enough	151	38.2
Total	395	100

Table 4 presents the distribution of respondents' knowledge regarding cervical cancer and IVA testing. Most respondents demonstrated sufficient knowledge (39.5%), followed by poor knowledge (38.2%), while 22.3% had good knowledge.

Table 5. Attitude Frequency Distribution (n=395)

Category	Frequency (n)	Percentage (%)
Negative	190	48.1
Positive	205	51.9
Total	395	100

Table 5 shows respondents' attitudes toward IVA testing. Of the 395 respondents, 205 women (51.9%) had a positive attitude, while 190 women (48.1%) had a negative attitude.

Table 6. Frequency Distribution of Husband's Support (n=395)

Category	Frequency (n)	Percentage (%)
Negative	161	40.8
Positive	234	59.2
Total	395	100

Based on the table above, most respondents reported positive husband support (59.2%), while 40.8% reported negative support.

Education	78	36.7	96	52.45	174	44.05	0.002
Low	134	63.3	87	47.55	221	55.95	
Higher							
Knowledge	29	33.0	59	27.86	88	22.28	0.000
Good	62	33.8	94	44.33	156	39.49	
Enough	92	50.2	59	27.83	151	38.23	
Poor							
Attitude	74	34.9	116	63.38	190	48.1	0.000
Negative	138	65.1	67	36.62	205	51.9	
Positive							
Husband's Support	54	25.47	107	58.46	161	40.76	0.000
Negative	158	74.53	76	41.53	234	59.24	
Positive							

Among respondents who were willing to undergo the IVA test, 134 women (63.3%) had higher education. Chi-square analysis demonstrated a statistically significant relationship between educational level and willingness to undergo IVA testing ($p = 0.002$). Regarding knowledge, 92 respondents (50.2%) with poor knowledge were still willing to undergo IVA testing. The chi-square test indicated a significant association between knowledge level and willingness to undergo IVA testing ($p < 0.001$).

With respect to attitude, 138 respondents (65.1%) with a positive attitude were willing to undergo IVA testing, and attitude was significantly associated with willingness to undergo IVA testing ($p < 0.001$). Similarly, 158 respondents (74.5%) who reported positive husband's support were willing to undergo IVA testing. The chi-square analysis showed a significant association between husband's support and willingness to undergo IVA testing ($p < 0.001$).

Table 8. Multivariate Analysis of Factors Affecting Women of Childbearing Age's Willingness to Undertake IVA Test

Factors	p-value	Exp (B)	95% CI for Exp (B)	
			Lower	Upper
Education	0.038	1.608	1.027	2.519
Knowledge	0.026	0.706	0.520	0.960
Attitude	0.007	1.896	1.190	3.019
Husband's support	0.000	3.397	2.158	5.348
Constant	0.368	0.665		

Based on Table 8, all four independent variables, education, knowledge, attitude, and husband's support, showed p-values below 0.05, indicating a statistically significant association with willingness to undergo IVA testing. This finding suggests that education level, knowledge, attitude, and husband's support influence women's willingness to undertake the IVA test in the Curug Community Health Center working area. For the education variable, women with higher education were more likely to undertake the IVA test compared to women with lower education ($\text{Exp(B)} = 1.608$). For the knowledge variable, women with better knowledge had a higher likelihood of being willing to undertake the IVA test compared to women with sufficient or poor knowledge ($\text{Exp(B)} = 0.706$). Furthermore, women with a positive attitude tended to be more willing to undertake the IVA test compared to women with a negative attitude ($\text{Exp(B)} = 1.896$).

Husband's support was identified as the strongest influencing factor, showing that women with positive husband's support were more likely to undertake the IVA test compared to women who received negative husband's support ($\text{Exp(B)} = 3.397$).

DISCUSSION

Influence of Education on Willingness to IVA Test

Based on the results of the study, a significant association was found between education level and women of childbearing age's willingness to undergo the IVA test, with a p-value of 0.038 ($p < 0.05$). This indicates that education level influences women's willingness to participate in IVA testing. This finding is consistent with the studies by Handayani (2018) and other related research, which also reported a significant relationship between education and willingness to undergo IVA screening. Higher educational attainment facilitates access to and understanding of information related to the importance of early cervical cancer detection, whereas lower education levels may limit comprehension and reduce willingness to undergo VIA testing. This result is also in line with the study by Siregar et al. (2021), which demonstrated a significant relationship between education and VIA test behavior, with a p-value of 0.003 ($p < 0.05$). These findings support the role of education in shaping health-related decision-making among women of childbearing age.

Education is defined as a process of individual development that shapes attitudes and behaviors within society (Rafikasariy, 2019). Musallina (2020) classified education into lower education (elementary to junior high school) and higher education (senior high school to university). The higher a person's level of education, the easier it is to receive and process health-related information, which in turn increases knowledge. Conversely, lower educational levels may hinder access to information regarding Visual Acetic Acid Inspection (VIA), thereby reducing the likelihood of undergoing the test. Education, therefore, plays a crucial role in shaping knowledge and awareness, including understanding the importance of early cervical cancer detection (Manihuruk Arina et al., 2021).

Influence of Knowledge on Willingness to IVA Test.

Knowledge in this context refers to women of childbearing age's understanding of cervical cancer and its early detection. Adequate knowledge about cervical cancer can increase willingness to undergo the VIA test, as awareness of personal health risks encourages preventive behavior. Conversely, limited knowledge may reduce willingness to participate in early detection. Information related to cervical cancer can be obtained from various sources, including mass media, informational brochures, interactions with family members and peers, and communication with health workers and community health cadres.

Based on the study findings, a significant relationship was identified between knowledge level and willingness to undergo the IVA test, with a p-value of 0.026 ($p < 0.05$). This indicates that women's level of knowledge influences their willingness to undergo IVA testing in the Curug Health Center working area. This result is consistent with the findings of Lestari (2016) and other studies demonstrating that knowledge significantly influences women's willingness to participate in IVA screening. Although knowledge is an important determinant, it alone may not be sufficient to bring about behavioral change, as other psychosocial factors may also play a role.

Influence of Attitude on Willingness to IVA Test

The results of this study indicate a significant association between attitude and women of childbearing age's willingness to undergo the IVA test, with a p-value of 0.007 ($p < 0.05$). This finding suggests that attitude is an influential factor in determining women's willingness to participate in IVA screening in the Curug Health Center working area.

This finding is supported by studies conducted by Risliana et al. (2024), which reported a significant relationship between attitudes and early cervical cancer detection behavior through VIA examination. Women with negative attitudes were more likely to avoid VIA screening compared to those with positive attitudes. Similarly, Audina et al. (2023) reported a significant association between attitudes and women's willingness to undergo VIA screening (p-value = 0.019), indicating that more positive attitudes are associated with greater willingness to participate in screening.

Consistent findings were also reported by Putinah et al. (2023), who identified a significant relationship between attitude and women's interest in undergoing VIA examination (p-value = 0.004). Likewise, Ariana and Nursanti (2018) concluded that attitude significantly influenced women's participation in VIA examinations at the Ancol Village Health Center.

Attitude is defined as a closed response or internal reaction toward an object or situation (Lestari, 2016). Risliana et al. (2024) noted that positive attitudes toward health do not always translate into action, as they may be influenced by personal experiences or social perceptions. Conversely, negative attitudes toward the VIA test are

often associated with a limited understanding of the procedure, including its purpose and benefits.

The Influence of Husband's Support on Willingness to IVA Test

The results of this study demonstrate a significant association between husband's support and women of childbearing age's willingness to undergo the IVA test, with a p-value of 0.000 ($p < 0.05$). This indicates that husbands' support plays an important role in influencing women's willingness to participate in IVA screening in the Curug Health Center working area. Based on the Exp(B) or odds ratio (OR) value of 3.397, husband's support emerged as the most dominant factor influencing women's willingness to undergo the IVA test compared to other variables examined.

These findings are consistent with studies conducted by Rislina et al. (2024) and others, which reported a strong influence of husband's support on women's participation in IVA screening. Compared to education, knowledge, and attitude, husband's support was identified as the most influential factor in encouraging early detection of cervical cancer among women of childbearing age.

Husbands' support represents a critical form of internal social support that contributes to improving women's reproductive health. As the closest partner, the husband can encourage healthy behaviors and support health-related decision-making (Lestari, 2016). Sundari and Setiawati (2018) also reported that husbands' support significantly increases the likelihood of women undergoing early cervical cancer detection. Support from close family members can strengthen motivation and readiness to act, highlighting the importance of involving husbands in reproductive health education. Therefore, information regarding cervical cancer and the VIA test should target not only women but also their husbands, to promote shared responsibility for reproductive health (Sundari & Setiawati, 2018).

CONCLUSION

Most respondents in the Curug Community Health Center working area were aged 25–34 years, had a higher level of education, and were more willing to undergo early detection of cervical cancer through the IVA test. The majority of women of childbearing age (WUS) with positive attitudes were willing to participate in IVA testing. In addition, most WUS who received positive support from their husbands were willing to undergo early detection using the IVA test.

The results of the analysis indicate that education level, knowledge, attitudes, and husbands' support significantly influence the willingness of women of childbearing age to undergo IVA testing in the Curug Community Health Center working area. Husbands' support was identified as the most dominant factor influencing WUS's willingness to undertake the IVA test.

Health workers are encouraged to involve husbands in health

promotion activities and provide health education. It is hoped that future researchers can further contribute to increasing knowledge regarding the factors influencing women of childbearing age's willingness to undergo early detection of cervical cancer through the IVA test.

ACKNOWLEDGEMENTS

The author would like to express sincere gratitude to all parties who contributed to the completion of this research, especially the Curug Community Health Center, Tangerang Regency.

REFERENCES

- Ariana, A., & Nursanti, I. (2018). Faktor-Faktor Yang Berhubungan Dengan Keikutsertaan Wanita Usia Subur Dalam Pemeriksaan IVA Di Puskesmas Kelurahan Ancol Tahun 2018. <https://perpus.fikunj.ac.id/index.php?p=fstream-pdf&fid=10340&bid=4471>
- Audina, M., Suratmi, T., & Samingan. (2023). Pemeriksaan IVA (Inspeksi Visual Asam Asetat) Pada Wanita Usia Subur di Wilayah Kerja Puskesmas Simpang Katis Kabupaten Bangka Tengah Tahun 2021. *Jurnal Untuk Masyarakat Sehat (JUKMAS)*, 7(1), 27–44. <http://ejournal.urindo.ac.id/index.php/jukmas>
- Dinas Kesehatan Kabupaten. Tangerang. (2020). Profil Kesehatan Kab. Tangerang 2020. *Dinas Kesehatan Kab. Tangerang*. Retrieved from: <https://s.id/profilkesehatankabupatentangerang2020>
- Handayani, L. T. (2018). Kajian Etik Penelitian Dalam Bidang Kesehatan Dengan Melibatkan Manusia Sebagai Subyek. *The Indonesian Journal of Health Science*, 10(1), 2087–2053. <https://doi.org/https://doi.org/10.32528/the.v10i1.1454>
- Irwan. (2016). *Epidemiologi Penyakit Tidak Menular*. Yogyakarta: Deepublish.
- Izah, Y. N., Octaviana, D., & Nurlaela, S. (2022). Faktor-Faktor yang Berpengaruh terhadap Deteksi Dini Kanker Leher Rahim Metode IVA di Kabupaten Banyumas (Studi di Puskesmas Cilogok I). *Jurnal Epidemiologi Kesehatan Komunitas*, 7(2), 553–561. <https://doi.org/https://doi.org/10.14710/jekk.v7i2.13768>
- Kemendes RI. (2022). *Laporan Kinerja 2022*. <http://p2p.kemkes.go.id/wp-content/uploads/2023/03/LAKIP-Setditjen-P2P-Tahun-2022.pdf>
- Lestari, I. S., Yuli Kusumawati, S. K. M., & Werdani, K. E. (2016). *Faktor-faktor yang mempengaruhi kesediaan wus dalam melakukan deteksi dini kanker serviks di puskesmas manahan surakarta* (Doctoral dissertation, Universitas Muhammadiyah Surakarta).
- Manihuruk Arina, S., Asriwati, & Tarigan Sirebo, J. (2021). Analisis Faktor Yang Mempengaruhi Perilaku Ibu Dalam Pelaksanaan Tes IVA Di Wilayah Kerja Puskesmas Hutarakyat Kabupaten Dairi Tahun 2019. *Jurnal Kesehatan Masyarakat*, 8(2), 238–260.

<https://doi.org/https://doi.org/10.31596/jkm.v8i2.686>

- Mardianti, M. (2019). Faktor-Faktor Yang Berhubungan Dengan Perilaku Wanita Usia Dalam Melakukan Deteksi Dini Kanker Serviks Di Desa Jatimulya Wilayah Kerja Puskesmas Pedes Kabupaten Karawang. *Jurnal Kebidanan*, 8(1), 8-17.
- Musallina, A. (2020). Faktor-Faktor Yang Mempengaruhi Perilaku Deteksi Dini Kanker Serviks Pada WUS Di Wilayah Kerja Puskesmas Pandak II Tahun 2020. *Skripsi Prodi Sarjana Terapan Kebidanan Politeknik Kesehatan Kementerian Kesehatan Yogyakarta*.
<http://eprints.poltekkesjogja.ac.id/3427/1/Awal.pdf>
- Putinah, Afriyani, R., Fatriansari, A., Apriani, & Desvitasari, H. (2023). Faktor Yang Berhubungan Dengan Minat Wanita Usia Subur Dalam Pemeriksaan Inspeksi Visual Asam Asetat. *Jurnal Kesehatan Tambusai*, 4(4), 5448–5455.
<https://doi.org/https://doi.org/10.31004/jkt.v4i4.20638>
- Rafikasariy, S. (2019). Faktor Yang Berhubungan Dengan Perilaku Deteksi Dini Kanker Serviks Dengan Metode Inspeksi Visual Asam Asetat (IVA) (Studi Kasus Pelaksanaan Deteksi Dini Kanker Serviks pada Pasangan. *Skripsi Program Studi Kesehatan Masyarakat Sekolah Tinggi Ilmu Kesehatan Bhakti Husada Mulia Madiun*. <http://repository.stikes-bhm.ac.id/id/eprint/621>
- Rislana, Lilia, D., & Heryanto, E. (2024). Faktor-faktor yang Berhubungan dengan Perilaku Wanita Usia Subur (WUS) dalam Deteksi Dini Kanker Serviks dengan Metode Iva Test. *Jurnal Penelitian Perawat Profesional*, 6(2), 527–536.
<https://doi.org/https://doi.org/10.37287/jppp.v6i2.2162>
- Siregar, M., Panggabean, H. W., & Simbolon, J. L. (2021). Faktor-Faktor Yang Mempengaruhi Perilaku Pemeriksaan IVA Test Pada Wanita Usia Subur Di Desa Simatupang Kecamatan Muara Tahun 2019. *Jurnal Kesehatan Masyarakat Dan Lingkungan Hidup*, 6(1), 32–48.
<https://doi.org/10.51544/jkmlh.v6i1.1918>

Original Research

Prevalence of Post-Concussion and Post-Traumatic Stress Symptoms One Month after Mild TBI: A Descriptive Observational Study

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ARTICLE INFO

Keywords:

Demographic

Mild traumatic brain
injury

Prevalence

post-concussion

post-traumatic
stress

ABSTRACT

Mild traumatic brain injury (mTBI) frequently leads to post-concussion symptoms (PCS) and post-traumatic stress disorder (PTSD), both of which may hinder recovery if not identified early; however, research on these conditions remains limited. This study aimed to determine the prevalence of PCS and PTSD one month after mTBI and to describe demographic and clinical characteristics, including age, gender, education, employment, injury mechanism, and comorbidities. This study employed a descriptive observational design using descriptive statistics. A purposive sampling technique recruited 65 patients based on predefined inclusion and exclusion criteria. PCS was measured using the Rivermead Post-Concussion Symptoms Questionnaire, and PTSD was assessed using the PTSD Checklist for DSM-5. Data were collected from August to November 2024 at Prof. Dr. R.D. Kandou Hospital, Manado, North Sulawesi. Descriptive statistics were applied to analyze PCS, PTSD, and demographic characteristics. The results reported that of 65 patients with mild traumatic brain injury (mean age 30.69 years, 67.7% male), most had >9 years of education (60.0%) and were unemployed (61.5%). Motor vehicle crashes were the leading cause of injury (46.2%). One month post-injury, 33.8% experienced post-concussion symptoms, and 21.5% reported symptoms of post-traumatic stress disorder. Conclusion: PCS and PTSD are common in the early phase after mTBI, particularly among young men and those injured in motor vehicle crashes. These findings highlight the importance of early symptom recognition, patient education, and psychological support, as well as strengthened road safety measures to reduce the impact of mTBI.

Received 29 September 2025;

Received in revised form 2 December 2025;

Accepted 16 December 2025

<https://doi.org/10.19166/nc.v13i2.10359>

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INTRODUCTION

Mild traumatic brain injury, widely recognized as a concussion, is the most frequently occurring brain injury, accounting for 70–90% of traumatic brain injuries worldwide (Dewan et al., 2019). Although many patients recover within days to weeks, a substantial proportion report symptoms that persist beyond the acute phase, commonly termed post-concussion symptoms. These symptoms include headache, dizziness, sleep disturbance, fatigue, poor concentration, and irritability (McInnes et al., 2017). Evidence indicates that 20–40% of individuals report persistent symptoms at one month post-injury (Thomas et al., 2017; Voormolen, Haagsma, et al., 2019). Within the Indonesian context, the burden of mild head injury remains substantial, with the National Basic Health Survey reporting a prevalence of 11.9%, predominantly resulting from motorcycle-related traffic accidents (Ministry of Health, 2018).

Psychological sequelae may also emerge after mTBI. Post-traumatic stress disorder has been observed in a notable subset of patients following injuries that are distressing or perceived as life-threatening. Early PTSD symptoms, such as hyperarousal, intrusive thoughts, and avoidance, have been reported in 10–25% of patients at one month post-injury (Stein et al., 2019). The co-occurrence of PCS and PTSD is clinically important because the syndromes share overlapping features and may contribute to prolonged recovery and increased healthcare needs (van der Vlegel, Polinder, Mikolic, et al., 2021).

Participant characteristics are associated with symptom persistence. Young adults, particularly males, are more likely to sustain mTBI; however, females frequently report more severe and persistent PCS. Lower educational attainment, pre-injury psychiatric history, and substance use have also been linked to delayed recovery (Hiploylee et al., 2017; Iverson et al., 2017). These factors underscore the value of describing demographic and clinical profiles alongside symptom outcomes.

Despite growing literature on post-injury trajectories, evidence at the one-month time point remains inconsistent with respect to concurrent assessment of PCS and PTSD. Previous studies have varied in their tools and definitions, contributing to inconsistent prevalence estimates. In Indonesia, evidence at one month post-injury remains limited, underscoring the need for descriptive prevalence data. This gap is important because the one-month mark is a clinically meaningful checkpoint when persistent symptoms begin to influence work, family roles, and service use, and when timely intervention may prevent longer-term disability (Patricios et al., 2023; van der Vlegel, Polinder, Toet, et al., 2021).

This study applies a brief conceptual framework in which key demographic and clinical variables are used to contextualize early post-injury outcomes and strengthen the interpretation of one-month PCS and PTSD prevalence. Guided by this framework, the study aims to determine the one-month prevalence of PCS and

PTSD following mTBI and to describe the demographic and clinical characteristics of individuals experiencing these conditions.

METHOD

The study employed a descriptive observational design using purposive sampling to include patients who met specific clinical criteria relevant to the study objectives. Data were collected from participants one month after the injury and were obtained consecutively from eligible patients attending the Surgical Clinic and Neurosurgery Clinic at Prof. Dr. R.D. Kandou Hospital, Manado, North Sulawesi, during August–November 2024. Inclusion criteria were adults (≥ 18 years) diagnosed with mTBI and able to communicate in Indonesian, while patients with unrelated major medical conditions or hearing impairment were excluded. All participants had previously received standard care in the Emergency Unit or inpatient unit, in accordance with hospital protocols. In total, 65 individuals who met the mTBI criteria were enrolled in the study.

The instrument used in this study included: 1) Demographic and clinical characteristics questionnaire, which collected data on age, gender, education level, employment status, mechanism of injury, and comorbidities. 2) The Rivermead Post-Concussions Symptoms Questionnaire (RPQ). The RPQ was applied to evaluate both the presence and intensity of post-concussion symptoms at one month post-injury. The tool encompasses 16 frequently reported symptoms, such as headache, dizziness, nausea or vomiting, sensitivity to noise, sleep problems, fatigue, irritability, low mood or tearfulness, frustration or impatience, forgetfulness, reduced concentration, slowed thinking, blurred or double vision, light sensitivity, and restlessness. The RPQ total score is the sum of all 16 items, excluding ratings of 1 (King et al., 1995). Scores range from 0 to 64, with higher scores indicating more severe symptomatology. In this study, the classification was based on previous research, in which patients with mTBI were considered to have post-concussion symptoms if they reported three or more symptoms with a score of 2 (mild) or higher (Voormolen, Polinder, et al., 2019). The Indonesian version of the RPQ has demonstrated good reliability, with a Cronbach's alpha of 0.90 (Fikriyanti et al., 2014). 3) *The Post-Traumatic Stress Disorder Checklist (civilian version) (PCL-5)*. The PTSD Checklist for DSM-5 (PCL-5) is a widely used instrument for assessing post-traumatic stress disorder symptoms. It consists of 20 items corresponding to the 20 PTSD criteria outlined in the DSM-5. Each item is rated on a five-point Likert scale ranging from 0 ("not at all") to 4 ("extremely"). A cutoff score of 33 or higher is typically used to indicate probable PTSD (Stein et al., 2019; van der Vlegel et al., 2021). Among individuals with mTBI, the PCL-5 demonstrated excellent reliability, with an internal consistency (Cronbach's alpha) of 0.91 (Mulyadi et al., 2023).

Ethical approval for this study was granted by the Research Ethics Committee of RSUP Prof. Dr. R. D. Kandou Manado (No: DP.04.03. D.XV/356/2024). The rights of all participants were respected, data confidentiality was ensured, and written informed

consent was obtained prior to enrollment. Data were analyzed using IBM SPSS Statistics version 24. Descriptive statistics were utilized to address the study objectives. Prior to analysis, a data-cleaning procedure was conducted to exclude incomplete responses; consequently, no missing data were present in the final analytic dataset. The prevalence of PCS and PTSD one month after mTBI was reported as frequencies and percentages. Demographic and clinical characteristics were summarized using frequencies and percentages for categorical variables (gender, education, employment status, comorbidity, and mechanism of injury) and means with standard deviations for continuous variables (age).

RESULT

This study included 65 patients with mTBI who were discharged from the hospital and attended follow-up visits at the Surgical or Neurosurgery Clinics within one month.

Table 1. Descriptive statistics of participants (n=65)

	Mean ± SD	Frequency (%)	Range
Demographic characteristics			
Age	30.69 ± 15.11		18-68
Gender			
Male		44 (67.7%)	
Female		21 (32.3%)	
Education			
≤ 9 Years		26 (40.00%)	
> 9 Years		39 (60.00%)	
Employment status			
Not employed		40 (61.50%)	
Employed		25 (38.50%)	
Mechanism of Injury			
Motor vehicle crashes (MVCs)		30 (46.20%)	
Fall		9 (13.80%)	
Sport injury		14 (21.50%)	
Occupational accident		12 (18.50%)	
Comorbidity			
Yes		7 (10.80%)	
No		58 (89.20%)	

Note. SD, Standard deviation.

Table 1 presents the participants’ characteristics. The mean age was 30.69 years (SD = 15.11), ranging from 18 to 68 years, and approximately two-thirds were male (67.7%). The majority had more than nine years of education (60.0%), and 61.5% were unemployed at the time of assessment. Motor vehicle crashes were the most common mechanism of injury (46.2%), followed by sports-related injuries (21.5%), occupational accidents (18.5%), and falls (13.8%). Overall, the comorbidity burden was low, with only 10.8% reporting any comorbid conditions one month post-injury.

Table 2. Prevalence of PCS and PTSD symptoms in mTBI (n=65)

mTBI		Frequency (%)	95 % CI
Post-Concussion Symptoms			
mTBI with PCS		22 (33.80%)	22.3 – 45.3
mTBI without PCS		43 (66.20%)	54.7 – 77.7
Total mTBI		65 (100%)	
Post-Traumatic Stress Disorder			
mTBI with symptoms	PTSD	14 (21.50)	11.5 – 31.5
mTBI without symptoms	PTSD	51 (78.50)	68.5 – 88.5
Total mTBI		65 (100%)	

Table 2 presents the prevalence of persistent PCS and PTSD among individuals with mild traumatic brain injury. Of the 65 patients, 22 (33.8%; 95% CI: 22.3–45.3) experienced PCS, while 43 (66.2%; 95% CI: 54.7–77.7) did not. PTSD symptoms were reported by 14 patients (21.5%; 95% CI: 11.5–31.5), with the remaining 51 patients (78.5%; 95% CI: 68.5–88.5) not reporting PTSD symptoms. Although most patients did not report ongoing symptoms, a notable minority continued to experience physical, cognitive, or psychological effects. PCS was more prevalent than PTSD, illustrating a differential pattern of symptom persistence within the cohort and highlighting variability in recovery trajectories following mTBI.

DISCUSSION

This study examined the one-month prevalence of PCS and PTSD following mTBI, and described associated demographic and clinical characteristics. At one month post-injury, 33.8% of participants reported PCS and 21.5% screened positive for PTSD symptoms. These findings underscore the dual burden of physical and psychological sequelae in the early recovery phase, a critical period when symptoms begin to affect daily functioning, role resumption, and care needs.

The prevalence of PCS in this study was 33.8%, consistent with earlier findings indicating that 35.4% of individuals with mTBI developed PCS symptoms (Suwaryo et al., 2024). Fikriyanti et al. identified dizziness, headache, fatigue, forgetfulness, and slowed thinking as the most frequent complaints in Indonesian patients (Fikriyanti et al., 2014). In a prospective study from the Netherlands, Abdulle and van der Naalt similarly noted that dizziness, fatigue, and headache were the most prevalent symptoms within the first month after injury, with many patients reporting difficulties in concentration and daily task performance (Eman Abdulle & van der Naalt, 2020). Other international studies have reported comparable prevalence of PCS within the first three months, typically ranging between 30% and 40% (McIntosh et al., 2025; van der Naalt et al., 2017). Collectively, these results emphasize that PCS is not only common but also heterogeneous, with symptom clusters varying between populations. This reinforces the heterogeneous nature of PCS and the need for early recognition and patient education regarding

symptom management.

PTSD symptoms were observed in 21.5% of participants, consistent with civilian mTBI studies reporting prevalence between 15% and 30% (Stein et al., 2019; Van Praag et al., 2019). PTSD often co-occurs with PCS and is associated with prolonged somatic complaints, reduced functional outcomes, and slower return to work (Polinder et al., 2018). Routine psychological screening and early intervention using validated tools such as the PCL-5 are recommended to improve recovery trajectories.

The demographic and injury characteristics observed in our study are also consistent with global TBI epidemiology. The sample was predominantly young (mean age 30.69 years) and male (67.7%), with motor vehicle crashes representing the leading mechanism of injury (46.2%). This aligns with global data showing that road traffic injuries disproportionately affect young males and remain the leading cause of death among individuals aged 5-29 years (World Health Organization, 2023). This trend aligns with the male predominance and relatively young mean age found in our sample, similar to studies reporting male proportions of 60-80% and motor vehicle crashes as the leading cause of TBI, particularly in low- and middle-income countries undergoing rapid motorization (Gu et al., 2025). Although most participants were young men, the study did not analyze associations between age, sex, and PCS. Therefore, these descriptive characteristics should be interpreted cautiously.

A high proportion of participants were unemployed (61.5%), partly due to the large number of students, reflecting the link between TBI and socioeconomic vulnerability (Cuthbert et al., 2015; van der Vlegel, Polinder, Toet, et al., 2021). Although assessed only at one month post-injury, these findings highlight the importance of early vocational screening and referral. Overall, the combination of physical symptoms, psychological distress, and socioeconomic challenges underscores the need for holistic, patient-centered care. Early identification of PCS and PTSD, along with supportive interventions, can help patients recover more effectively and improve long-term outcomes.

This study has several limitations. The sample was relatively small and drawn from a single site. In addition to clinic-based participants, some data were obtained through direct follow-up of patients from the Emergency Department, which may have introduced differences in sample characteristics. Data were collected only at one month post-injury, so the long-term course of symptoms could not be assessed. Symptom reporting was also based on self-report, which may be influenced by recall bias. To minimize these issues, strict inclusion and exclusion criteria were applied, standardized instruments were used to enhance comparability, and validated questionnaires with clear instructions were provided to reduce recall bias. Future research should follow patients for longer periods and in more varied settings to better understand how PCS and PTSD change over time. Studies are also needed to test supportive approaches, such as nurse-led education, psychological care, and

vocational guidance, that can help patients recover not only physically but also emotionally, enabling a confident return to daily life and social roles.

CONCLUSION

This study fulfilled its objective by describing the prevalence of PCS and PTSD within one month following mTBI, showing that both conditions were relatively common in the early recovery phase. The demographic and clinical characteristics align with international evidence, with young men and motor vehicle crashes representing the predominant population and injury mechanism, while also reflecting local challenges such as high unemployment.

As a descriptive study, these findings highlight the need for routine symptom screening and patient education during early follow-up. Future analytic studies are warranted to examine factors associated with PCS and PTSD.

ACKNOWLEDGEMENTS

The researchers would like to thank the Institute for Research and Community Service (Lembaga Penelitian dan Pengabdian Masyarakat, LPPM), Universitas Sam Ratulangi, for funding this study through the Riset Dasar Unggulan Klaster 1 scheme (Grant No. 127/UN12.27/LT/2024). The researchers also extend sincere gratitude to all respondents who participated in this study.

REFERENCES

- Cuthbert, J. P., Harrison-Felix, C., Corrigan, J. D., Bell, J. M., Haarbauer-Krupa, J. K., & Miller, A. C. (2015). Unemployment in the United States after traumatic brain injury for working-age individuals: prevalence and associated factors 2 years postinjury. *J Head Trauma Rehabil*, 30(3), 160-174. <https://doi.org/10.1097/htr.0000000000000090>
- Dewan, M. C., Rattani, A., Gupta, S., Baticulon, R. E., Hung, Y. C., Punchak, M., Agrawal, A., Adeleye, A. O., Shrimel, M. G., Rubiano, A. M., Rosenfeld, J. V., & Park, K. B. (2019). Estimating the global incidence of traumatic brain injury. *Journal of Neurosurgery*, 130(4), 1080-1097. <https://doi.org/10.3171/2017.10.Jns17352>
- Eman Abdulle, A., & van der Naalt, J. (2020). The role of mood, post-traumatic stress, post-concussive symptoms and coping on outcome after MTBI in elderly patients. *Int Rev Psychiatry*, 32(1), 3-11. <https://doi.org/10.1080/09540261.2019.1664421>
- Fikriyanti, Kitrungrote, L., & Songwathana, P. (2014). The Post Concussion Symptom Experience and Quality of Life in Indonesian Persons With Mild Traumatic Brain Injury. *Songklanagarind Journal of Nursing*, Vol. 34 No.2
- Gu, D., Ou, S., & Liu, G. (2025). Global burden of road injuries and their attributable risk factors from 1990 to 2021: A systematic analysis for the global burden of disease study

2021. *Prev Med Rep*, 53, 103051. <https://doi.org/10.1016/j.pmedr.2025.103051>
- Hiploylee, C., Dufort, P. A., Davis, H. S., Wennberg, R. A., Tartaglia, M. C., Mikulis, D., Hazrati, L. N., & Tator, C. H. (2017). Longitudinal Study of Postconcussion Syndrome: Not Everyone Recovers. *Journal of Neurotrauma*, 34(8), 1511-1523. <https://doi.org/10.1089/neu.2016.4677>
- Iverson, G. L., Gardner, A. J., Terry, D. P., Ponsford, J. L., Sills, A. K., Broshek, D. K., & Solomon, G. S. (2017). Predictors of clinical recovery from concussion: a systematic review. *Br J Sports Med*, 51(12), 941-948. <https://doi.org/10.1136/bjsports-2017-097729>
- King, N. S., Crawford, S., Wenden, F. J., Moss, N. E. G., & Wade, D. T. (1995). The Rivermead Post Concussion Symptoms Questionnaire: a measure of symptoms commonly experienced after head injury and its reliability. *Journal of Neurology* 242 : 587-592.
- McInnes, K., Friesen, C. L., MacKenzie, D. E., Westwood, D. A., & Boe, S. G. (2017). Mild Traumatic Brain Injury (mTBI) and chronic cognitive impairment: A scoping review. *PLoS One*, 12(4), e0174847. <https://doi.org/10.1371/journal.pone.0174847>
- McIntosh, S. J., Vergeer, M. H., Galarneau, J.-M., Eliason, P. H., & Debert, C. T. (2025). Factors Associated With Persisting Symptoms After Concussion in Adults With Mild TBI: A Systematic Review and Meta-Analysis. *JAMA Network Open*, 8(6), e2516619-e2516619. <https://doi.org/10.1001/jamanetworkopen.2025.16619>
- Ministry of Health. (2018). *Indonesia Basic Health Survey (Riskesdas) 2018*. Jakarta: Badan Litbangkes Retrieved from https://www.depkes.go.id/resources/download/info-terkini/materi_rakorpap_2018/Hasil%20Riskesdas%202018.pdf
- Mulyadi, M., Harianto, S., Tonapa, S. I., & Lee, B. O. (2023). Early Quality-of-Life Changes in Mild Traumatic Brain Injury: A Prospective Study. *Journal of Trauma Nursing*, 30(2), 75-82. <https://doi.org/10.1097/JTN.0000000000000706>
- Patricios, J. S., Schneider, K. J., Dvorak, J., Ahmed, O. H., Blauwet, C., Cantu, R. C., Davis, G. A., Echemendia, R. J., Makdissi, M., McNamee, M., Broglio, S., Emery, C. A., Feddermann-Demont, N., Fuller, G. W., Giza, C. C., Guskiewicz, K. M., Hainline, B., Iverson, G. L., Kutcher, J. S.,...Meeuwisse, W. (2023). Consensus statement on concussion in sport: the 6th International Conference on Concussion in Sport- Amsterdam, October 2022. *Br J Sports Med*, 57(11), 695-711. <https://doi.org/10.1136/bjsports-2023-106898>
- Polinder, S., Cnossen, M. C., Real, R. G. L., Covic, A., Gorbunova, A., Voormolen, D. C., Master, C. L., Haagsma, J. A., Diaz-Arrastia, R., & von Steinbuechel, N. (2018). A Multidimensional Approach to Post-concussion Symptoms in Mild Traumatic Brain Injury. *Front Neurol*, 9, 1113. <https://doi.org/10.3389/fneur.2018.01113>
- Stein, M. B., Jain, S., Giacino, J. T., Levin, H., Dikmen, S., Nelson, L. D., Vassar, M. J., Okonkwo, D. O., Diaz-Arrastia, R., Robertson, C. S., Mukherjee, P., McCrea, M., Mac Donald, C. L., Yue, J. K., Yuh, E., Sun, X., Campbell-Sills, L., Temkin, N., Manley, G. T.,...Zafonte, R. (2019). Risk of Posttraumatic Stress Disorder and Major Depression in Civilian Patients After Mild Traumatic Brain Injury: A TRACK-TBI Study. *JAMA Psychiatry*, 76(3), 249-258. <https://doi.org/10.1001/jamapsychiatry.2018.4288>
- Suwaroyo, P. A. W., Kadir, F., Omar, A., & Singh, S. K. D. (2024). Prevalence of Persistent Post-Concussion Syndrome in Adults After Mild Traumatic Brain Injury. *Nurse Media Journal of Nursing*, 14(2). <https://doi.org/10.14710/nmjn.v14i2.56529>
- Thomas, M., Skilbeck, C., Cannan, P., & Slatyer, M. (2017). The Structure of the Rivermead Post-Concussion Symptoms Questionnaire in Australian Adults with Traumatic Brain Injury. *Brain Impairment*, 19(2), 166-182. <https://doi.org/10.1017/BrImp.2017.26>
- van der Naalt, J., Timmerman, M. E., de Koning, M. E., van der Horn, H. J., Scheenen, M. E., Jacobs, B., Hageman, G., Yilmaz, T., Roks, G., & Spikman, J. M. (2017). Early predictors of outcome after mild traumatic brain injury (UPFRONT): an observational cohort study. *The Lancet Neurology*, 16(7), 532-540. [https://doi.org/10.1016/s1474-4422\(17\)30117-5](https://doi.org/10.1016/s1474-4422(17)30117-5)
- van der Vlegel, M., Polinder, S., Mikolic, A., Kaplan, R., von Steinbuechel, N., Plass, A. M., Zeldovich, M., van Praag, D., Bockhop, F., Cunitz, K., Mueller, I., Haagsma, J. A., The Center-Tbi, P., & Investigators. (2021). The Association of Post-Concussion and Post-Traumatic Stress Disorder Symptoms with Health-Related Quality of Life, Health Care Use and Return-to-Work after Mild Traumatic Brain Injury. *J Clin Med*, 10(11). <https://doi.org/10.3390/jcm10112473>
- van der Vlegel, M., Polinder, S., Toet, H., Panneman, M. J. M., & Haagsma, J. A. (2021). Prevalence of Post-Concussion-Like Symptoms in the General Injury Population and the Association with Health-Related Quality of Life, Health Care Use, and Return to Work. *J Clin Med*, 10(4). <https://doi.org/10.3390/jcm10040806>
- Van Praag, D. L. G., Cnossen, M. C., Polinder, S., Wilson, L., & Maas, A. I. R. (2019). Post-Traumatic Stress Disorder after Civilian Traumatic Brain Injury: A Systematic Review and Meta-Analysis of Prevalence Rates. *J Neurotrauma*, 36(23), 3220-3232. <https://doi.org/10.1089/neu.2018.5759>
- Voormolen, D. C., Haagsma, J. A., Polinder, S., Maas, A. I. R., Steyerberg, E. W., Vuleković, P., Sewalt, C. A., Gravesteijn, B. Y., Covic, A., Andelic, N., Plass, A. M., & von Steinbuechel, N. (2019). Post-Concussion Symptoms in Complicated vs. Uncomplicated Mild Traumatic Brain Injury Patients at Three and Six Months Post-Injury: Results from the CENTER-TBI Study. *J Clin Med*, 8(11). <https://doi.org/10.3390/jcm8111921>

Voormolen, D. C., Polinder, S., von Steinbuechel, N., Vos, P. E., Cnossen, M. C., & Haagsma, J. A. (2019). The association between post-concussion symptoms and health-related quality of life in patients with mild traumatic brain injury. *Injury*, 50(5), 1068-1074. <https://doi.org/10.1016/j.injury.2018.12.002>

World Health Organization. (2023). *Road traffic injuries*. <https://www.who.int/news-room/fact-sheets/detail/road-traffic-injuries>

Original Research

The Effectiveness of Preceptorship Program in Improving Clinical Competence Among Novice Nurses: A Systematic Review

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ARTICLE INFO

Keywords:

Clinical Competence

Feedback

Mentoring

Nursing Staff

Preceptorship

Search Engine

Review Literature as

Topic

ABSTRACT

The transition period for new nurses is often characterized by adaptation-related stress, limited clinical experience, and insufficient supervision. Preceptorship offers structured support that helps accelerate competency development and enhance clinical readiness for practice. The Objective is to evaluate the effectiveness of preceptorship programs in improving clinical competence in novice nurses. Methods A systematic search was conducted in PubMed, ScienceDirect, ProQuest, and Google Scholar from August 2019 to April 2025, following the PRISMA 2020 guidelines and registered PROSPERO protocol. This review included quantitative studies involving new nurses who received structured preceptorship interventions with clinical competency as the primary outcome. Eligible study designs comprised randomized controlled trials, quasi-experimental studies, uncontrolled pre–post trials, and cross-sectional surveys. Qualitative studies, student-based programs, and orientations without preceptors were excluded. Two reviewers independently conducted study selection, data extraction, and methodological quality appraisal using the JBI critical appraisal tools. The findings were synthesized narratively. The Results: Ten studies consistently demonstrated that preceptorship programs improved clinical competence, confidence, and readiness for practice. Eight studies reported significant improvements ($p < 0.05$). Effective programs included individualized supervision, structured feedback, and standardized competency assessments. Critical success factors included preceptor readiness, continuity of preceptorship, organizational support, and reduced transition shock. The conclusion is that the findings indicate that well-structured preceptorship programs can enhance the clinical competence and self-confidence of novice nurses. Healthcare institutions are encouraged to adopt standardized preceptorship frameworks, allocate adequate resources, and provide ongoing training and support for preceptors to strengthen practice readiness, improve quality of care, and promote nurse retention.

Received 2 September 2025;

Received in revised form 26 November 2025;

Accepted 5 December 2025

<https://doi.org/10.19166/nc.v13i2.10300>

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INTRODUCTION

The transition from student to professional nurse represents one of the most demanding phases for new graduates, characterized by high stress levels and substantial role adaptation. Previous studies indicate that organizational support, structured mentoring, self-confidence, a positive work environment, social support, strong job commitment, and adequate academic preparation all play vital roles in facilitating a smooth transition into clinical practice (Baharum et al., 2023). Furthermore, transitional programs that provide continuous support within a supportive learning environment have been shown to enhance clinical skills, job satisfaction, and perceived support during the first year of practice (Charette et al., 2023). This transition phase is widely recognized as a highly vulnerable period for novice nurses, underscoring the need for targeted interventions that promote consistent adaptation and long-term retention.

In real-world nursing settings, inexperienced nurses often face significant obstacles in acquiring professional skills, largely due to hierarchical teaching approaches and the relatively limited training experience of many of their supervisors (Nielsen et al., 2017). Research also suggests that preceptor mentorship can boost employee confidence and job commitment; however, disparities persist when support is inconsistent or not effectively planned (Choi & Yu, 2022). A Study by Tulleners et al. (2025) found that newly graduated nurses encounter clinical skill difficulties for up to four years post-graduation due to limited hands-on training and frequently rigid learning environments. These constraints collectively hinder the progression of novice nurses toward autonomous and safe practice. Such persistent competency gaps underscore the need for robust, adaptive preceptorship interventions designed to provide consistent guidance and accelerate clinical readiness.

Given these persistent barriers in clinical learning, preceptorship has emerged as a structured and strategic approach to bridge the gap between academic preparation and real-world nursing practice. Experienced senior nurses in this model act as preceptors, offering direct supervision, constructive feedback, and ongoing clinical guidance that boosts practical skills, eases anxiety, and elevates readiness and confidence among novice nurses (NMC, 2006; Walker & Norris, 2020). Studies have shown that preceptorship improves clinical performance, but its success depends on the quality of interactions between preceptors and their trainees, adequate organisational support, and the preceptors' preparedness (Lima & Alzyood, 2024). As such, preceptorship is considered a key structural intervention designed to address competency gaps that cannot be resolved through conventional learning models.

Recent literature has reported varied and sometimes conflicting

findings regarding the benefits of preceptorship for novice nurses, particularly in reducing transition stress and strengthening confidence. A clear structure and tailored approaches are essential, as demonstrated by (Berthelsen et al., 2025), who discovered that long-term advantages entail higher retention rates but also identified obstacles such as extended program duration and increased workloads for preceptors. A study by J. H. Kim & Shin (2020) identified self-efficacy, job satisfaction, and supportive work environments as key facilitators, contrasted with obstacles such as high workloads, unrealistic expectations, and workplace bullying. Similarly, Chen et al. (2021) found that preceptor support enhances clinical competence and mitigates transition shock, with emotional demands and preceptor variability as significant predictors. Evidence from Ahn & Jeong (2025) further showed that positive attitudes, empathy, and encouragement from clinical nurse educators reduce adaptation stress and promote professional growth. Diverse findings across investigations underscore the necessity for rigorous assessment to clarify the actual efficacy and operational demands of preceptorship programmes. Such evaluation is essential to ensure program sustainability, guide organizational investment, and support adaptation of preceptorship models to diverse clinical contexts.

The absence of a thorough assessment of the effectiveness and long-term viability of preceptorship programs necessitates structured evaluations to guarantee that these interventions stay pertinent and adaptable to organisational requirements. Based on this gap, this systematic review aims to evaluate the effectiveness of preceptorship programs in improving the clinical competency of novice nurses. The review focuses its evaluation on the program's achievements in important areas, including clinical expertise, analytical abilities, decision-making, communication, and professional ethics, emphasizing programme components that result in desired outcomes and providing evidence-based recommendations for enhancing and streamlining preceptorship in healthcare environments.

METHOD

This systematic review was developed based on a PROSPERO-registered protocol and conducted in accordance with the PRISMA 2020 guidelines. The review aimed to evaluate the effectiveness of preceptorship programs in improving the clinical competency of novice nurses. The methodological framework included structured procedures for literature search, screening, quality assessment, data extraction, and synthesis of quantitative primary studies published between August 2019 and April 2025.

The review questions were structured to clarify the research focus using the PICO framework, with the following components: Population - nurses, Intervention - a preceptorship program, Comparison - no comparison group, and Outcome - improved clinical competence. The search was performed using the following key terms: (("Nurse" OR "New Nurse") AND ("Preceptorship

Program") AND ("Clinical Competence")).

Table 1. PICO Research Question Framework

P	I	C	O
New Nurse	Preceptorship Program	no comparison	Improving clinical competence

Studies were included if they involved new nurses participating in structured preceptorship programs and employed quantitative designs such as randomised controlled trials, quasi-experimental studies, pre–post intervention studies, correlational studies, or cross-sectional studies. Studies were excluded if they were qualitative, focused on nursing students, described general orientation programs lacking a formal preceptor role, or were non-empirical (reviews, commentaries, editorials).

A comprehensive search was conducted in PubMed, ScienceDirect, ProQuest, and Google Scholar using MeSH terms and free-text keywords related to novice nurses, preceptorship, and clinical competence. Eligible articles were limited to English-language publications from August 2019 to March 2025. The literature search was conducted between March 2025 and April 2025.

Two reviewers independently performed title/abstract screening and full-text assessment, resolving discrepancies through discussion or consultation with a third reviewer. The PRISMA 2020 flow diagram documented the selection process. Data extraction was completed independently by two reviewers using a standardized extraction form capturing study characteristics, intervention details, measurement instruments, and outcomes. Methodological quality and risk of bias were appraised using the appropriate Joanna Briggs Institute (JBI) critical appraisal tools.

Given the anticipated heterogeneity in study design, intervention duration, and measurement tools, a narrative thematic synthesis was the primary analytic approach. Comparative evidence tables summarized key findings. Meta-analysis was planned if at least two studies demonstrated adequate methodological and statistical homogeneity, using a random-effects model with heterogeneity assessed via I^2 statistics. Subgroup and sensitivity analyses were planned when feasible. If meta-analysis was not possible, findings were integrated through structured narrative synthesis.

RESULT

The article identification and selection process was carried out following the PRISMA 2020 guidelines. Four databases were used in the main search, namely PubMed, ScienceDirect,

ProQuest, and Google Scholar (with the first 300 results screened to maintain data replication). The search yielded a total of 4,486 articles from three major databases: PubMed(484), ScienceDirect (1,420), and ProQuest (2,582). Google Scholar was used as an additional source, but only the first 300 results were screened to avoid inflated and non-reproducible hit counts. After combining all sources and removing duplicates, 4,012 articles proceeded to the initial screening process.

The screening stage resulted in the removal of 3,950 out of 4,012 articles, as they did not meet the required standards, primarily due to irrelevance to preceptorship or clinical training, lack of focus on novice nurses, or failure to employ quantitative study designs or clinical competency outcome measures. A total of 62 articles progressed to the eligibility assessment stage.

A total of 62 articles were fully reviewed. Excluded from consideration were 52 articles, including 16 qualitative studies, 12 studies conducted among experienced nurses, 9 articles that did not utilise preceptorship as an intervention, 8 studies where clinical competency was not the primary focus, 5 studies with insufficient data for analysis due to unclear instruments or incomplete results, and 2 articles. Thus, 10 articles met all methodological and content criteria for inclusion in the final synthesis.

A total of 10 studies were included in the final analysis, as outlined in the Methods section. These studies originated from various countries in East Asia, Southeast Asia, the Middle East, and Europe, with research designs including quasi-experimental, pre-test and post-test, correlational, and cross-sectional.

Findings from the synthesis show that preceptorship programs consistently enhance the clinical competence of novice nurses compared with those receiving no preceptorship or standard orientation programs. The most effective interventions include one-on-one supervision, structured feedback, the use of validated competency instruments, and a program duration of at least 4–12 weeks. Contributing factors to success include preceptor training, organizational support, and a positive learning culture. Key challenges include preceptor workload, lack of program standardization, and variation in supervision quality.

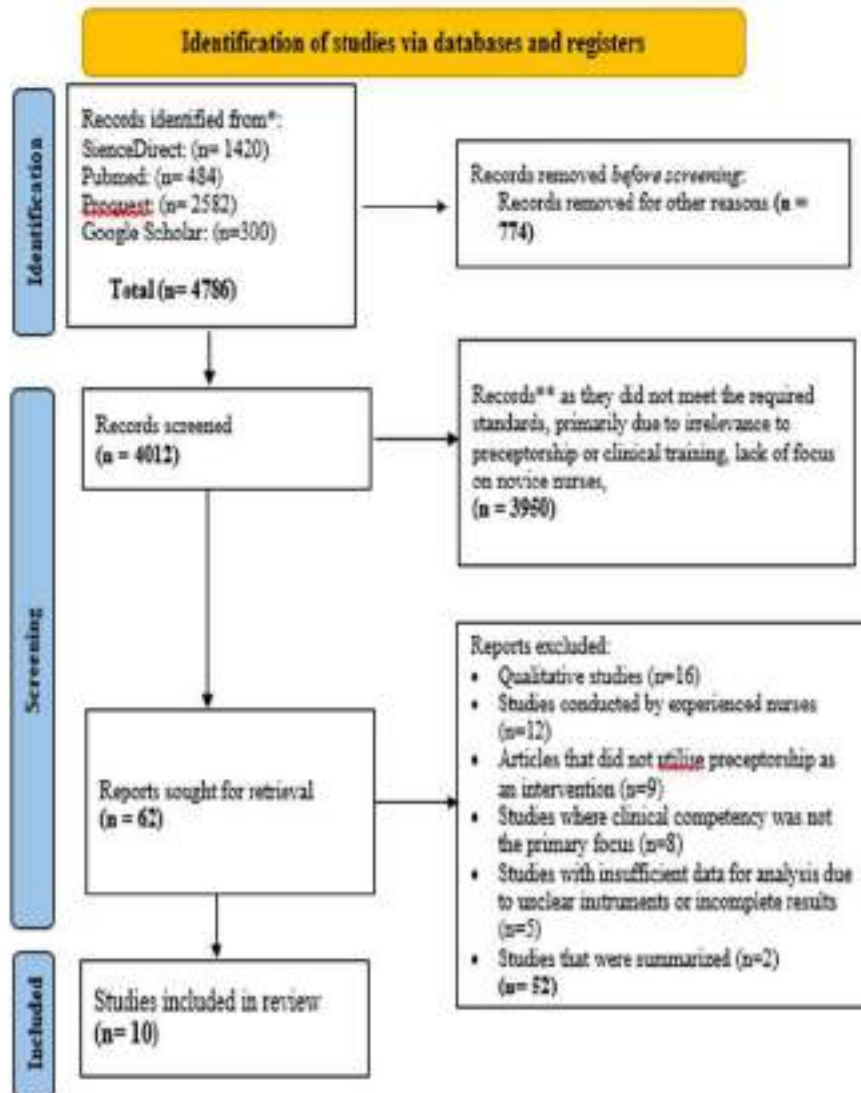


Fig. 1 PRISMA Flow Diagram

Table 2. Data Extraction Matrix

No	Author(s), Year	Research Title	Research Purposes	Country	Key Findings
1	Kyeong Hye Kim & Sujin Shin (2025)	Factors influencing preceptor nurses' clinical teaching behavior: A cross-sectional study	This study identified significant factors affecting clinical teaching behavior among South Korean preceptor nurses.	Korea	The study demonstrated that clinical reasoning, critical reflection, perceptions of patient safety, and an appropriate preceptor–preceptee ratio contributed 66.7% to clinical teaching behaviors among nurse preceptors. The research was assessed to have adequate methodological quality and relevance to nursing, as it explored factors influencing preceptors' clinical teaching behaviors. Considering its strengths and limitations, such as instrument quality, inappropriate analytical techniques, and the topic's relevance to nursing education practice, this study was deemed highly suitable for inclusion in the systematic review, particularly as a source of quantitative data, since it fulfilled all methodological criteria of the JBI checklist for cross-sectional studies.
2	Chen, Feifei, Liu, Yuan., et.al. (2021)	Transition shock, preceptor support and nursing competency among newly graduated registered nurses: A cross-sectional study	The aim of the study was to examine the relationship between transition shock, preceptor support, and nursing competency in a sample of newly graduated registered nurses	China	This study found that sustained one-to-one preceptor relationships, the context of preceptorship, and transition shock influenced the development of nursing competence among New Graduate Registered Nurses in China. Accordingly, the research emphasized the importance of providing educational programs aimed at enhancing critical thinking and skills. The study highlighted the crucial role of preceptor support in reducing transition shock and improving the clinical competence of novice nurses ($r = 0.56$, $p < 0.01$).
3	Abdelaliem, Sally M. Farghaly, Alsleem, D. Khalid., et.al (2025)	The relationship between practical skills confidence and readiness for transition to practice among nursing internship students: Exploring the mediating role of preceptor.	Examine the relationship between practical skills confidence and readiness for transition to practice among nursing internship students through exploring the mediating role of preceptorship.	Saudi Arabia	This study makes a significant contribution both practically and theoretically by clarifying the role of confidence in practical skills and the quality of preceptorship in readiness for transition to the workplace. The perceptions of nurse interns in the study by Abdelaliem, Sally M. Farghaly, Alsleem, D. Khalid, et al. (2025) highlighted the critical role of preceptorship in predicting their success during the transition to clinical practice, particularly by enhancing their confidence in practical skills. The findings indicated that confidence in practical skills accounted for 38% of the variance in preceptorship effectiveness, which in turn positively influenced the overall transition experience of nurse interns. These results underscore the importance of preceptorship

No	Author(s), Year	Research Title	Research Purposes	Country	Key Findings
4	Renning, Kelsey et.al. (2024)	Effectiveness of a paediatric critical care pilot preceptor program: Improved confidence and competency outcomes among a cohort of professional nurses in Blantyre, Malawi	Evaluate the effectiveness of a paediatric critical care nurse preceptor program, via change in nurses' knowledge, skills, confidence, and precepting competence.	Malawi, Africa	<p>and confidence in practical skills as key determinants of a successful transition to professional practice. Therefore, strategies aimed at strengthening preceptorship programs and fostering confidence in practical skills are essential to improve transition outcomes for nurse interns.</p> <p>This study retains high practical and contextual value, particularly by providing insights from training programs in developing countries facing shortages of specialist nurses. It also demonstrated adequate methodological quality, making it a valuable reference for inclusion in a systematic review examining the effectiveness of preceptor training or nursing education interventions. The study reported significant improvements in clinical knowledge ($p < 0.001$), resuscitation skills and blood gas analysis ($p = 0.001$), as well as clinical confidence ($p = 0.002$) following the critical paediatric preceptorship intervention.</p>
5	Chipwanya, Elizabeth., et.al. (2024)	The effect of a preceptorship programme on newly hired experienced professional nurses' self-efficacy in nursing clinical competency in Saudi Arabia	This study aimed to determine if participation in a preceptorship programme affected newly hired experienced professional nurses' self-efficacy in clinical practice and whether their perceived competence was related to respondents' demographic profiles at a university hospital in Saudi Arabia.	Arab Saudi	<p>Self-efficacy post-test scores were significantly higher than pre-test scores ($p < 0.001$). The programme positively influenced the respondents' self-efficacy scores. As perceived by the respondents, the preceptorship programme had a positive effect and improved their clinical performance in the nursing process. There was no relationship between perceived competence and respondents' demographic profiles.</p>
6	Yuliartiningssi., Nursalam., Kartini, Yanis. (2019).	Preceptorship Method to The Achievement of New Nurse Competencies at Rumah Sakit Islam Surabaya Jemursari	Explaining the influence of the preceptorship method on the competency achievement of new nurses.	Surabaya, Indonesia	<p>Overall, this study is of high quality and worthy of inclusion as it provides practical contributions in the local context and demonstrates the effectiveness of the preceptorship method in enhancing new nurses' competence. The study employed a quasi-experimental design with a pretest-post-test and control group, which strengthened its methodological rigor in evaluating changes resulting from the intervention. The findings revealed that the preceptorship method significantly improved the competency achievement of new nurses ($p < 0.05$).</p>

No	Author(s), Year	Research Title	Research Purposes	Country	Key Findings
7	Lindfors, Kirsi., Flinkman, Mervi., et. al. (2024)	New graduate registered nurses' professional competence and the impact of preceptors' education intervention: a quasi-experimental longitudinal intervention study	The aim of this quasi-experimental longitudinal intervention study was to investigate new graduate nurses' professional competence development after preceptors' participation in an education intervention.	Finland	This study provides insights into the longitudinal process of competency development among new nurses and the role of preceptors' and it demonstrates that an eight-hour short training for preceptors does not result in significant improvements in new nurses' professional competence unless accompanied by systematic long-term support.
8	Mashayekh, Razieh., Ebadi, Abbas., et.al. (2022)	The effect of the preceptorship training program on the participation of clinical nurses in training nursing internship students: a quasi-experimental study.	To determine the effectiveness of the preceptorship training program for the participation of clinical nurses in the education of nursing students.	Teheran, Iran.	This study, highlights the critical role of instructors in clinical nursing education. Which is essential for student development and influencing nurses in clinical settings. It significantly contributes to systematic reviews on preceptor training effectiveness. Despite potential biases and limitations, it is suitable for quantitative synthesis, including meta-analysis. Result showed no significant difference in nurse. Participation scores between experimental (101.84 ± 15.42) and control (107.24 ± 10.53) groups before the intervention ($P = 0.10$). after the intervention, scores increased significantly in the experimental group (118.90 ± 15.11) compared to the control (106.21 ± 11.96) ($P < 0.001$). within the experimental group, all participation scores improved significantly ($P < 0.001$), while changes in the control group were not significant ($P = 0.41$).
9	Kim, Eun A., Bong, Young Sook., et.al. (2024)	Nursing practice readiness improvement program tailored for newly graduated registered nurses: A quasi-experimental study.	To develop a tailored nursing practice preparation improvement program for newly graduated registered nurses and assess its impact on the successful adaptation of nurse.	Korea	This study demonstrates high methodological quality and is appropriate for evaluating the effectiveness of adaptation training programs for new graduate registered nurses (NGRNs). Using a quasi-experimental design with a non-equivalent control group and pre-test – post-test measures. The study provides strong evidence for assessing changes resulting from the intervention. The program was systematically designed based on the ADDIE model and incorporated various educational tours, group discussions, and simulation-based practice training. Findings revealed significant improvements in nursing practice readiness, job satisfaction, retention, intention, and a statistically significant reduction in transition shock. However, the study has potential limitations. As an institutional study, it excluded exogenous variables environment, and educational setting, limiting generalizability. Intervention effects were evaluated

No	Author(s), Year	Research Title	Research Purposes	Country	Key Findings
10	Pohjamies, Netta., Haapa, Toni., et.al. (2022)	Nurse preceptors' orientation competence and associated factors: A cross-sectional study	To identify distinct orientation competence profiles amongst nurse preceptors and explain the associated factors.	Finland	<p>using analyses controlling for pre-scores of dependent variables, but a limitation was the absence of corrected alpha, which may have increased error risk. Overall, the tailored program effectively reduced transition shock ($F = 9.18$, $P = 0.004$) and improved practice readiness ($F = 19.90$, $P < 0.001$), job satisfaction ($F = 4.09$, $P = 0.049$), and retention intention ($F = 6.20$, $P = 0.016$) among new graduate registered nurses.</p> <p>This study demonstrates high methodological quality and is appropriate for evaluating the effectiveness of adaptation training programs for new graduate registered nurses (NGRNs). Using a quasi-experimental design with a non-equivalent control group and pretest-post-test measures. The study provides strong evidence for assessing changes resulting from the intervention. The program was systematically designed based on the ADDIE model and incorporated various educational strategies, including, mentoring, departmental tours, group discussion, and simulation-based practice training. Findings revealed significant improvements in nursing practice readiness, job satisfaction, retention intention, and a statistically significant difference. This study also makes a valuable contribution to the preceptor literature, particularly in illustrating how individual and organizational factors influence orientation competence. It is highly relevant and identifies three profiles of preceptor orientation. Competence based on self-assessments from 844 nurses in a finish university hospital. Factors correlated with competence included age, work experience, work motivation, involvement in orientation training, and support from colleagues and supervisors. Significant associations were found between adequate nursing care knowledge ($p = .001$), adequate nursing care skills ($p = .024$), current work motivation ($p < .001$), work motivation ($p < .001$), participation in new employee orientation education ($p < .001$), and participation in student guidance education ($p < .001$) across the identified competence profiles. Nursing care knowledge relevant to new employee orientation was rated higher by profile A nurses (96.5%) compared to profile B (94.0%) and profile C (85.0%).</p>

DISCUSSION

A review of ten studies showed that preceptorship consistently contributed to improved clinical competence, practice readiness, and confidence among new nurses. The program strengthened technical skills and clinical reasoning through direct supervision, structured feedback, and reflective learning, as demonstrated by Kim & Shin (2025) and supported by Benner's Novice to Expert framework, which emphasizes competency development through experience and ongoing reflection. The program's effectiveness was also demonstrated across a variety of contexts, including facilities with limited resources, as reported by Renning et al. (2024) in Malawi. Furthermore, findings from Saudi Arabia demonstrated that a 90-day program improved confidence and mastery of the nursing process among new nurses. The evidence available indicates that preceptorship plays a vital role in enabling a novice practitioner to become clinically competent.

The success of preceptorship is greatly influenced by the quality of the preceptor-preceptee relationship, organizational support, and preceptor preparedness and training. A study by Pohjamies et al. (2022) emphasized the importance of preceptor selection based on clinical competency and realistic workload management. Ongoing training and schedule flexibility have been found to be essential forms of institutional support (Lindfors et al., 2022; Mashayekh et al., 2024). Furthermore, emotional support from preceptors contributes to developing self-efficacy, consistent with Bandura's theory, as shown by Abdelaliem et al. (2025) and T. T. Chen et al. (2021). These factors strengthen adaptation, reduce transition stress, and increase job satisfaction among new nurses.

Despite its demonstrated effectiveness, the implementation of preceptorship faces various obstacles. The reliance on assessment tools that are largely based on questionnaires heightens the risk of self-assessment bias, making it necessary to use more objective methods like direct observation or the Mini-CEX (Chipwanya et al., 2024; Motefakker et al., 2022). Short or discontinuous preceptor training can also hinder the quality of mentoring. Furthermore, time constraints, high workloads, and varying preceptor competencies often reduce the consistency of mentoring. Other challenges include limited learning infrastructure, the lack of structured feedback systems, and limited access to technology, particularly in low-resource facilities. These barriers highlight the need for more adaptive program planning and stronger organizational support.

This review's results support the notion that preceptorship should be developed as a systematic initiative, enhancing not only clinical proficiency but also confidence and readiness for practice among novice nurses. According to various studies, healthcare institutions are recommended to: (1) Continuously enhance preceptor training, as brief training sessions without continued support have been found insufficient (Lindfors et al., 2022; Mashayekh et al., 2024). (2) employ multiple assessment approaches, including direct observation, Mini-CEX, e-portfolios, and written reflections, which

have been shown to improve the accuracy of competency assessments (Motefakker et al., 2022; Song et al., 2024; Xu et al., 2025). (3) optimize organizational support, particularly workload management and protected mentoring time, in line with evidence emphasizing the importance of structural support (Pohjamies et al., 2022). (4) foster a supportive work culture, including positive role modelling and regular feedback, which has been shown to enhance confidence and resilience among new nurses (Abdelaliem et al., 2025; T. T. Chen et al., 2021); and (5) adapt preceptorship programs to local needs, particularly in low-resource settings, where context-sensitive models have demonstrated effectiveness (Renning et al., 2024). This approach, which combines structured, adaptive, and organisationally supported preceptorship, holds significant promise for enhancing clinical competence and improving the transition of new nurses into professional practice.

CONCLUSION

A systematic review, conducted in accordance with the PRISMA 2020 guidelines, identified ten eligible studies from an initial pool of 4,486 records and 300 supplementary sources, demonstrating that structured preceptorship programmes consistently improve clinical competence and confidence among novice nurses. Preceptorship is most effective when aligned with Benner's stages of competency development and Bandura's self-efficacy framework, through guided supervision, structured reflection, and high-quality feedback that support the early professional transition.

The evidence suggests that preceptorship enhances clinical skills, self-confidence, and practice readiness; however, its effectiveness depends heavily on a well-organised programme structure, adequate organisational support (including workload management, time allocation, and assessment systems), and competent preceptors with strong teaching and supervisory skills. Healthcare institutions should integrate preceptorship into formal organisational policies, invest in structured and ongoing preceptor training, clearly define preceptor roles and responsibilities, and allocate sufficient resources to ensure consistent, accountable supervision, thereby enhancing patient safety, supporting successful transition, and improving nurse retention.

REFERENCES

- Abdelaliem, S. M. F., Alsleem, D. K., Aladdad, S. K., Alqahtani, A. S., Alenazi, R. K., Alotaibi, M. G., Oqailan, H. K., & Almarshad, L. B. (2025). The relationship between practical skills confidence and readiness for transition to practice among nursing internship students: Exploring the mediating role of preceptorship. *Nurse Education Today*, 147. <https://doi.org/10.1016/j.nedt.2025.106587>
- Ahn, S., & Jeong, H. W. (2025). Analysis of clinical nurse educators' mentoring feedback on new nurse journals at a tertiary hospital in South Korea: utilizing text network analysis. *BMC Nursing*, 24(1). <https://doi.org/10.1186/s12912-025-03625-5>

- Baharum, H., Ismail, A., McKenna, L., Mohamed, Z., Ibrahim, R., & Hassan, N. H. (2023). Success factors in adaptation of newly graduated nurses: a scoping review. *BMC Nursing*, 22(1). <https://doi.org/10.1186/s12912-023-01300-1>
- Berthelsen, C., Kjærgaard, K. M., & Aviaja-Hansen, C. (2025). Experiences of an ongoing preceptorship programme for newly employed nurses in medical departments – A qualitative study. *Clinical Nursing Studies*, 13(1), 1. <https://doi.org/10.5430/cns.v13n1p1>
- Charette, M., McKenna, L., McGillion, A., & Burke, S. (2023). Effectiveness of transition programs on new graduate nurses' clinical competence, job satisfaction and perceptions of support: A mixed-methods study. *Journal of Clinical Nursing*, 32(7–8), 1354–1369. <https://doi.org/10.1111/jocn.16317>
- Chen, F., Liu, Y., Wang, X., & Dong, H. (2021). Transition shock, preceptor support and nursing competency among newly graduated registered nurses: A cross-sectional study. *Nurse Education Today*, 102. <https://doi.org/10.1016/j.nedt.2021.104891>
- Chen, T. T., Hsiao, C. C., Chu, T. P., Chen, S. H., Liao, M. N., & Hung, C. C. (2021). Exploring core competencies of clinical nurse preceptors: A nominal group technique study. *Nurse Education in Practice*, 56. <https://doi.org/10.1016/j.nepr.2021.103200>
- Chipwanya, E., Downing, C., & Nkosi, E. (2024). The effect of a preceptorship programme on newly hired experienced professional nurses' self-efficacy in nursing clinical competency in Saudi Arabia. *International Journal of Africa Nursing Sciences*, 20. <https://doi.org/10.1016/j.ijans.2024.100682>
- Choi, E., & Yu, S. (2022). Effects of preceptors' mentoring function on novice nurses' self-efficacy and organizational commitment: A cross-sectional study. *Nurse Education in Practice*, 64. <https://doi.org/10.1016/j.nepr.2022.103431>
- Kim, J. H., & Shin, H. S. (2020). Exploring barriers and facilitators for successful transition in new graduate nurses: A mixed methods study. *Journal of Professional Nursing*, 36(6), 560–568. <https://doi.org/10.1016/j.profnurs.2020.08.006>
- Kim, K. H., & Shin, S. (2025). Factors influencing preceptor nurses' clinical teaching behavior: A cross-sectional study. *Nurse Education Today*, 146. <https://doi.org/10.1016/j.nedt.2024.106555>
- Lima, M. S., & Alzyood, M. (2024). The impact of preceptorship on the newly qualified nurse and preceptors working in a critical care environment: An integrative literature review. *Nursing in Critical Care*, 29(5), 1178–1189. <https://doi.org/10.1111/nicc.13061>
- Lindfors, K., Flinkman, M., Kaunonen, M., Huhtala, H., & Paavilainen, E. (2022). New graduate registered nurses' professional competence and the impact of preceptors' education intervention: a quasi-experimental longitudinal intervention study. *BMC Nursing*, 21(1). <https://doi.org/10.1186/s12912-022-01133-4>
- Mashayekh, R., Ebadi, A., Nehrir, B., & Moayed, M. S. (2024). The effect of the preceptorship training program on the participation of clinical nurses in training nursing internship students: a quasi-experimental study. *BMC Nursing*, 23(1). <https://doi.org/10.1186/s12912-024-02034-4>
- Motefakker, S., Shirinabadi Farahani, A., Nourian, M., Nasiri, M., & Heydari, F. (2022). The impact of the evaluations made by mini-cex on the clinical competency of nursing students. *BMC Medical Education*, 22(1). <https://doi.org/10.1186/s12909-022-03667-2>
- Nielsen, K., FINDERUP, J., Brahe, L., Elgaard, R., Elsborg, A. M., Engell-Soerensen, V., Holm, L., Juul, H., & Sommer, I. (2017). The art of preceptorship. A qualitative study. *Nurse Education in Practice*, 26, 39–45. <https://doi.org/10.1016/j.nepr.2017.06.009>
- Pohjames, N., Haapa, T., Kääriäinen, M., & Mikkonen, K. (2022). Nurse preceptors' orientation competence and associated factors—A cross-sectional study. *Journal of Advanced Nursing*, 78(12), 4123–4134. <https://doi.org/10.1111/jan.15388>
- Renning, K., Thompson, J. A., Hartman, A. M., Nyondo, A. N., Mann, J., Chepuka, L., Mula, C., Gowero, N., Wilson, G., Ramwell, C., & van de Water, B. (2024). Effectiveness of a pediatric critical care pilot preceptor program: Improved confidence and competency outcomes among a cohort of professional nurses in Blantyre, Malawi. *Nurse Education Today*, 142. <https://doi.org/10.1016/j.nedt.2024.106351>
- Song, Y., Lafond, C. M., Vincent, C., Kim, M. J., Park, C. G., & McCreary, L. L. (2024). Critical soft skill competencies that clinical nurse educators consider important to evaluate in nurses. *Nursing Open*, 11(10). <https://doi.org/10.1002/nop2.70047>
- Tulleners, T., Ryan, L., Stratton-Maher, D., Elliott, J., Terry, D., Southern, J., Jayasinghe, T., Roderick, G., Ng, L., Tan, J. Y., Gleeson, D., Buckley, J., & Peck, B. (2025). Exploring the development of early career nurses: Insights 4 years after graduation. *Journal of Advanced Nursing*. <https://doi.org/10.1111/jan.16987>
- Xu, H., Dong, C., Lv, Y., & Yu, L. (2025). Determining core components of clinical competency for the students of master of nursing specialists: a descriptive qualitative study. *BMC Medical Education*, 25(1). <https://doi.org/10.1186/s12909-025-06974-6>

Original Research

Exploration of Mothers' Perceptions of The Eating Habits of Children with Stunting in The Banjar Ethnic Community: An Ethnographic Study

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ARTICLE INFO

Keywords:

Banjar Ethnic
Community

Eating Habits

Ethnographic Study

Mother's Perceptions

Stunted Children

ABSTRACT

Stunting remains a major public health issue in Banjar Regency, especially among the Banjar ethnic community living along riverbanks. Poor child feeding habits, shaped by cultural, social, and economic factors, are key contributors. This study aims to explore mothers' perceptions of child-feeding practices within the cultural context of the Banjar community. A qualitative ethnographic approach was employed. Data were collected through in-depth interviews with 17 Banjar mothers of children with stunting, selected using purposive sampling. Data analysis involved transcription, categorization, and thematic analysis using NVivo 12. The study identified five main themes: child dietary patterns, children's mealtime behaviors, maternal expectations, household food decision-makers, and maternal perceptions of healthy food. The findings indicate that both maternal and child-related factors significantly shape children's eating habits. Culturally sensitive stunting interventions that actively involve mothers and household decision-makers are therefore recommended.

Received 18 August 2025;

Received in revised form 23 October 2025;

Accepted 18 November 2025

<https://doi.org/10.19166/nc.v13i2.10254>

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INTRODUCTION

Malnutrition remains a global health concern that profoundly affects child growth, development, and overall survival. Among the various forms of chronic malnutrition, stunting has gained increasing international attention as it reflects long-term nutritional inadequacy and poor health conditions (Tamir et al., 2024). According to the World Health Organization (WHO), stunting is defined as a child's height-for-age being more than two standard deviations below the WHO Child Growth Standards median. In 2022, the global prevalence of stunting was reported at 22.3%, while in Indonesia, the 2023 Indonesia Health Survey (SKI) recorded a

prevalence of 12.9% (Badan Kebijakan Pembangunan Kesehatan, 2023; World Health Organization, 2023). Although a gradual decline has been observed, South Kalimantan continues to face significant challenges, with a stunting rate of 13.7% (Ikasari et al., 2025).

Banjar Regency is one of the regions with a relatively high rate of stunting. In 2018, the prevalence of stunting reached 29.1% and increased to 40.2% by 2021. Although the figure declined to 20.89% in 2023, it still indicates that stunting remains a serious health concern (Ikasari et al., 2025). A preliminary study conducted in the working area of Martapura 1 Primary Health Center revealed an increase in stunting prevalence among children under two, from

4.55% in 2022 to 6.55% in 2023, and a further rise to 17% by September 2024.

In the Banjar ethnic community, there are various prohibitions or taboos commonly referred to as *pamali*. *Pamali* in Banjar culture encompasses many aspects of life, including natural phenomena, religion, manners, and sacred life events such as marriage, birth, and death. Among the Banjar people, *pamali* serves as a social mechanism to regulate behavior and ensure adherence to existing moral and cultural norms. Several *pamali* are associated with eating practices. For instance, pregnant women are forbidden to suck on bones while eating because it is believed that doing so will cause the unborn child to be “sucked” by *buyu* (Veniaty, 2023). *Buyu* is a supernatural entity believed to drain a child’s blood, leading to malnutrition (Ikasari et al., 2025). Another taboo for pregnant women is eating twin bananas, which is thought to cause the birth of twins. Pregnant women are also discouraged from consuming *kuini* (a type of mango) and durian fruits, as these are believed to cause miscarriage (Veniaty, 2023).

Food restrictions in the Banjar culture are not limited to pregnancy but also apply to women during the postpartum period. During this time, mothers are advised to avoid eating meat, certain types of fish, or seasoned vegetables. The types of vegetables allowed are limited, usually spinach and *katuk* leaves, which are believed to support lactation. Typically, this period of dietary restriction lasts for approximately 41 days (Noveni et al., 2025). From a biomedical perspective, however, there are no dietary prohibitions for pregnant or postpartum women as long as foods are consumed in moderation. Pregnant women are encouraged to eat fruits as a source of vitamins for fetal development, while postpartum mothers require adequate protein intake to support recovery after childbirth (Purwaningsih et al., 2025).

These cultural food taboos reflect how traditional beliefs influence dietary behaviours and maternal nutrition, which can indirectly contribute to child growth outcomes. When nutrient-rich foods such as eggs, meat, and fish are restricted due to cultural beliefs, both mothers and children may experience nutritional deficiencies that increase the risk of stunting. Therefore, understanding these cultural determinants is essential for designing contextually relevant interventions that address stunting not only from a biomedical perspective but also from a sociocultural standpoint.

Stunting is a multifactorial condition resulting from a combination of biological, environmental, and socio-economic determinants, including inadequate nutrition, recurrent infections, poor parenting practices, inadequate sanitation, and limited access to healthcare services (Dadras et al., 2024; Ikasari et al., 2024). Its consequences extend beyond increased susceptibility to infectious diseases and impaired cognitive development; stunting also reduces individual productivity and, ultimately, hampers national economic growth (Nduwayezu et al., 2025). In response, the World Health Organization (WHO) emphasizes the need for a multisectoral

approach encompassing both nutrition-specific and nutrition-sensitive interventions, such as improving access to education, food security, and sanitation (Sin et al., 2024).

An important determinant of stunting prevention is children’s eating habits, particularly their daily patterns of food selection and consumption. These habits are shaped by the family environment, cultural values, and individual preferences. In the Banjar ethnic community, predominantly residing in Banjar Regency, eating behaviors are deeply influenced by local traditions and geographical conditions, especially their proximity to riverbanks. Traditional Banjar foods, including *nasi kuning* (yellow rice), *ketupat kandangan* (Banjar-style rice cake with *haruan* fish in coconut milk broth), and various freshwater fish dishes, constitute staple components of their diet. However, the extent to which these culturally rooted dietary practices contribute to or protect against stunting remains insufficiently explored (Alfisyah, 2019; Syahroni et al., 2021).

Previous research by the authors on maternal experiences in caring for stunted children revealed that children’s eating habits included incomplete meals, small portions, irregular mealtimes, frequent consumption of snacks, and only eating twice a day (Ikasari et al., 2024). Nevertheless, no studies have specifically explored the perceptions of Banjar mothers regarding the eating habits of children with stunting, despite the critical role of cultural factors in shaping child feeding practices. This gap highlights the need to understand Banjar mothers’ perceptions of their children’s eating habits in order to identify culturally embedded influences on child nutrition. The findings are expected to serve as a basis for designing culturally tailored interventions to prevent and address stunting in Banjar Regency. Therefore, this study aims to explore mothers’ perceptions of the eating habits of children with stunting within the Banjar ethnic community living along the riverbanks of Banjar Regency, South Kalimantan Province.

METHOD

This research is a qualitative study using an ethnographic approach to explore in-depth maternal perceptions of feeding practices among children with stunting in the Banjar ethnic community. The ethnographic approach was chosen to allow a contextualized understanding of maternal experiences within their cultural and social environment. Sampling was conducted using purposive sampling. Participants were identified and recruited through collaboration with community health workers and data from the Martapura 1 Primary Health Center, which maintains a registry of children classified as stunted. Mothers who met the inclusion criteria were approached directly by health workers and informed about the study before being contacted by the researcher for voluntary participation. The inclusion criteria were: (1) being of Banjar ethnicity, (2) having at least one child diagnosed with stunting based on WHO child growth standards, (3) being able to communicate effectively, and (4) providing informed consent to participate.

A total of seventeen mothers of stunted children were selected to ensure a range of experiences and perspectives. Diversity in cultural and socioeconomic backgrounds was ensured by selecting participants from different neighborhoods (urban, semi-urban, and rural areas) and varying levels of education, occupation, and family income. These variations were identified through initial screening interviews and community health records. The study was conducted in the service area of Martapura 1 Primary Health Center, a predominantly Banjar ethnic region that provides a rich cultural context for understanding feeding practices. Data were collected through face-to-face, in-depth interviews conducted in participants' homes to create a familiar and comfortable environment. Interviews lasted approximately 30–60 minutes and were guided by a semi-structured interview guide developed by the researchers based on a review of previous literature and preliminary field observations. The interview guide covered key themes such as mothers' understanding and beliefs about child nutrition and stunting, daily feeding routines and food preparation practices, cultural beliefs and taboos surrounding child feeding, perceived barriers to providing adequate nutrition, and sources of information and support related to feeding practices.

Interviews were conducted in Bahasa Indonesia, with the inclusion of Banjar language expressions when preferred by participants. To ensure accuracy, the primary researcher, who is fluent in both languages, transcribed all interviews verbatim and verified the translations with a native Banjar speaker. The primary researcher is a nursing lecturer with a background in community and child health and has prior experience working with Banjar communities through health education programs. This positionality facilitated rapport and trust-building with participants but also required reflexivity to minimize bias. To maintain neutrality, the researcher engaged in reflective journaling after each interview and discussed emerging interpretations with peer researchers to avoid subjective assumptions.

Data were analyzed thematically using NVivo 12 software to identify recurring patterns and themes related to maternal perceptions of feeding practices. The analysis followed Braun and Clarke's six-phase framework: data familiarization, initial coding, theme generation, reviewing, defining, and reporting. To ensure the trustworthiness of the findings, several strategies were implemented: (1) Member checking was conducted by summarizing key findings to several participants for confirmation; (2) A detailed audit trail was maintained, documenting methodological and analytical decisions; (3) Reflexive notes and peer debriefing were used to minimize researcher bias; and (4) Thick descriptions of the cultural context and participant characteristics were provided to enable transferability to similar settings. This study was approved by the Health Research Ethics Committee of Sekolah Tinggi Ilmu Kesehatan Intan Martapura (Certificate No.: 049/KE/YBIP-SI/VI/2025). All participants provided informed consent before participation, and confidentiality was strictly maintained throughout the research process.

RESULT

Participant Characteristics

The participants in this study were mothers of Banjar ethnicity who had children diagnosed with stunting and resided within the service area of Martapura 1 Public Health Center. The identification of stunted children was based on a list provided by the coordinator of the stunting program at Martapura 1 Public Health Center, which had been compiled from diagnoses made by pediatric specialists at Ratu Zalecha Regional Hospital. A total of 17 participants were involved in this study. Their ages varied, with the youngest being 24 years old (P6) and the oldest 43 years old (P10). The participants' educational backgrounds ranged from elementary to senior high school, and most of them were housewives (n = 14), while the remaining three participants were small-scale traders. The number of children per participant ranged from one to four, with the mean age of stunted children being 2.6 years.

Table 1. Characteristics of research participants (n=34)

Participant Code	Age (Year)	Tribe	Education	Work	Number of Children	Age of children with stunting
P1	29	Banjar	JHS	Housewife	2	3
P2	33	Banjar	JHS	Housewife	4	2,7
P3	34	Banjar	JHS	Seller	2	2
P4	30	Banjar	JHS	Seller	2	4
P5	35	Banjar	JHS	Housewife	4	3
P6	24	Banjar	SHS	Housewife	1	2,5
P7	32	Banjar	SHS	Seller	2	2
P8	28	Banjar	SHS	Housewife	1	1,5
P9	27	Banjar	SHS	Housewife	1	3
P10	43	Banjar	ES	Housewife	3	3
P11	34	Banjar	ES	Housewife	4	2
P12	36	Banjar	JHS	Housewife	3	2,5
P13	34	Banjar	JHS	Housewife	2	4,5

P14	29	Banjar	JHS	Housewife	3	2
P15	32	Banjar	JHS	Housewife	1	2,5
P16	30	Banjar	ES	Housewife	2	3
P17	34	Banjar	JHS	Housewife	3	2,5

In-depth interviews with the 17 participants revealed several themes related to the research topic. The data analysis using NVivo 12 software resulted in the identification of five main themes: children's eating patterns, children's eating habits

during meals, mothers' expectations, decision-makers in food selection, and mothers' perceptions of healthy food.



Fig. 1. Mind map exploring mothers' perceptions of the eating habits of children with stunting
In the Banjar Tribe Community Used NVivo-12

Based on thematic analysis, these themes represent key aspects of mothers' perceptions regarding the eating habits of children with stunting in the Banjar ethnic community. The five main themes identified in this study were: children's eating patterns, children's

eating behaviors, mothers' expectations, decision-makers regarding the food menu, and mothers' perceptions of healthy food.



Fig. 2. Word cloud exploring mothers' perceptions of the eating habits of Children with stunting in the Banjar Tribe Community

In our study, three keywords emerged as the most frequently mentioned during the in-depth interviews. The most frequently occurring word was “sometimes,” which appeared 51 times (1.32%). This was followed by the phrase “body weight,” appearing 39 times (1.01%), and the word “child,” which appeared 35 times (0.90%).

Children's Eating Patterns

This theme reflects the daily eating behaviours and parental practices that influence children’s nutritional intake within the Baniar ethnic

community. The findings of this study revealed several aspects related to the eating patterns of children with stunting, including snacking habits, meal frequency, types of foods served, side dishes, foods disliked by the child, and dietary restrictions imposed on the child. These findings are summarized in Figure 3 below.

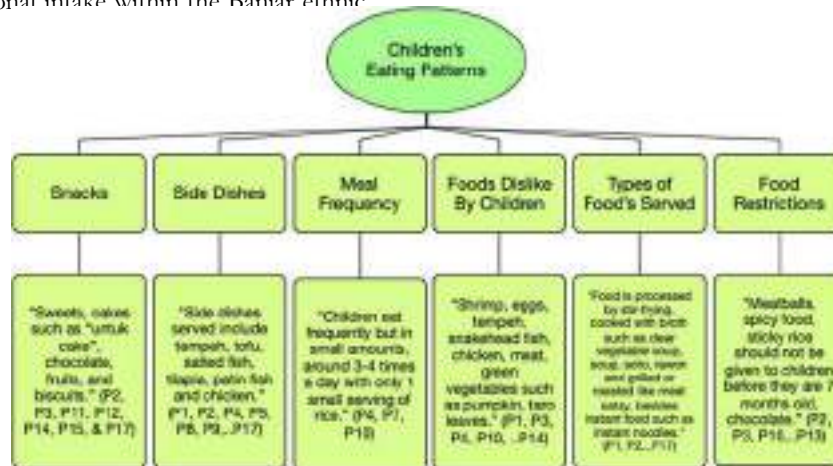


Fig. 3. Mind Map of Children's Eating Patterns

The mind map illustrates the thematic elaboration of *children's eating patterns*. According to the participants, their children tended to enjoy eating snacks such as local cakes known as “*umtuk*”, chocolate, biscuits, and similar foods. The participants also mentioned that their children preferred side dishes such as *tempeh*, tofu, and other local foods. In terms of meal frequency, the children tended to eat frequently but in small portions. Meanwhile, foods that were disliked by the children included shrimp, eggs, and *tempeh*. The participants described several common methods of food preparation, including stir-fried dishes (*oseng-oseng*), vegetable soups (*sup sayur*), *soto*, and *satay*. Some food restrictions were also reported, such as

avoiding *pentol* (meatballs), spicy foods, sticky rice (*ketan*) before the age of seven months, and chocolate.

Children's Eating Habits During Meals

The findings identified in this study regarding the eating habits of children with stunting include eating while walking, eating while watching TV, eating with sweet soy sauce, eating while using a mobile phone, and eating while playing. Our findings are outlined in Figure 4 below.



Fig. 4. Mind Map of Children's Eating Habits During Meals

The mind map illustrates the thematic elaboration of *children's eating habits during meals*, showing that, according to the participants, their children engaged in various activities while eating.

Mothers' Expectations

The findings identified in this study regarding mothers' expectations for their children with stunting include the child's condition improving, the child speaking sooner, the child gaining weight, and the child growing normally according to their age group. Our findings are outlined in Figure 5 below.



Fig. 5. Mind Map of Mothers' Expectations

The mind map illustrates the thematic elaboration of *mothers' Expectations*, in which the participants expressed various expectations regarding their children's growth and development, hoping for improvement and age-appropriate progress.

Decision-Makers on Meal Menus

The findings identified in this study regarding decision-makers on meal menus include the husband, wife, grandmother, and child. Our findings are outlined in Figure 6 below.

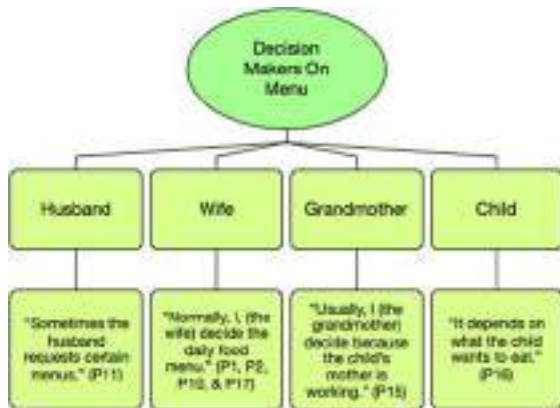


Fig. 6. Mind Map of Decision-Makers on Meal Menus

The mind map illustrates the thematic elaboration of *decision-makers on meal menus*, showing that, according to the participants, meal decisions were not solely made by mothers

or other nuclear family members. Grandmothers also played a role in determining the child's menu, as many children were left in their care from morning until evening. Consequently, grandmothers often decided what foods were prepared and served to the children.

Mothers' Perceptions of Healthy Food

The findings identified in this study regarding mothers' perceptions of healthy food include the consumption of vegetables, fish, and fruits. These findings are presented in Figure 7 below.

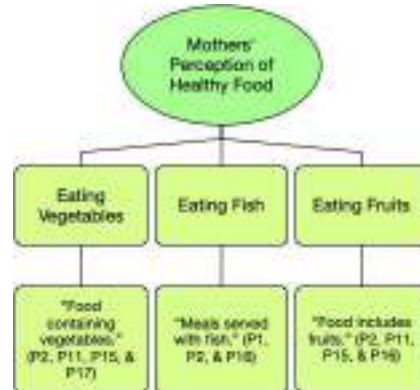


Fig. 7. Mind Map of Mothers' Perceptions of Healthy Food

The mind map illustrates the theme *mothers' perceptions of healthy food*, in which participants described healthy food as consisting of vegetables, fish, and fruits. This perception reflects that mothers possess a basic understanding of the importance of balanced nutrition to support children's growth and development. However, their understanding tends to focus on specific types of food commonly perceived as "healthy," without fully considering dietary diversity or the adequacy of other essential nutrients, such as plant-based proteins, milk, or complex carbohydrates.

DISCUSSION

Our findings indicate that mothers' perceptions regarding the eating habits of children with stunting in the Banjar community are reflected in five key themes.

Children's Eating Patterns

Our findings revealed that children with stunting consumed a variety of foods such as snacks, candies, steamed cakes (*kue untuk*), fruits, and biscuits. Although they ate frequently—about three to four times a day—the portion sizes were small, typically only one scoop of rice per meal. The types of food prepared were commonly cooked by stir-frying or boiling (e.g., clear vegetable soup, *soto* (Indonesian aromatic soup), *rawon* (Indonesian black beef soup)) or grilling (such as chicken meat satay). In addition, children frequently consumed

instant noodles and side dishes like *tempeh*, tofu, salted fish, *nila* fish, *patin* fish, and chicken. However, certain foods were disliked by the children, including shrimp, eggs, *tempeh*, *ikan gabus* (snakehead fish), chicken, meat, and green vegetables such as squash and taro leaves. There were also specific food restrictions, such as avoiding sticky rice (*ketan*) before the age of seven months and limiting chocolate consumption.

These eating patterns reflect not only children's food preferences but also the influence of Banjar cultural beliefs and socioeconomic conditions. In Banjar families, certain foods are traditionally categorized as “cold” (*dingin*) or “hot” (*panas*) and are believed to affect a child's health balance. For instance, foods like shrimp, eggs, and *ikan gabus* are often avoided because they are thought to cause allergies or “internal heat” (*panas dalam*), which may lead to illness or fever. Consequently, mothers may restrict these foods even though they are nutritionally valuable. Moreover, many Banjar households have limited financial resources, leading mothers to prioritize low-cost and easily accessible foods, such as instant noodles, salted fish, and fried dishes. These choices are also shaped by practical considerations—convenience, family food preferences, and the perception that these foods are “safe” and well-tolerated by children.

Overall, unbalanced dietary patterns and limited food variety can contribute to stunting in children (Martony, 2023). Therefore, improving dietary diversity is essential to ensure sufficient nutritional intake for optimal growth. Promoting better eating habits requires not only providing more nutritious and diverse meals but also addressing the underlying cultural and socioeconomic factors that shape mothers' food choices. Interventions that consider local food beliefs and preferences—such as using culturally accepted foods or modifying cooking methods—are more likely to be effective in improving child nutrition.

Previous studies by Suling, Ariani, and Fetriyah (2024) found a significant relationship between children's eating patterns and stunting, consistent with other studies (Nabuasa, 2024; Pujiati et al., 2021; Suling et al., 2024). However, other research reported no significant association between children's eating patterns and stunting (Angraini et al., 2023; Ruswati et al., 2021). These conflicting findings suggest that the relationship may be context-dependent, influenced by cultural food practices, household food security, or variations in measurement across studies. Therefore, further investigation is needed to clarify the role of children's eating patterns in stunting prevalence within different settings.

In addition, maternal education plays a crucial role in shaping children's eating patterns, particularly among families experiencing stunting. Mothers with higher education levels tend to have a better understanding of nutrition and health. They are more likely to recognize the benefits of diverse diets and to adopt healthy food preparation methods. Educated mothers are also more proactive in

seeking information about nutrition and in following health professionals' advice. Conversely, mothers with lower educational backgrounds often lack sufficient nutritional knowledge and rely on traditional food beliefs or convenience-based feeding practices. This was evident in the current study, where the majority of participants (58.8%) had completed only junior high school.

The Global Nutrition Report (2021) highlights the critical role of maternal education in shaping family nutrition practices. Mothers with limited knowledge of nutritious foods are more likely to provide diets that do not meet their children's nutritional requirements. This underscores that maternal education is not merely an influencing factor but a key determinant of children's dietary adequacy. Strengthening maternal knowledge through targeted nutrition and health education programs may therefore represent a strategic and evidence-based approach to preventing stunting and promoting optimal child growth and development (Global Nutrition Report, 2021).

Children's Eating Habits During Meals

Our findings revealed several common behaviors exhibited by children during mealtimes. These included walking around while eating, eating while watching television, adding sweet soy sauce to meals, eating while using a mobile phone, and eating while playing with toys. These behaviors indicate that children often engage in other distracting activities during meals.

Children's activities such as watching television and using mobile phones while eating are commonly facilitated by parents so that the child becomes distracted and easier for the mother to feed. This is consistent with a previous study by Risnawaty and Monika (2022), which found that mothers give gadgets to children who are difficult to feed so that they become easier to spoon-feed, as the children are distracted by TV and YouTube shows, even though the mothers stated that this is only done during feeding (Risnawaty & Monika, 2022). In the findings of Risnawaty and Monika (2022), mothers mentioned that when children are given something to watch, they become calm and thus easier to feed. Without gadget-based distractions, children tend to be fed while walking or running, so distraction is considered necessary to make them eat while sitting (Risnawaty & Monika, 2022). Supporting these findings, a study conducted by Juherman, Sutrio, Mulyani, and Wahyuni (2022) also reported that 8 out of 12 mothers still used toys, mobile phones, and television as distractions during meals (Juherman et al., 2022).

A distinct habit among the Banjar community is adding sweet soy sauce to meals. In fact, findings from a previous study revealed that children with stunting in Banjar Regency were willing to eat even if only served rice with sweet soy sauce (Ikasari et al., 2024). In line with the study by Kumalasari and Wulandari (2024), many mothers still feed their children based on family eating habits and use whatever food is available at home, without necessarily understanding its nutritional content. Food choices for toddlers are often based on what is available, what the child prefers, and what is

easy and convenient to prepare, with little attention given to nutritional balance or variety (Kumalasari & Wulandari, 2024).

Although mothers in Banjar culture commonly provide fish one of the community's staple protein sources daily food choices are still largely guided by convenience and household availability rather than structured nutritional planning. The provision of fish reflects a culturally rooted habit rather than a deliberate nutritional strategy. Consequently, mothers often rely on whatever ingredients are easily accessible, quick to prepare, or preferred by children, which may limit dietary diversity. This indicates that while some traditional practices are nutritionally beneficial, overall feeding patterns remain unstructured, highlighting the need for education programs that help mothers adopt more intentional and nutrition-guided feeding practices.

Mother's Expectations

Our findings identified that mothers of stunted children expressed expectations for their children to become healthier, speak sooner, gain weight, and grow according to their age. These findings are consistent with previous studies in which mothers of children with stunting expressed expectations for their child's recovery (Sari & Dinarsih, 2025). These expectations reflect the mothers' concerns about their children's delayed growth and development, which they clearly observe. Children with stunting typically have lower height and weight compared to standard growth benchmarks. In addition to physical delays, mothers are also aware of potential cognitive issues, such as difficulties in speech, thinking, memory, and communication. These concerns are supported by the observable symptoms of stunting namely, shorter height and lower weight relative to peers—which are clear indicators of nutritional deficiencies.

Beyond physical growth retardation, stunted children are also at risk for cognitive impairments, including problems with reasoning, memory, learning, language, and communication. Furthermore, they often struggle with concentration in school, emotional instability, and lower engagement in their learning environment (Fauziah et al., 2024). Based on the mothers' statements, it can be interpreted that their expectations are not solely limited to physical recovery but also include a desire to see their children develop optimally across various aspects of life. These expectations act as an important motivational factor in the mothers' role as the primary decision-makers in daily child feeding practices.

Furthermore, our study adds a dimension that remains insufficiently explored in the current literature by emphasizing mothers' future expectations for their stunted children. While previous research has predominantly focused on risk factors, feeding practices, and caregiving challenges, the emotional and aspirational perspectives of mothers have been largely overlooked. By capturing this underreported aspect, our study offers an important contribution to understanding the broader psychosocial context of stunting and provides meaningful insight for designing more empathetic and

family-centered intervention programs.

Decision-Makers on Family Meals

Our findings revealed that decision-making about daily food menus in Banjar families varies and may involve the husband, wife, grandmother, or child. However, in most cases, the wife (mother) plays the dominant role in deciding the daily menu. This finding aligns with previous research which investigated differences in food coping strategies between rural and urban households in relation to stunting. Their findings showed that wives were more dominant in food-related decisions, including menu planning, food expenditure, and the selection and preparation of nutritious meals. Some of the respondents in that study were also from the Banjar ethnic group (Pujokaroni et al., 2023). The dominant role of mothers in food-related decision-making in Banjar families is closely related to their domestic responsibilities, such as selecting, purchasing, and preparing food for the household. Meanwhile, the husband, as the head of the household, is generally more involved in work outside the home to provide for the family. However, our study found that not only wives serve as the key decision-makers in determining the family's meals. Some participants mentioned that husbands, children, and grandmothers also contribute to deciding the daily food menu. Husbands sometimes request specific dishes, and children may express food preferences. Grandmothers may decide on meals when they take care of the children in the mother's absence.

Parents, particularly mothers, need to possess the ability to provide diverse and nutritious meals to fulfill children's nutritional needs during their golden growth years. Menu diversity significantly affects children's appetite and willingness to eat. A study by Maulidia, Simatupang, and Adhe (2022) analyzing menu variety and its effects on children aged 2–4 years in Badang Village revealed that children had better appetites when served with varied meals and snacks. Not only did their appetite increase, but they also accepted the food more readily and ate properly (Maulidia et al., 2022). This finding highlights the importance of food variety in enhancing children's eating habits and acceptance of meals.

However, menu selection is not independent of a family's economic capability to purchase complete food ingredients. From the authors' perspective, several participants in this study had limited financial means, making it difficult to provide diverse meals in a single serving. Although varied meals from the five food groups can be achieved with minimal cost by selecting low-priced ingredients, some groups, such as fruits and protein sources, typically require extra spending due to their relatively high prices in Martapura, South Kalimantan.

Mothers' Perceptions of Healthy Food

Our findings showed that mothers perceived healthy food as consisting of vegetables, fish, and fruits. This indicates that Banjar mothers generally understand that healthy foods include vegetables, fish, and fruit. This result is in line with a qualitative study conducted by Hapzah, Asmuni, and Nurbaya (2023), which explored mothers' perceptions of stunting and its risk factors. Their study found that

mothers believed stunting was caused by children refusing to eat vegetables and fruits or having a poor appetite (Hapzah et al., 2023). Similarly, research by Heiko and Yurochko (2023), titled *Mother's Perceptions of Healthy Diet for Children in Ukraine*, revealed that mothers considered fresh fruits and vegetables as complementary components of a healthy diet for children, though not as the foundation. Moreover, none of the mothers fully understood the World Health Organization's recommendations for a healthy diet (Heiko & Yurochko, 2023).

While the participants in our study recognized vegetables, fruits, and fish as healthy food, this understanding is only partially correct because it does not fully represent the complete concept of balanced nutrition for young children. According to the Indonesian Ministry of Health Regulation No. 41 of 2014 on Balanced Nutrition Guidelines, children aged 6–24 months should receive a balanced diet that includes all five essential food groups: (1) staple foods as energy sources, (2) animal-based protein, (3) plant-based protein, (4) vegetables, and (5) fruits, accompanied by adequate fluids. The guidelines emphasize the importance of gradually introducing a variety of foods starting at six months to ensure adequate nutrient intake. The participants' view is considered incomplete because they tended to focus only on vegetables, fruits, and fish, whereas balanced nutrition requires a wider diversity of foods, including staple foods (e.g., rice, porridge, tubers) and plant-based protein sources (e.g., tofu, tempeh, beans). No single type of food—other than breast milk—can meet all nutritional needs for growth and health; therefore, children must receive food from multiple groups to achieve adequate and balanced nutrition (Peraturan Menteri Kesehatan Republik Indonesia Nomor 41 Tahun 2014, 2014).

The types of healthy food mentioned by participants in this study were still limited to vegetables, fish, and fruit. In fact, there are many other healthy food options representing each food group essential for children's consumption. For example, staple foods may include rice, potatoes, corn, noodles, and more; protein sources may include eggs, fish, chicken, beef, tempeh, and others; vegetables can range from carrots, spinach, and water spinach; and there is a wide variety of fruits and beverages. A diverse diet is especially crucial for toddlers and family members to support optimal growth and development (Pujokaroni et al., 2023).

Limitations and Cautions

This study has several limitations. First, the research was conducted in a specific cultural context, namely among mothers of the Banjar ethnic group living in riverbank areas of Martapura. Therefore, the results may not be generalizable to other ethnic groups or geographic regions with different socio-cultural and economic characteristics. Second, the data collection relied heavily on self-reported information through in-depth interviews, which may be subject to recall bias, social desirability bias, or misinterpretation of questions by participants. Although efforts were made to build trust and clarify meanings during the interviews, these biases cannot be

entirely ruled out. Third, the study involved a relatively small sample size ($n = 17$), which, while sufficient for qualitative research using an ethnographic approach, may limit the diversity of perspectives captured, particularly across different age groups, education levels, or parenting experiences. Finally, the interpretation of cultural practices and beliefs was conducted through the lens of the researchers, which may introduce researcher bias despite the use of triangulation and coding validation procedures. Therefore, caution is advised when applying these findings to broader populations. Future research is encouraged to include a larger and more diverse sample, incorporate observational methods, and explore the influence of cultural beliefs in a comparative manner across different ethnic groups to strengthen the validity and transferability of the results.

Recommendations for Future Research

Based on the findings and limitations of this study, several recommendations can be made for future research. First, future studies should explore the decision-making processes of mothers regarding child feeding practices, particularly in relation to cultural beliefs, food taboos, and traditional health perceptions. Understanding these deeper cultural dimensions may provide stronger insights into how social norms influence child nutrition and contribute to stunting. Second, integrating observational methods or participatory ethnographic techniques—such as field immersion, direct observation of feeding routines, or community-based participatory research—would enable researchers to capture child-feeding practices in natural settings. These approaches can help validate self-reported data and enrich the interpretation of maternal behaviors with contextual evidence.

Third, future research should also consider involving fathers, grandparents, and other family members who play significant roles in food-related decision-making within households. Examining the dynamics of shared caregiving could reveal key influencers beyond mothers and contribute to a more comprehensive understanding of family nutrition practices. Finally, there is a need for applied or interventional research that develops and evaluates culturally tailored educational programs aimed at improving maternal knowledge and practices related to child nutrition and stunting prevention. Such interventions should be designed with sensitivity to local food beliefs and cultural norms to ensure relevance and sustainability.

Although this study employed several strategies to minimize potential biases—including member checking with participants, peer debriefing with qualitative experts, and maintaining a detailed audit trail—the authors acknowledge that researcher subjectivity is inherent in ethnographic work. Nevertheless, the reflexive process, documentation of analytical decisions, and triangulation between interview data, field notes, and community observations strengthened the credibility, dependability, confirmability, and overall trustworthiness of the findings. Future qualitative studies are encouraged to continue integrating these methodological rigor techniques to enhance confidence in data interpretation and transferability of results.

CONCLUSION

This study explored maternal perceptions of feeding practices among children with stunting in the Banjar ethnic community, emphasizing how cultural, social, and household factors shape these practices. The dominant theme identified was children's eating patterns, which encompassed snack consumption, meal frequency, types of foods served, preferred and disliked foods, and variations in side dishes. These eating patterns strongly influenced nutritional intake and commonly guided maternal decisions related to daily feeding. In addition to the dominant theme, several non-dominant but influential themes emerged. These included maternal decision-making in food selection, shaped by family habits and internal household dynamics; maternal expectations around healthy growth; and culturally rooted food taboos that restricted certain foods believed to be unsuitable for young children. Together, these themes illustrate how maternal beliefs, traditions, and caregiving norms interact to influence feeding behaviours in Banjar families. The findings offer new insights into culturally embedded feeding perceptions, underscoring the need for culturally sensitive nutrition education and behaviour-focused interventions. Tailored, community-based strategies that address local eating patterns and cultural beliefs may strengthen stunting prevention efforts. This study's limitations include its restricted geographic focus and reliance on self-reported data. Future research should examine feeding practices in diverse cultural groups, incorporate observational methods, and evaluate targeted educational interventions. Such approaches may deepen understanding of child nutrition behaviours and support more context-specific public health strategies.

ACKNOWLEDGEMENTS

The author would like to thank the Directorate of Research, Technology, and Community Service, Directorate General of Higher Education (Ditjen Dikti), Ministry of Education and Culture of the Republic of Indonesia, for funding this research. Appreciation is also extended to the Head of STIKES Intan Martapura and the Head of the Research and Community Service Unit of STIKES Intan Martapura for their support during the implementation of this study. The author further acknowledges the nutritionist at Martapura 1 Public Health Center, Ms. Evi Fitria, S.Gz., as well as the health cadres, students (Fir'ad Setya Nugraha, Cut Ika Anugerah Kirana, and Muhammad Wirandi), and all participants for their valuable contributions.

REFERENCES

- Alfisyah. (2019). Tradisi Makan Urang Banjar: Kajian Folklor Atas Pola Makan Masyarakat Lahan Basah. *Jurnal Pendidikan Sosiologi Antropologi*, 1(3), 97–109. <https://ppjp.ulm.ac.id/journals/index.php/padaringan/article/view/1408/1142>
- Angraini, W., Firdaus, F., Pratiwi, B. A., Oktarianita, & Febriawati, H. (2023). Parenting, Eating Patterns And Physical Environmental Conditions With Incidence Stunting. *Journal of Nursing and Public Health*, 11(2), 500–511. <https://doi.org/https://doi.org/10.37676/jnph.v11i2.5186>
- Badan Kebijakan Pembangunan Kesehatan. (2023). Survei Kesehatan Indonesia (SKI). <https://www.badankebijakan.kemkes.go.id/hasil-ski-2023/>
- Dadras, O., Suwanbamrung, C., Jafari, M., & Stanikzai, M. H. (2024). Prevalence of stunting and its correlates among children under 5 in Afghanistan: the potential impact of basic and full vaccination. *BMC Pediatrics*, 24(436). <https://doi.org/https://doi.org/10.1186/s12887-024-04913-w>
- Fauziah, J., Trisnawati, K. D., Rini, K. P. S., & Putri, S. U. (2024). Stunting: Penyebab, gejala, dan pencegahan. *Jurnal Parenting Dan Anak*, 1(2), 1–11. <https://doi.org/https://doi.org/10.47134/jpa.v1i2.220>
- Global Nutrition Report. (2021). Progress towards ending malnutrition. <https://globalnutritionreport.org/reports/2021-global-nutrition-report/>
- Hapzah, Asmuni, & Nurbaya. (2023). Stunting itu bukan hanya pendek: Studi kualitatif persepsi ibu tentang stunting dan faktor penyebabnya. *Jurnal Kesehatan Masyarakat Indonesia*, 18(3), 28–34. <https://jurnal.unimus.ac.id/index.php/jkmi/article/view/9642/0>
- Heiko, L., & Yurochko, T. (2023). Mother's perceptions of healthy diet for children in Ukraine. *Health Economics and Management Review*, 4(3), 22–33. <https://doi.org/https://doi.org/10.61093/hem.2023.3-02>
- Ikasari, F. S., Maria, I., Chrisnawati, Nugraha, F. S., Abdillah, A. R., Kirana, C. I. A., & Wirandi, M. (2024). Mother's experience of caring for children with stunting in the riverside of Banjar Regency. *Media Publikasi Promosi Kesehatan Indonesia*, 7(11), 2666–2682. <https://doi.org/https://doi.org/10.56338/mppki.v7i11.6231>
- Ikasari, F. S., Pusparina, I., Nugraha, F. S., Abdillah, A. R., Kirana, C. I. A., & Wirandi, M. (2025). Exploration of Mother's Perception of Toddlers About Stunting: Qualitative Study. *Media Publikasi Promosi Kesehatan Indonesia*, 8(3), 177–178. <https://doi.org/https://doi.org/10.56338/mppki.v8i3.6932>
- Juherman, Y. N., Sutrio, Mulyani, R., & Wahyuni, E. S. (2022). Analisis Kualitatif Praktik Pemberian Makan Pada Bayi dan Anak di Wilayah Kerja Puskesmas Rajabasa Kota Bandar Lampung. *PREPOTIF Jurnal Kesehatan Masyarakat*, 6(2), 1115–1128. <https://doi.org/https://doi.org/10.31004/prepotif.v6i2.4375>

- Kumalasari, D., & Wulandari, U. R. (2024). Kebiasaan Makan Pada Balita Stunting di Kecamatan Grogol Kabupaten Kediri. *Jurnal Kesehatan Perintis*, 11(01). <https://doi.org/https://doi.org/10.33653/jkp.v11i1.1075>
- Martony, O. (2023). Stunting Di Indonesia: Tantangan Dan Solusi Di Era Modern. *Journal of Telenursing (JOTING)*, 5(2), 1734–1745. <https://doi.org/https://doi.org/10.31539/joting.v5i2.6930>
- Maulidia, P., Simatupang, N. D., Widayati, S., & Adhe, K. R. (2022). Analisis Variasi Penyajian Menu Makanan Terhadap Nafsu Makan Pada Anak Usia 2-4 Tahun Di Desa Badang. *SELING: Jurnal Program Studi PGRA*, 8(2), 159–171. <https://doi.org/https://doi.org/10.29062/seling.v8i2.1229>
- Nabuasa, C. (2024). Hubungan Riwayat Pola Asuh, Pola Makan, Asupan Zat Gizi Terhadap Kejadian Stunting Pada Anak Usia 24 – 59 Bulan Di Kecamatan Biboki Utara Kabupaten Timor Tengah Utara Propinsi Nusa Tenggara Timur. *Jurnal Pangan Gizi Dan Kesehatan*, 13(1), 58–74. <https://doi.org/https://doi.org/10.51556/ejpazih.v13i1.228>
- Nduwayezu, G., Mansourian, A., Bizimana, J. P., & Pilesjö, P. (2025). Hybridizing spatial machine learning to explore the fine-scale heterogeneity between stunting prevalence and its associated risk determinants in Rwanda. *Geo-Spatial Information Science*, 1–21. <https://doi.org/https://doi.org/10.1080/10095020.2025.2459133>
- Noveni, A., Malutama, E., Hadianor, Hasanuddin, Saputra, M. Y., & Ilmi, B. (2025). Budaya Pantang Makanan Pada Ibu Menyusui Di Wilayah Hambuku Baru Kec. Babirik Kab. Hulu Sungai Utara. *Midwifery and Complementary Care*, 4(1). <https://doi.org/10.33859/mcc.v4i1.848>
- Peraturan Menteri Kesehatan Republik Indonesia Nomor 41 Tahun 2014 (2014). <https://peraturan.bpk.go.id/Details/119080/permenkes-no-41-tahun-2014>
- Pujiati, W., Nirnasari, M., & Rozalita, R. (2021). Pola Pemberian Makan Dengan Kejadian Stunting Pada Anak Umur 1–36 Bulan. *Menara Medika*, 4(1). <https://jurnal.umsb.ac.id/index.php/menaramedika/article/view/2803/2191>
- Pujokaroni, S., Utoro, P. A. R., Aini, Q., & Saragih, B. (2023). Perbedaan Food Coping Strategy antara Rumah Tangga di Perdesaan dan Perkotaan terhadap Kejadian Stunting. *Amerta Nutrition*, 7(2SP), 80–91. <https://doi.org/10.20473/amnt.v7i2SP.2023.80-91>
- Purwaningsih, Y., Hendrawati, G. W., & Hartanto, A. E. (2025). Manfaat Putih Telur terhadap Penyembuhan Luka Perineum. Penerbit NEM. https://books.google.co.id/books?hl=id&lr=&id=C3FfEQAAQBAJ&oi=fnd&pg=PR1&dq=Manfaat+Putih+Telur+terhadap+Penyembuhan+Luka+Perineum.&ots=UKViL95_FC&sig=MfIZPjBXXvLj_822iNQb69HPVKI&redir_esc=y#v=onepage&q=Manfaat Putih Telur terhadap Penyembuhan Luka Perineum.&f=false
- Risnawaty, W., & Monika. (2022). Studi Pendahuluan Cara Pengasuhan Orang Tua Dalam Penggunaan Gawai Pada Anak. *Jurnal Muara Medika Dan Psikologi Klinis*, 02(01), 265–278. <https://doi.org/https://doi.org/10.24912/jmmpk.v2i1.20973>
- Ruswati, Leksono, A. W., Prameswary, D. K., Pembajeng, G. S., Inayah, Felix, J., Dini, M. S. A., Rahmadina, N., Hadayna, S., Aprilia, T. R., Hermawati, E., & Ashanty. (2021). Risiko Penyebab Kejadian Stunting pada Anak. *Jurnal Pengabdian Kesehatan Masyarakat: Pengmaskemas*, 1(2), 34–38. <https://doi.org/doi.org/10.31849/pengmaskemas.v1i2/5747>
- Sari, E., & Dinarsih, H. (2025). Pengalaman Ibu Dalam Merawat Anak Dengan Stunting Dan Tuberkulosis: Studi Fenomenologi di Surabaya. *Jurnal Kebidanan*, 14(1), 1–6. <https://doi.org/https://doi.org/10.47560/keb.v14i1.695>
- Sin, M. P., Forsberg, B. C., Peterson, S. S., & Alfven, T. (2024). Assessment of Childhood Stunting Prevalence over Time and Risk Factors of Stunting in the Healthy Village Programme Areas in Bangladesh. *Children*, 11(6). <https://doi.org/https://doi.org/10.3390/children11060650>
- Suling, C. I. S., Ariani, M., & Fetriyah, U. H. (2024). Hubungan Pola Makan Dengan Kejadian Stunting Pada Balita. *Jurnal Keperawatan Jiwa (JKJ)*, 12(04). <https://doi.org/10.26714/jkj.12.4.2024.1009-1022>
- Syahroni, M. H. A., Astuti, N., Indrawati, V., & Ismawati, R. (2021). Faktor-Faktor Yang Mempengaruhi Kebiasaan Makan Anak Usia Prasekolah (4-6 Tahun) Ditinjau Dari Capaian Gizi Seimbang. *Jurnal Tata Boga*, 10(1), 12–22. <https://ejournal.unesa.ac.id/index.php/jurnal-tata-boga/article/view/37802>
- Tamir, T. T., Gezhegn, S. A., Dagnew, D. T., Mekonnen, A. T., Aweke, G. T., & Lakew, A. M. (2024). Prevalence of childhood stunting and determinants in low and lower-middle income African countries: Evidence from standard demographic and health survey. *PLoS ONE*, 19(4), e0302212. <https://doi.org/https://doi.org/10.1371/journal.pone.0302212>
- Veniaty, S. (2023). Pamali pada perempuan hamil di masyarakat Banjar Kalimantan Selatan (Kajian antropologi sastra). *Enggang: Jurnal Pendidikan, Bahasa, Sastra, Seni Dan Budaya*, 3(2). <https://doi.org/https://doi.org/10.37304/enggang.v3i2.10042>
- World Health Organization. (2023). Joint Child Malnutrition Estimates. <https://www.who.int/data/gho/data/themes/topics/joint-child-malnutrition-estimates-unicef-who-wb>

Original Research

The Effectiveness of Support Group Therapy on Depression and Anxiety Levels Among the Elderly in The Halim Subdistrict of East Jakarta

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ARTICLE INFO

Keywords:

Support group
therapy

Depression;
Anxiety

Elderly

ABSTRACT

Aging is often accompanied by physiological, psychological, and social changes that increase the risk of mental health problems, particularly depression and anxiety. Effective psychosocial interventions are needed to help older adults manage these challenges and improve their well-being. This study aimed to determine the effect of Support Group Therapy on reducing depression and anxiety levels among older adults in Halim Village, East Jakarta. This study employed a quantitative quasi-experimental design with a pre-test–post-test approach. The sample consisted of 34 older adults selected using purposive sampling based on predetermined inclusion criteria. The intervention was delivered through 10 structured sessions, each focusing on specific topics related to emotional well-being and peer support. Data normality was tested using the Kolmogorov–Smirnov test, while statistical analysis was conducted using paired t-tests and independent sample t-tests. The results showed a significant difference ($p < 0.001$) in depression and anxiety levels before and after the intervention, indicating that Support Group Therapy is effective in reducing depression and anxiety among the elderly. These findings contribute to nursing practice, particularly in mental health nursing, by supporting Support Group Therapy as an effective psychosocial intervention to improve the mental health of older adults. This intervention may be implemented sustainably in community settings and health care facilities that provide services for the elderly.

Received 1 November 2025;

Received in revised form 6 December 2025;

Accepted 16 December 2025

<https://doi.org/10.19166/nc.v13i2.10456>

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INTRODUCTION

Older adults are commonly defined as individuals aged 60 years and above, a standard widely used in many developing countries, including Indonesia (Sari et al.,

2025). The global aging population continues to increase rapidly due to improvements in life expectancy and declining fertility rates. According to the United Nations World Population Prospects (2022), the number of people aged 65 and older is projected to rise from 761 million in

2021 to 1.6 billion by 2050, meaning that one in six people worldwide will be aged 65 years and older. Approximately 80% of this population will reside in low- and middle-income countries, including Indonesia (United Nations, 2024). Indonesia is experiencing the same demographic shift. Based on recent national demographic projections, the proportion of older adults in Indonesia is experiencing a similar demographic transition. Based on recent national demographic projections, the proportion of older adults in Indonesia is expected to reach approximately 19.9% of the total population by 2045, placing the country within the category of an aging society (Yudhistira et al., 2024). As the proportion of older adults grows, the dependency ratio is expected to rise, and many elderly individuals continue to face challenges such as multimorbidity, limited social support, low socioeconomic status, and reduced functional capacity (Li et al., 2023; Puyan  et al., 2025). These combined physiological, psychological, and social changes increase vulnerability to mental health problems, particularly depression and anxiety. Mental health disorders remain a major global health concern and are projected to become one of the leading contributors to the global disease burden by 2030 (WHO, 2025).

Older adults are especially at risk due to factors such as bereavement, loneliness, reduced social interaction, loss of roles, and chronic illness, all of which may contribute to emotional distress and declining mental well-being. Data from the National Socio-Economic Survey (Susenas) collected in March 2023 indicate that 9.75% of older adults live alone (BPS, 2023). In terms of gender, the disparity remains significant, with 14.29% of older adults living alone being women, compared to 4.69% being men. Older adults whose spouses have passed away and who live far from their children are particularly vulnerable to loneliness. The proportion of older adults living alone remains higher in rural areas (10.87%) than in urban areas (8.92%).

Psychological disorders among older adults can lead to both physical and mental health deterioration. Research has demonstrated associations between psychological disorders and limited social interaction with conditions such as hypertension, cardiovascular disease, obesity, impaired immune function, depression, cognitive decline, Alzheimer's disease, and increased mortality (Kemenkes, 2016; van Marwijk et al., 2015). A study by Puspawati and Rekawati involving older adults in Jakarta found that 57.4% of 101 respondents experienced depression (Puspawati & Rekawati, 2017). Similar findings were reported among 40 older adults in Bali, with 50% experiencing depression and poor quality of life (Mahadewi & Ardani, 2018). Likewise, a study conducted in Padang reported that 50% of 100 older adult respondents experienced depression (Utami et al., 2018).

Meanwhile, research conducted in Manado revealed that among 36 respondents, 75% experienced mild depression and 25% experienced severe depression (Manafe & Berhimpun, 2022). Other studies have confirmed the high prevalence of depression and anxiety among older adults, both of which negatively affect quality of life and increase mortality risk (Perkovic et al., 2018; Puspawati & Rekawati, 2017). This is in line with previous research revealing that depression and anxiety in the elderly are significantly associated with an increased risk of heart disease and a high risk of death (van Marwijk et al., 2015). Additional evidence suggests that factors such as retirement, loneliness due to weakened social relationships, financial insecurity, and limited family and community support contribute to depression and anxiety in older adults (Musavi et al., 2017).

A large-scale study using data from the Indonesian Family Life Survey (IFLS-5), involving 4,236 individuals aged 60 years and older, reported a depression prevalence of 16.3%. Factors associated with depression included moderate to low subjective economic status, poor perceived health, dependence in activities of daily living, insomnia, a history of falls, and other related factors (Handayani et al., 2022). Another study involving 1,381 older adults aged 60 years and above from 15 community health centers reported a relatively high prevalence of depressive symptoms, with approximately 60.03% of respondents affected. Associated factors included gender, previous employment status, health conditions, and loneliness (Susanty et al., 2024). These findings highlight the need for effective non-pharmacological community-based interventions to address mental health problems among older adults (Larsen et al., 2025; Tao et al., 2023).

The increasing number of older adults and the complexity of their health problems require comprehensive government efforts to promote elderly well-being. A systematic review and meta-analysis by Holvast and Massoudi found that non-pharmacological interventions, including support group therapy, effectively reduce depression among older adults and can be implemented in community settings. This approach is particularly important because pharmacological treatments, such as antidepressants, may increase the risk of polypharmacy in older populations (Holvast et al., 2017). Supporting evidence indicates that support group therapy improves quality of life among older adults with hypertension across physical, psychological, environmental, and social domains (Tobing & Novianti, 2019). In addition, supportive therapy provided to families has been shown to reduce caregiver burden and anxiety, as demonstrated by significant differences before and after intervention in treatment groups (Harkomah & Saswati, 2021).

Support group therapy developed by Shu and Lung (2005),

consisting of 10 structured sessions, has been previously implemented and evaluated in Taiwan. However, despite the growing elderly population and increasing prevalence of mental health problems in Indonesia, evidence regarding the effectiveness of structured support group therapy for older adults remains limited. To date, no studies have examined the implementation of Shu and Lung's structured support group therapy model among elderly populations in Indonesia. The Halim Perdanakusuma sub-district in Jakarta represents a relevant community setting, characterized by a high proportion of older adults and limited access to non-pharmacological mental health interventions at the primary care level. Therefore, this study aimed to address this research gap by examining the effectiveness of support group therapy in reducing depression and anxiety among older adults in this community.

METHOD

This study employed a quantitative quasi-experimental design using a one-group pretest–posttest approach, which measured levels of depression and anxiety before and after the Support Group Therapy intervention. The study was conducted in Halim Perdanakusuma Village, East Jakarta. The population of this study comprised older adults residing in Halim Perdanakusuma Village. Initial identification of respondents with depression and anxiety was conducted through a screening process using the Depression and Anxiety subscales of the DASS questionnaire. Older adults who screened positive for depression and/or anxiety were invited to participate in the study.

A total of 40 eligible respondents were recruited through purposive sampling. During the intervention, six respondents withdrew due to personal and health-related reasons, resulting in 34 respondents completing the study and were included in the final analysis. The inclusion criteria were: willingness to participate, ability to read and write, being *compos mentis*, and experiencing depression and/or anxiety based on DASS screening results. The exclusion criterion was uncooperative behavior during the intervention. Participants were not receiving antidepressant or anxiolytic medications during the study period, as confirmed through self-report during the initial assessment.

This research instrument used the standardized DASS-42 (Depression, Anxiety, Stress Scale) questionnaire developed by Lovibond and Lovibond (Lovibond & Lovibond, 1995). The DASS-42 questionnaire was translated into Indonesian by Damanik and consists of four response options for each item. The DASS is considered suitable for use in large non-clinical

populations. In this study, only the depression and anxiety subscales were utilized, each comprising 14 items. Depression severity was classified as normal (0–9), mild (10–13), moderate (14–20), severe (21–27), and extremely severe (≥ 28), while anxiety severity was categorized as normal (0–7), mild (8–9), moderate (10–14), severe (15–19), and extremely severe (≥ 20). These classifications are consistent with the original DASS-42 manual and previous validation studies of the Indonesian version.

The depression subscale consisted of items 3, 5, 10, 13, 16, 17, 21, 24, 26, 31, 34, 37, 38, 42, while the anxiety subscale consisted of items 2, 4, 7, 9, 15, 19, 20, 23, 25, 28, 30, 36, 40, 41. The Indonesian version of the DASS was validated using two sample groups ($N = 144$): participants residing in Yogyakarta and Bantul who had experienced a disaster, and participants residing in Jakarta and surrounding areas who had not experienced a disaster. Reliability testing using Cronbach's alpha demonstrated excellent internal consistency. The overall reliability coefficient was $\alpha = 0.95$, with Cronbach's alpha values of 0.90 for the depression subscale and 0.85 for the anxiety subscale (Damanik, 2011). Ethical approval for this study was obtained from Universitas Dirgantara Marsekal Suryadarma (Number BLP2M44XI2025). The study was conducted in August 2025. All participants received written information explaining the purpose, procedures, risks, and benefits of the study, and written informed consent prior to data collection.

The intervention followed the Support Group Therapy model developed by Shu and Lung (2005), which consists of 10 structured sessions covering key topics: (1) knowing each other, (2) caring for myself, (3) my interpersonal relationships, (4) my family, (5) interaction, (6) my selfness (selfishness), (7) coping strategies, (8) social networks, (9) community resources, and (10) perspective on death. Each session serves as a guide for discussion and self-disclosure, while participants were also encouraged to raise additional issues affecting their mental health. The therapy emphasized the “here-and-now” principle, focusing on participants' current experiences. A standardized therapy module and participant workbook were used to ensure intervention consistency.

The intervention was conducted in small groups of up to five participants, with two trained facilitators per group. Facilitators underwent a Training of Trainers (TOT) program prior to data collection, which aimed to standardize understanding of the therapy protocol, questionnaire administration, and knowledge related to depression and anxiety in older adults. Facilitators were psychiatric nursing lecturers with expertise in geriatric and community nursing and extensive experience in elderly mental health interventions. Although formal inter-rater

reliability testing (e.g., Kappa analysis) was not performed, consistency in intervention delivery was ensured through structured discussions and protocol review during the TOT. The therapy was implemented over a single day for each group, with each session lasting approximately 60–90 minutes, divided into two phases: (i) Term 1: Sessions 1–5, focusing on introductory topics and personal/social relationships (ii) Term 2: Sessions 6–10, focusing on coping strategies, social networks, community resources, and perspectives on death. Pre-tests were conducted before the first session of Term 1, and post-tests were conducted after the completion of Term 2, allowing evaluation of the intervention’s effect on depression and anxiety levels. Of the initial participants, 34 completed all sessions, while six participants withdrew before completion and were excluded from the posttest analysis.

Data analysis was conducted using IBM SPSS Statistics version 20.0. Data normality was tested using the Kolmogorov-Smirnov test ($p > 0.05$). Univariate analysis was performed to describe demographic characteristics using frequencies and percentages, while bivariate analysis was conducted using the paired t-test to examine differences in depression and anxiety levels before and after the intervention ($p < 0.05$).

RESULT

Table 1 shows that more than half of the respondents were female (64.7%), approximately one-third had completed senior high school education (38.2%), and a similar proportion were aged 65–69 years (38.2%).

Table 1. Respondent Characteristics: Gender, Education, and Age (n= 34)

Variable	n	%
Gender		
Male	12	35.3
Female	22	64.7
Education		
Elementary	7	20.6
Junior	10	29.4
High	13	38.2
Diploma	2	5.9
University	2	5.9
Age		
60-69	22	64.7
70-79	8	23.5
≥80	4	11.8

Table 2 presents the distribution of depression and anxiety severity among respondents prior to the Support Group Therapy intervention. The highest proportion of respondents experienced

moderate depression (47.1%), followed by severe and extremely severe depression (38.2%). With regard to anxiety, the majority of respondents were classified as having extremely severe anxiety (67.6%), followed by severe anxiety (29.4%). No respondents were categorized as having mild anxiety prior to the intervention.

Table 2. Frequency Distribution of Depression and Anxiety in Elderly People Before Support Group Therapy Intervention (n=34)

Depression	n	%
Normal	1	2.9
Mild	2	5.9
Moderate	16	47.1
Severe	13	38.2
Very severe	2	5.9
Anxiety		
Moderate	1	2.9
Severe	10	29.4
Very severe	23	67.6

Table 3 presents the distribution of depression and anxiety severity among respondents after the Support Group Therapy intervention. Most respondents were classified as having normal depression levels (94.1%), followed by mild depression (5.9%), with no respondents remaining in the severe or extremely severe categories. Similarly, the highest proportion of respondents demonstrated normal anxiety levels (73.5%), followed by moderate anxiety (6.0%). No respondents were classified as having severe or extremely severe anxiety following the intervention.

Table 3. Frequency Distribution of Depression and Anxiety in Elderly People Post Support Group Therapy Intervention (n= 34)

Depression	n	%
Normal	32	94.1
Mild	2	5.9
Anxiety		
Normal	25	73.5
Mild	3	8.8
Moderate	6	17.6

Table 4 shows the results of the paired t-test correlation analysis, which revealed a statistically significant difference in depression and anxiety scores before and after the Support Group Therapy intervention ($p < 0.001$). These findings indicate that Support Group Therapy significantly reduced depression and anxiety levels among older adults.

Table 4. The Relationship Between Depression and Anxiety Levels in Elderly People Pre and Post Support Group Therapy Intervention (n= 34)

Variable	Pre intervention (Mean ± SD)	Post intervention (Mean ± SD)	Difference (Δ)	t	p-value
Depression	3.38±0.81	1.06±0.23	2.32	16.07	<0.0001
Anxiety	4.65±0.54	1.44±0.78	3.20	20.45	<0.0001

Table 5 further demonstrates significant differences in mean depression and anxiety scores before and after the intervention ($p < 0.001$), confirming that Support Group Therapy was effective in reducing both depression and anxiety among the participants.

Table 5. The Effect of Supportive Group Therapy Intervention on Reducing Levels of Depression and Anxiety in the Elderly (n= 34)

Variable	t	df	P value
Depression Pre vs Post test	9.84	34	<0.0001
Anxiety Pre vs Post test	8.15	34	<0.0001

DISCUSSION

Before the Support Group Therapy intervention, respondents generally exhibited moderate to severe levels of depression and anxiety, indicating a substantial baseline burden of psychological distress among participants. This condition illustrates that most of the elderly in this study experienced quite high psychological pressure, both in the form of depression and anxiety. High levels of depression and anxiety among older adults have been widely reported in previous studies. Factors such as spousal loss, limited social activities, declining physical health, loneliness, and reduced family support are known to contribute to psychological disorders in older populations (Putri Dewi, 2023; Wisanti et al., 2024).

After being given Support Group Therapy intervention, there was a significant decrease in depression and anxiety levels. Most respondents were in the normal category for both depression and anxiety. The paired t-test results demonstrated statistically significant differences in depression and anxiety scores before and after the intervention ($p < 0.001$), indicating that Support Group Therapy was effective in reducing psychological distress among older adults. These findings are consistent with previous studies reporting that group-based interventions can reduce depression among older adults by enhancing emotional support and fostering a sense of belonging (Amri et al. 2025; Hidayati et al., 2021).

Within a group setting, older adults have opportunities to share experiences, express emotions, and exchange coping strategies, thereby creating an atmosphere of mutual support and reducing feelings of social isolation (PRA, 2014). According to Stuart, Support Group Therapy emphasizes open communication, empathy, and interpersonal connection among participants. These interactions promote a sense of belonging, self-esteem, and self-efficacy, which are closely associated with reductions in depressive and anxiety symptoms (Stuart, 2012). Previous research has also shown that support group therapy can significantly enhance self-esteem, optimism, and overall psychological well-being among older adults (Banon et al., 2022; Wahab, 2014).

From a physiological perspective, the observed reduction in depression and anxiety may be partially explained by decreased sympathetic nervous system activation resulting from relaxation and feelings of acceptance within the group. Enjoyable social activities have been shown to lower cortisol levels and increase dopamine and serotonin hormones, which play an important role in mood regulation (Mikhaline, 2015; Ruqaiyah et al., 2023).

Support group therapy utilizes the social support systems surrounding older adults, enabling them to recognize and mobilize coping resources to manage stress more effectively. Through group interaction, participants gain opportunities to discuss personal problems, receive feedback, and identify sources of emotional and practical support that contribute to adaptive coping mechanisms. The working concept of supportive group therapy is believed to play an important role in enabling older adults to identify stressors and the resources they have to anticipate dealing with these problems. Research on psychological disorders has proven that anxiety, stress, and depression occur because of uncontrollable emotional pressure. Previous studies have shown that anxiety, stress, and depression often arise from uncontrolled emotional pressure, and that recognizing stressors is a critical step in managing psychological disorders (Lisnawati et al., 2018). According to Yalom and Leszcz (2020), therapeutic factors such as universality (the awareness that other people also face similar problems), altruism (giving and receiving support), and instillation of hope are key elements that contribute to the success of group therapy. Older adults who perceive that they

are not alone and receive emotional support from others are more likely to develop a positive outlook on life and greater optimism about the future. (Yalom & Leszcz, 2020).

This study has several limitations that should be considered when interpreting the findings. First, the relatively small sample size (34 participants) may limit the generalizability of the results to the broader elderly population. Consequently, future studies involving larger samples and participants from diverse social backgrounds and health conditions are needed.

Second, the use of a single-group pretest–posttest design without a control group limits causal inference, as changes in depression and anxiety levels may have been influenced by external or uncontrolled factors. Future studies employing randomized controlled or comparative designs are therefore recommended. Third, the study was conducted in a single community setting, and context-specific social, cultural, and environmental factors may have influenced participants' responses to the intervention. Multicenter studies across different regions and cultural contexts would provide a more comprehensive understanding of the effectiveness of Support Group Therapy among older adults. Fourth, the limited duration of the intervention and the absence of long-term follow-up restricted the ability to assess the sustainability of the therapeutic effects. Longitudinal studies with medium- and long-term evaluations are warranted to determine whether reductions in depression and anxiety are maintained over time. Fifth, although validated and reliable instruments were used, the reliance on self-reported measures may have introduced subjective bias. Finally, this study did not examine other potential influencing factors, such as family support, spirituality, or the quality of social relationships outside the therapy group, which may moderate the effectiveness of Support Group Therapy. Considering these limitations, future studies should adopt more rigorous experimental designs, including control or comparison groups, expand the range of variables examined, and extend the duration of intervention and follow-up to provide a more robust evaluation of Support Group Therapy for older adults.

CONCLUSION

The findings of this study indicate that Support Group Therapy is effective in reducing depression and anxiety among older adults. Overall, this intervention has a positive impact on mental health as well as psychosocial well-being, as it encourages healthy social interaction, enhances feelings of acceptance, and supports the development of adaptive coping mechanisms to manage life stressors experienced in older age. Therefore, Support Group Therapy may be considered an effective, feasible, and easily implemented group-based nursing intervention in various healthcare settings and community-based elderly programs. Overall, Support Group Therapy demonstrates a positive impact on both the mental

health and psychosocial well-being of older adults. This intervention promotes healthy social interaction, enhances feelings of acceptance, and supports the development of adaptive coping mechanisms to manage life stressors experienced in later life. These findings suggest that Support Group Therapy is a feasible and effective group-based nursing intervention that can be implemented across various healthcare and community settings for older adults.

Beyond clinical practice, the findings of this study also have important implications for nursing education. Nursing education institutions play a crucial role in integrating evidence-based interventions into the curriculum, particularly within gerontic and mental health nursing courses. Practical strategies may include training students to design and facilitate Support Group Therapy, incorporating group-based approaches into clinical and community field practice, and encouraging further research on the application of Support Group Therapy for diverse psychological conditions among older adults. In addition, collaboration between educational institutions, nursing homes, and community-based elderly organizations can support the implementation of group-based support programs as part of community service initiatives. Taken together, these findings contribute to the improvement of elderly nursing care quality and reinforce the role of nursing education in mental health promotion and prevention among older adults.

ACKNOWLEDGEMENTS

The authors would like to thank all individuals and organizations whose support and contributions made this study possible.

REFERENCES

- Amri, K., Fahruji, A., & Nazwa, W. N. (2025). Penurunan Tingkat Depresi Pada Lanjut Usia Melalui Terapi Tertawa. *Jurnal Bakti Dirgantara*, 2(1), 20-26.
- Banon, E., Rakhmawati, I., Hidayat, E., Sudrajat, A., Suratun, S., & Hartini, T. (2022). Terapi Kelompok Life Review Efektif dalam Meningkatkan Harga Diri Lansia. *Jurnal Keperawatan*, 7(2), 224-233.
- Damanik, E. D. (2011). The measurement of reliability, validity, items analysis and normative data of Depression Anxiety Stress Scale (DASS). *Diundub dari*.
- Handajani, Y. S., Schröder-Butterfill, E., Hogervorst, E., Turana, Y., & Hengky, A. (2022). Depression among Older Adults in Indonesia: Prevalence, Role of Chronic Conditions and Other Associated Factors. *Clin Pract Epidemiol Ment Health*, 18, e174501792207010. <https://doi.org/10.2174/17450179-18-e2207010>

- Harkomah, I., & Saswati, N. (2021). The effectiveness of supportive and psychoeducational family therapy: A linkage towards burden and anxiety of care for children with mental retardation. *Malabayati International Journal of Nursing and Health Science*, 4(2), 103-111.
- Hidayati, S., Baequny, A., & Fauziyah, A. (2021). Intervensi TAKS (Terapi Aktivitas Kelompok Sosialisasi) sebagai upaya menurunkan tingkat depresi lansia. *JABI: Jurnal Abdimas Bhakti Indonesia*, 2(2), 64-76.
- Holvast, F., Massoudi, B., Oude Voshaar, R. C., & Verhaak, P. F. (2017). Non-pharmacological treatment for depressed older patients in primary care: A systematic review and meta-analysis. *PloS one*, 12(9), e0184666.
- Kemenkes, R. (2016). Situasi lanjut usia (Lansia) di Indonesia. Jakarta: Kemenkes RI. In.
- Larsen, A. J., Teobaldi, G., Jeraldo, R. I. E., Falkai, P., & Cooper, C. (2025). Effectiveness of pharmacological and non-pharmacological interventions for treatment-resistant depression in older patients: a systematic review and meta-analysis. *BMJ Mental Health*, 28(1).
- Li, P., Zhong, J., He, Y., Yan, H., Xie, M., & Meng, L. (2023). Loneliness and depression among community-dwelling older adults in China during the COVID-19 epidemic: The mediating role of social support. *Medicine*, 102(37), e35171.
- Lisnawati, S. K., Muhammad, T. A. S., BS PA, P. D., & Rita, H. W. S. K. (2018). *Pengaruh Supportive Group Therapy terhadap Stres Lansia Dengan Hipertensi di Puskesmas Pudakpayung* Medicine Faculty].
- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour research and therapy*, 33(3), 335-343.
- Mahadewi, I. G. A., & Ardani, G. (2018). Hubungan tingkat depresi dengan kualitas hidup pada lansia di Panti Sosial Werdha Wana Seraya Denpasar Bali. *E-Jurnal Medika*, 7(8), 1-8.
- Manafe, L. A., & Berhimpon, I. (2022). Hubungan tingkat depresi lansia dengan interaksi sosial lansia di bpslul senja cerah manado. *Jurnal Ilmiah Hospitality*, 11(1), 749-758.
- Mikhaline, C. (2015). *Pengaruh Terapi Tertawa Terhadap Penurunan Skor Depresi Pada Lanjut Usia (Lansia) Di Panti Graha Werdha Marie Joseph Kota Pontianak* Universitas Tanjungpura].
- Musavi, M., Mohammadian, S., & Mohammadinezhad, B. (2017). The effect of group integrative reminiscence therapy on mental health among older women living in Iranian nursing homes. *Nursing open*, 4(4), 303-309.
- Perkovic, R., Sucic, A., Vasilj, I., & Kristo, B. (2018). The incidence of depression and anxiety among the elderly in the area of Livno, Bosnia and Herzegovina. *Materia socio-medica*, 30(3), 176.
- PRA, G. S. M. (2014). *Pengaruh Terapi Kenangan (Reminiscence Therapy) Dengan Metode Terapi Aktivitas Kelompok Terhadap Fungsi Kognitif Pada Lansia di Panti Werdha Hargo Dedali Surabaya* UNIVERSITAS AIRLANGGA].
- Puspadewi, A. A. R., & Rekawati, E. (2017). Depresi berhubungan dengan kualitas hidup lansia di Panti Sosial Tresna Werdha di Jakarta. *Jurnal Keperawatan Indonesia*, 20(3), 133-138.
- Putri Dewi, R. (2023). *Hubungan Kehilangan Pasangan Hidup Dengan Tingkat Depresi Pada Lansia Di Kelurahan Kaligawe* Universitas Islam Sultan Agung Semarang].
- Puyan , M., Chabrera, C., Cam n, E., & Cabrera, E. (2025). Uncovering the impact of loneliness in ageing populations: a comprehensive scoping review. *BMC geriatrics*, 25(1), 244.
- Ruqaiyah, R., Irwan, H., Alamsyah, A., Harun, A., Jannata, R. W., & Amir, F. (2023). Pengaruh Serotonin Terhadap Perubahan Mood Pada Remaja Wanita Premenstrual Syndrome. *Media Penelitian dan Pengembangan Kesehatan*, 33(3), 68-77.
- Sari, S. P., Everink, I. H., Lohrmann, C., Amir, Y., Sari, E. A., Halfens, R. J., & Schols, J. M. (2025). Knowledge, attitude and practice of family caregivers on pressure injury prevention for community-dwelling older adults: a cross-sectional study in an Indonesia City. *BMC nursing*, 24(1), 24.
- Stuart, G. W. (2012). *Principles and Practice of Psychiatric Nursing-E-Book: Principles and Practice of Psychiatric Nursing-E-Book*. Elsevier Health Sciences.
- Susanty, S., Mujahid, E., Suyanto, J., Sudayasa, I., & Chuang, Y. (2024). Older adults with predictors factors of depressive symptoms in the community of Indonesia: a cross-sectional study. *Advances in gerontology= Uspekhi gerontologii*, 37(5), 525-531.
- Tao, A., Ho, K. H. M., Yang, C., & Chan, H. Y. L. (2023). Effects of non-pharmacological interventions on psychological outcomes among older people with frailty: a systematic review and meta-analysis. *International Journal of Nursing Studies*, 140, 104437.
- Tobing, D. L., & Novianti, E. (2019). Efektifitas terapi supportif terhadap kualitas hidup lansia dengan hipertensi. *Jurnal Ilmiah Ilmu Keperawatan Indonesia*, 9(03), 648-652.
- United Nations, D. o. E. a. S. A. (2024). *World Population Prospects 2024: Summary of Results*. Stylus Publishing, LLC.
- Utami, A. W., Gusyaliza, R., & Ashal, T. (2018). Hubungan kemungkinan depresi dengan kualitas hidup pada lanjut usia di Kelurahan Surau Gadang Wilayah Kerja Puskesmas Nanggalo Padang. *Jurnal Kesehatan Andalas*, 7(3), 417-423.
- van Marwijk, H. W., van der Kooy, K. G., Stehouwer, C. D., Beekman, A. T., & van Hout, H. P. (2015). Depression increases the onset of cardiovascular disease over and above other determinants in older primary care patients, a cohort

study. *BMC cardiovascular disorders*, 15(1), 40.

Wahab, A. F. (2014). *Pengaruh Terapi Aktivitas Kelompok (TAK) Stimulasi Persepsi terhadap Peningkatan Harga Diri dan Motivasi Lansia* UNS (Sebelas Maret University)].

Wisanti, E., Putri, D. K., Wulandari, M. A., & Pradessetia, R. (2024). Faktor-Faktor Yang Mempengaruhi Depresi Pada Lansia. *Al-Asalmiya Nursing: Jurnal Ilmu Keperawatan (Journal of Nursing Sciences)*, 13(1), 156-166.

Yalom, I. D., & Leszcz, M. (2020). *The theory and practice of group psychotherapy*. Hachette UK.

Yudhistira, M. H., Brodjonegoro, B. P., & Qibthiyyah, R. M. (2024). Unlocking Urban Potential. *Bulletin of Indonesian Economic Studies*, 60(2), 129-159.

Original Research

Descriptive Cross-Sectional Study on Nursing Students' Understanding of Human Physiology Concepts in Basic Biomedical Science Education

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ARTICLE INFO

Keywords:

Student
understanding
Human physiology
Nursing
Biomedical science
Health education

ABSTRACT

Human physiology is a core subject in nursing education, providing essential knowledge for understanding the human body and applying this knowledge in clinical practice. Despite its importance, many nursing students face difficulties in mastering complex physiological concepts, leading to gaps between theoretical knowledge and practical application. Addressing these challenges is crucial to ensure that future nurses are adequately prepared to deliver safe and effective patient care. This study aimed to evaluate nursing students' understanding of human physiology concepts in basic biomedical science education and to explore differences based on gender and semester level. A descriptive cross-sectional design was conducted with 50 nursing students from the second and fourth semesters at Famika University. Data were collected using a validated 25-item multiple-choice physiology test. Content validity was reviewed by experts, and a pilot test yielded a Cronbach's alpha of 0.82, confirming good reliability. Data were analyzed using SPSS version 26 with descriptive statistics, independent t-tests, and chi-square tests, applying a significance level of $p < 0.05$. The results showed that second-semester students achieved higher comprehension scores (77.75%, Good) than fourth-semester students (68%, Fair). Male students also performed better (81.25%, Good) compared to female students (74.52%, Fair). These findings suggest that variations in students' understanding may be influenced by academic workload, prior learning experiences, and learning motivation. Strengthening physiology education through active learning strategies and better integration of biomedical science content into the nursing curriculum is therefore recommended.

Received 17 May 2025;

Received in revised form 24 July 2025;

Accepted 05 December 2025

<https://doi.org/10.19166/nc.v13i2.9828>

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INTRODUCTION

Human physiology is a core component of the nursing curriculum, serving as a foundational discipline that underpins both the theoretical and practical aspects of nursing education (Brown et al., 2017; Wood et al., 2020). It provides essential knowledge for understanding the structure and function of the human body, which is fundamental to clinical reasoning, decision-making, and safe nursing practice. A strong understanding of physiological principles enables nursing students to accurately interpret clinical conditions, apply appropriate interventions, and maintain patient safety throughout their professional careers (Nuuyoma & Fillipus, 2020; Wood et al., 2020). As healthcare systems become increasingly complex, there is a growing need to ensure that physiology learning supports not only theoretical competence but also the application of knowledge in diverse clinical contexts (Astin et al., 2015).

Human physiology plays a pivotal role in nursing education because it provides the essential foundation for understanding the mechanisms of the human body, which in turn informs effective clinical reasoning, patient assessment, and evidence-based decision-making. Mastery of physiological principles is therefore critical to ensuring that nursing graduates are equipped to deliver safe and high-quality care across diverse clinical settings (Ashwathy et al., 2024; Horiuchi-Hirose et al., 2023). Without a solid grounding in physiology, students may struggle to connect basic biomedical concepts with practical nursing interventions, leading to suboptimal clinical performance (Nuuyoma & Fillipus, 2020; Wood et al., 2020). This situation highlights a critical research gap in nursing education, particularly in the Indonesian context, where empirical studies focusing on nursing students' conceptual understanding of physiology remain limited. While international literature has documented challenges and proposed active learning solutions, local evidence is needed to better understand the extent of these difficulties and their implications for curriculum development. Therefore, this study was conducted to analyze the current level of nursing students' understanding of physiology concepts in basic biomedical science education and to provide insights into potential strategies that can bridge the gap between theoretical knowledge and practical application in nursing education (Quiroga & Choate, 2019; Teshome et al., 2021).

To address these learning challenges, educational theories and instructional approaches have increasingly emphasized active and student-centered learning. Constructivist learning theory, for example, encourages students to actively construct knowledge through engagement, reflection, and problem-solving (Ashwathy et al., 2024). Active learning methodologies, such as problem-based learning (PBL) and inquiry-based learning (IBL), have proven effective in fostering greater student interest and retention of physiological knowledge (Horntvedt et al., 2018; Quiroga & Choate, 2019).

Another critical aspect of comprehending human physiology is the role of Basic Biomedical Sciences, which provides essential foundational knowledge for understanding the complexities of human physiology (Astin et al., 2015; Teshome et al., 2021). A strong grounding in subjects such as biochemistry, anatomy, and genetics enhances students' ability to relate physiological processes to diseases and health conditions, thereby preparing them for practical nursing roles (Brown et al., 2017; Teshome et al., 2021). Furthermore, the inconsistent integration of these sciences into the nursing curriculum can lead to fragmented understanding (Ashwathy et al., 2024; Siddiqui et al., 2022).

A wealth of studies has highlighted the obstacles that students encounter in mastering physiology. Research across various educational settings illustrates that many students report feelings of inadequacy and confusion regarding physiological concepts, which correlates with their academic performance and confidence in clinical practice (Ashwathy et al., 2024; Wood et al., 2020). For example, some studies have identified low student engagement and limited interest in physiology-related research, often attributed to perceived difficulty and insufficient instructional support (Ashwathy et al., 2024). While international research has explored these challenges and proposed innovative teaching strategies, empirical evidence from Indonesia remains limited (Aboregela et al., 2023; Nuuyoma & Fillipus, 2020). Additionally, further exploration of interdisciplinary approaches and innovative teaching methods is warranted to substantiate the efficacy of modified curricula (Ashwathy et al., 2024; Teshome et al., 2021).

Therefore, this study was conducted to address the existing research gap by analyzing nursing students' understanding of human physiology concepts in basic biomedical science education within the Indonesian context. While previous studies have highlighted the importance of effective teaching methodologies, student engagement, and curriculum design in enhancing physiology learning (Quiroga & Choate, 2019; Teshome et al., 2021), nursing students continue to face significant challenges in linking theoretical physiological concepts with practical application, which may negatively affect academic performance and clinical confidence (Ashwathy et al., 2024; Wood et al., 2020). However, most of these studies have been conducted in Western or other international contexts, while empirical evidence from Indonesia remains scarce. However, most available evidence has been generated in Western or other international settings, and empirical data from Indonesia remain limited.

Accordingly, this study aimed to evaluate the overall level of nursing students' understanding of human physiology and to examine differences based on semester level and gender. By providing locally grounded evidence, this study contributes to the existing body of knowledge and offers practical recommendations for strengthening physiology learning in nursing education through curriculum refinement and the integration of active learning strategies.

METHOD

This study employed a descriptive survey design using a quantitative approach. The study population consisted of undergraduate nursing students enrolled in the Basic Biomedical Science course at Universitas Famika. A total of 85 students were eligible, from which a random sample of 50 participants was selected using simple random sampling to ensure representativeness. The sample size was determined based on feasibility considerations and minimum requirements for quantitative survey research (Creswell, 2012).

The inclusion criteria were nursing students in their second and fourth semesters who had completed coursework in human physiology, were willing to participate voluntarily, and provided written informed consent. Students who were absent during the data collection period or who submitted incomplete responses were excluded from the study.

Data collection was conducted from May 5 to May 7, 2025. A structured questionnaire consisting of 25 multiple-choice items was used to assess students’ understanding of human physiology concepts and their application in clinical contexts. The questionnaire was developed based on course learning objectives and prior literature. Content validity was evaluated by three experts in nursing education. A pilot test involving 10 students outside the study sample yielded a Cronbach’s alpha of 0.82, indicating good internal consistency.

The questionnaires were administered in a supervised classroom setting, with each student given 30 minutes to complete the test. Participation was voluntary, and written informed consent was obtained prior to data collection. Anonymity and confidentiality were maintained throughout the study.

Data analysis was performed using SPSS version 26. Descriptive statistics, including means, standard deviations, and frequency distributions, were used to summarize students’ performance. Independent t-tests were conducted to compare differences between semester levels, while chi-square tests were applied to examine associations between students’ understanding and demographic variables. Statistical significance was set at $p < 0.05$.

RESULTS

This study was conducted in May and involved nursing students from the second and fourth semesters, with participants categorized based on gender and academic semester. The demographic characteristics of respondents are presented in Tables 1 and 2.

Table 1. Respondent Characteristics Based on Gender

Gender	Frequency	Presentase
Female	42	84%
Male	8	16%
Total	50	100%

Table 1 presents the distribution of respondents based on gender. Out of a total of 50 respondents, the majority were female, comprising 42 individuals (84%), while male respondents accounted for only 8 individuals (16%). This significant gender disparity may reflect the actual gender distribution within the academic program under study or a gender-based difference in willingness to participate in academic research.

Table 2. Respondent Characteristics Based on Academic Semester

Semester	Frequency	Presentase
Semester II	30	60%
Semester IV	20	40%
Total	50	100%

Table 2 shows the distribution of respondents according to academic semester. A total of 30 students (60%) were enrolled in the second semester, while 20 students (40%) were in the fourth semester. This indicates that most participants were in the earlier stage of their academic program.

Table 3. Students' Understanding of Human Physiology Concepts by Gender

Gender	Presentase	Group
Female	74,52 %	Fair
Male	81,25 %	Good

Table 3 illustrates students’ understanding of human physiology concepts based on gender. Male students demonstrated a higher mean score (81.25%), classified as “Good”, whereas female students achieved a mean score of 74.52%, categorized as “Fair”.

The classification of scores was based on established assessment benchmarks frequently applied in educational research, where $\geq 80\%$ is categorized as Good/High, 70–79% as Fair/Moderate, and $< 70\%$ as Low/Poor (Arikunto, 2010). These thresholds are consistent with prior studies that employed percentage-based intervals to interpret students’ academic performance in health sciences education (Zakar et al., 2024).

Table 4. Students' Understanding of Human Physiology Concepts by Academic Semester

Semester	Presentase	Group
Semester II	77,75%	Good
Semester IV	68%	Fair

Table 4 presents the level of students’ understanding of human physiology concepts in relation to their academic semester. Second-semester students attained a comprehension rate of 77.75%, classified as “Good,” while fourth-semester students scored lower, at 68%, categorized as “Fair” Interestingly, this finding reveals that students in earlier semesters exhibited a higher level of conceptual understanding than those in more advanced semesters. Possible contributing factors may include academic fatigue, increased workload in higher semesters, or insufficient reinforcement of foundational concepts.

DISCUSSION

Characteristics of Respondents by Gender

The findings of this study revealed that the majority of respondents were female (84%), with only 16% male participation. This gender imbalance is consistent with the general demographic trend in nursing education, where female students typically dominate enrollment (Voyer & Voyer, 2014). Similar results were also reported by Nuuyoma & Fillipus (2020), who found that women constituted the majority of participants in physiology-related studies, reflecting the broader feminization of the nursing profession.

Although the dominance of female respondents may limit the statistical balance between genders, the higher average score obtained by male students (81.25%, categorized as Good) compared to female students (74.52%, categorized as Fair) warrants further consideration. This outcome contrasts with previous meta-analyses which showed that female students often outperform males in academic achievement across disciplines, including health sciences (Voyer & Voyer, 2014). One possible explanation is that differences in learning strategies, motivation, self-efficacy, or prior exposure to science-related subjects may influence conceptual understanding in physiology (Kim, 2024).

From a practical perspective, these results highlight the importance of implementing learning strategies that accommodate diverse learning needs across genders. Active learning methods, such as problem-based learning (PBL) and collaborative group work, have been shown to reduce performance gaps and promote more equitable learning outcomes (Horntvedt et al., 2018; Iqbal et al., 2019). In the Indonesian nursing education context, gender-responsive and inclusive pedagogy may enhance student engagement and comprehension regardless of gender differences.

Characteristics of Respondents by Semester Level

The distribution of respondents based on semester level shows that the majority came from semester II (60%), while the remaining 40% were in semester IV. This finding is important to analyze because the semester level is closely related to cognitive level, academic experience, and exposure to more complex learning content.

According to the theory of cognitive development (Dale, 1946) Students who are in the early stages (semester II) tend to still be in the process of transitioning from concrete thinking to formal operational thinking, while advanced students (semester IV) have more developed abstract and reflective thinking abilities. This has an impact on the way they understand the material, including conceptual topics such as human physiology. Thus, the involvement of undergraduates in this study needs to be analyzed more carefully due to limited understanding due to immature learning experiences.

Similar studies by Vygotsky (1978) and adapted by Kuklinski & Weinstein (2001) emphasize the importance of the Zone of Proximal Development (ZPD) in higher education, where entry-

level students need more scaffolding or instructional support in understanding complex material. In this context, second-semester students may not have had adequate exposure to physiology material, in contrast to fourth-semester students who have undergone more learning and practical experiences.

Research by Albloushi et al. (2023) in the context of nursing students also found that the semester level had an effect on the level of understanding and clinical skills, where early students tended to show lower conceptual understanding than advanced students.

Students' Level of Understanding of the Concept of Human Physiology by Gender

The results indicate that male students demonstrated a higher level of understanding of human physiology concepts (81.25%, Good) compared to female students (74.52%, Fair). According to social learning theory (Kim, 2024), this disparity may result from differences in learning experiences, social reinforcement, and self-efficacy, with males exhibiting greater confidence in science subjects, promoting deeper engagement with complex concepts.

However, this finding contradicts a substantial body of literature suggesting that female students often show stronger academic persistence and consistent performance in health education programs (Voyer & Voyer, 2014). Therefore, the observed difference in scores may also be influenced by contextual factors, such as teaching methods, assessment formats, or the unequal gender distribution within the sample, which may introduce statistical bias.

Supporting this interpretation, Iqbal et al. (2019) reported no significant gender differences in physiology comprehension when problem-based learning (PBL) was applied consistently. The study emphasized that teaching effectiveness depends more on pedagogical approaches than gender differences. In contrast, research in the Southeast Asian context by (Voyer & Voyer, 2014) showed that male students tend to excel in logical reasoning-based tests, including in anatomy and physiology courses.

Second, learning evaluation should be adjusted to not only rely on written tests or conceptual memorization, but also accommodate a more contextual and reflective learning approach, where women tend to show excellence. Third, supporting strategies such as academic mentoring programs or self-study training are needed, especially for groups with lower levels of understanding, so that the gap does not widen and the learning process remains inclusive.

Students' Understanding of Human Physiology Concepts by Academic Semester

The findings reveal that second-semester students achieved higher understanding scores (77.75%, Good) compared to fourth-semester students (68%, Fair). This result may appear counterintuitive, but it can be explained by differences in curriculum focus and academic demands across semesters.

Second-semester students primarily engage with foundational

biomedical concepts, allowing them to concentrate more intensively on basic physiology. In contrast, fourth-semester students face increased academic workload, clinical integration, and content complexity, which may reduce their retention and reinforcement of fundamental physiological principles (Astin et al., 2015; Wood et al., 2020). Academic fatigue and shifting learning priorities may further contribute to this pattern.

These findings suggest the importance of vertical curriculum integration, where foundational physiology concepts are continuously reinforced in higher semesters through applied and clinical contexts. Active learning strategies, including Problem-Based Learning (PBL) and case-based discussions, may help bridge the gap between basic biomedical knowledge and clinical application, thereby enhancing long-term comprehension (Hornrtvedt et al., 2018; Quiroga & Choate, 2019).

CONCLUSION

This study revealed variations in nursing students' understanding of human physiology concepts, with male and second-semester students demonstrating higher scores compared to female and fourth-semester students. These findings highlight the influence of academic workload, prior learning experiences, and motivational factors on students' conceptual comprehension. While the study contributes locally relevant evidence supported by a validated instrument, limitations such as the small sample size, single-site design, and restricted demographic variables indicate that the findings should be interpreted with caution. Future studies involving larger and more diverse institutional settings are recommended to enhance the generalizability of the results and to inform the development of more effective and inclusive teaching strategies in nursing education.

ACKNOWLEDGEMENTS

The authors gratefully acknowledge the support of Universitas Famika and the participation of the nursing students who facilitated this research.

REFERENCES

- Aboregela, A. M., Sonpol, H. M. A., Metwally, A. S., El-Ashkar, A. M., Hashish, A. A., Mohammed, O. A., Elnahriry, T. A., Senbel, A., & Alghamdi, M. (2023). Medical students' perception and academic performance after team-based and seminar-based learning in human anatomy. *Journal of Taibah University Medical Sciences*, 18(1), 65–73. <https://doi.org/10.1016/j.jtumed.2022.08.005>
- Albloushi, M., Innab, A., Mofdy Almarwani, A., Alqahtani, N., Anazi, M., Roco, I., & Alzahrani, N. S. (2023). The Influence of Internship Year on Nursing Students' Perceived Clinical Competence: A Multi-Site Study. *Sage Open*, 13(3). <https://doi.org/10.1177/21582440231193198>
- Ashwathy, V., Avanthi, E., Narayanam, H., & Lokesh, B. (2024). Perception of undergraduate medical students on learning physiology: A descriptive cross-sectional study in a medical school of South India. *Journal of Education and Health Promotion*, 13(1). https://doi.org/10.4103/jehp.jehp_1077_23
- Astin, F., Carroll, D. L., Ruppard, T., Uchmanowicz, I., Hinterbuchner, L., Kletsios, E., Serafin, A., & Ketchell, A. (2015). A core curriculum for the continuing professional development of nurses: Developed by the Education Committee on behalf of the Council on Cardiovascular Nursing and Allied Professions of the ESC. *European Journal of Cardiovascular Nursing*, 14(3), 190–197. <https://doi.org/10.1177/1474515115572048>
- Bandura, A. (1986). *Social Foundations of Thought and Action: A social cognitive theory* (Vol. 1986). Upper Saddle River, NJ: Prentice Hall.
- Brown, S. J., White, S., & Power, N. (2017). Introductory anatomy and physiology in an undergraduate nursing curriculum. *Advances in Physiology Education*, 41(1), 56–61. <https://doi.org/10.1152/advan.00112.2016>
- Dale, E. (1946). *Audio-Visual Methods in Teaching*. Dryden Press.
- Horiuchi-Hirose, M., Fukuoka, T., & Saeki, Y. (2023). Integration of anatomy and physiology into nursing practice as perceived by undergraduate students and registered nurses: a scoping review. *BMC Nursing*, 22(1), 270. <https://doi.org/10.1186/s12912-023-01436-0>
- Hornrtvedt, M.-E. T., Nordsteien, A., Fermann, T., & Severinsson, E. (2018). Strategies for teaching evidence-based practice in nursing education: a thematic literature review. *BMC Medical Education*, 18(1), 172. <https://doi.org/10.1186/s12909-018-1278-z>
- Iqbal, S., Akram, R., Gohar, B., Mahmood, A., Naz, N., & Mudasar, S. (2019). Metacognitive Awareness and Academic Achievement of Medical Students in Different Medical Colleges of Lahore, Pakistan. *International Journal of Contemporary Medical Research [IJCMR]*, 6(9). <https://doi.org/10.21276/ijcmr.2019.6.9.32>
- Kaur, H., & Chadda, I. (2022). Online Education during COVID-19 in Punjab: A Study on Perception of Teachers. *Indian Journal of Educational Technology*, 4(2), 29–39.
- Kuklinski, M. R., & Weinstein, R. S. (2001). Classroom and Developmental Differences in a Path Model of Teacher Expectancy Effects. *Child Development*, 72(5), 1554–1578. <https://doi.org/10.1111/1467-8624.00365>
- Lazaridou, A. (2024). Gender Differences in Educational Leadership and Values: Adding Insights from a Neuro-Social Perspective. *European Journal of Education and Pedagogy*, 5(5), 54–61. <https://doi.org/10.24018/ejedu.2024.5.5.837>
- Nuuyoma, V., & Fillipus, S. K. (2020). Nursing students' perceptions and experiences of concept mapping as a

learning tool in a human physiology course. *African Journal of Health Professions Education*, 12(3), 98. <https://doi.org/10.7196/AJHPE.2020.v12i3.1330>

Quiroga, M. del M., & Choate, J. K. (2019). A virtual experiment improved students' understanding of physiological experimental processes ahead of a live inquiry-based practical class. *Advances in Physiology Education*, 43(4), 495–503. <https://doi.org/10.1152/advan.00050.2019>

Rabia Siddiqui, Saif Ullah Shaikh, Lalarukh Munawar, Iram Saddiq, & Muhammad Faisal Fahim. (2022). Survey of assessment of teaching learning methods for physiology among undergraduate medical students at a university. *The Professional Medical Journal*, 29(09), 1420–1425. <https://doi.org/10.29309/TPMJ/2022.29.09.7013>

Teshome, D., Tirunch, C., Berhanu, L., & Berihun, G. (2021). Medical Students' Attitude and Perception Towards Basic Medical Science Subjects at Wollo University, Northeast Ethiopia. *Advances in Medical Education and Practice*, Volume 12, 431–438. <https://doi.org/10.2147/AMEP.S309440>

Voyer, D., & Voyer, S. D. (2014). Gender differences in scholastic achievement: A meta-analysis. *Psychological Bulletin*, 140(4), 1174–1204. <https://doi.org/10.1037/a0036620>

Wood, A. F., Chandler, C., Connolly, S., Finn, G., Redmond, C., Jolly, J., Powell, A. D., Davies, C., & Grant, A. (2020). Designing and developing core physiology learning outcomes for pre-registration nursing education curriculum. *Advances in Physiology Education*, 44(3), 464–474. <https://doi.org/10.1152/advan.00139.2019>

Zeyer, A. (2018). Gender, complexity, and science for all: Systemizing and its impact on motivation to learn science for different science subjects. *Journal of Research in Science Teaching*, 55(2), 147–171. <https://doi.org/10.1002/tea.21413>

Original Research

Smart Virtual Reality–Artificial Intelligence for Improving Vulva Hygiene Knowledge and Attitudes among Early Adolescents Girls

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ARTICLE INFO

Keywords:

Adolescent

Artificial
Intelligence

Female

Reproductive
Health

Virtual Reality

ABSTRACT

Vulva hygiene is a crucial yet often overlooked aspect of adolescent reproductive health, and early adolescents often lack engaging and effective educational media. Smart Virtual Reality–Artificial Intelligence (VR–AI) based education provides an immersive and personalized learning experience, which has the potential to improve health literacy more effectively than conventional approaches. This study aimed to evaluate the effectiveness of VR–AI–based education in improving knowledge and attitudes related to vulva hygiene among early adolescent girls. A quasi-experimental nonequivalent pretest–posttest control group design was conducted at a public elementary school in Purwakarta, Indonesia, involving 35 female students aged 10–13 years, divided into intervention (n=18) and control (n=17) groups. The intervention group received a 3-minute VR–AI educational video via VR headsets, while the control group received a conventional lecture with equivalent duration and content. Knowledge and attitudes were measured using validated questionnaires and analyzed with parametric and nonparametric tests at a significance level of $\alpha=0.05$. Both groups experienced significant improvements in knowledge (intervention: $p<0.001$; control: $p=0.003$) and attitudes (intervention: $p=0.001$; control: $p=0.010$). Post-test attitudes were significantly higher in the intervention group compared with the control group ($p=0.014$), although knowledge did not differ significantly ($p=0.075$). VR–AI–based education enhances positive attitudes and represents a beneficial approach to adolescent reproductive health promotion. Schools are encouraged to integrate VR–AI media as a complementary strategy to strengthen the effectiveness and long-term sustainability of health education programs.

Received 07 October 2025;

Received in revised form 04 December 2025;

Accepted 16 December 2025

<https://doi.org/10.19166/nc.v13i2.10380>

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INTRODUCTION

Reproductive health and external genital (intimate organ) hygiene are essential for the well-being of adolescent girls. However, many adolescents still face limited access to

accurate and comprehensive Sexual and Reproductive Health (SRH) information and services, resulting in an increased risk of health problems, including poor menstrual and vulvar hygiene practices (Okyere et al., 2024; Nkrumah

et al., 2024; Aziz et al., 2024).

According to the World Health Organization (WHO), the highest prevalence of reproductive tract infections occurs in adolescents and young adults (35–42%), while in Indonesia, there are around 63 million adolescents who are at risk of experiencing poor menstrual hygiene practices (Djaguna et al., 2024). Socio-cultural barriers, stigma, and limited parent–adolescent communication further restrict open discussion about reproductive health issues (Klu et al., 2023).

Previous studies have shown that adolescents' reproductive health knowledge remains limited and is often confined to puberty-related changes or menstruation, while other important aspects, such as vulva hygiene, receive little attention (Sinombor, 2023). This gap is even more pronounced in rural settings, where access to information, health services, and educational facilities is more limited than in urban areas (Aziz et al., 2024). These conditions highlight the need for more engaging and interactive educational approaches, as conventional methods such as lectures or posters tend to be passive and less appealing to adolescent (Suttor et al., 2024).

The integration of immersive technologies, such as virtual reality (VR) and artificial intelligence (AI), offers a potential solution to these challenges. VR has been shown to enhance emotional engagement, comprehension, and knowledge retention in health education, while AI enables personalized and adaptive learning experiences based on individual needs (Giovanelli et al., 2023; Brisson et al., 2023). However, empirical evidence on the effectiveness of AI-based VR interventions for vulva hygiene education among adolescent girls remains limited, particularly in low-resource or rural contexts (Radovic & Badawy, 2020).

Based on this gap, this research was conducted in a public elementary school in the rural area of Purwakarta which has limited access to information and technology. A preliminary assessment involving 10 female students revealed varying levels of knowledge regarding vulva hygiene, ranging from low to high categories. Therefore, this study aims to answer the question: "Is AI-based VR video media effective in improving adolescents' knowledge and attitudes toward vulva hygiene?"

METHOD

This study employed a quantitative approach using a quasi-experimental nonequivalent pretest–posttest control group design. Two groups (intervention and control) received both pretest and posttest assessments, without full randomization due to the fixed classroom structure within the school setting. This design was selected to enable systematic comparison between groups while

maintaining a natural educational environment.

This research was carried out from July to August 2025 at a public elementary school in Purwakarta. The study population comprised female students aged 10–13 years enrolled in grades 4–6 ($n = 35$). Given the relatively small population size, total sampling was applied. Participants were assigned to the intervention group ($n = 18$) or control group ($n = 17$). Group assignment was performed using the Randomizer.org application, with stratification based on age and grade level to ensure balanced distribution. Baseline characteristic analysis confirmed no statistically significant differences between groups. The sample size met the minimum requirement for quasi-experimental studies (Fraenkel et al., 2012).

The inclusion criteria include students in the age range of 10–13 (based on initial identity data) who are willing to participate in the entire research process and obtain permission from the school. Meanwhile, the exclusion criteria include visual impairment or severe cognitive impairment, absence during tests or interventions, and not filling out a complete questionnaire during the pretest or posttest.

This study involved one independent variable, namely AI-generated VR video-based health education, and two dependent variables, namely knowledge and attitudes regarding vulva hygiene. Data were collected using a knowledge questionnaire consisting of 20 dichotomous items and an attitude questionnaire comprising 14 items measured on a 4-point Likert scale. The instrument was adapted from Marlissa (2017) and demonstrated acceptable validity ($r > 0.5$) and reliability ($\alpha = 0.76$ for knowledge; $\alpha = 0.77$ for attitude). The content validity assessment was performed by two experts with experience in community health education and health technology implementation. They reviewed the instrument and educational media to ensure clarity, relevance, and appropriateness for early adolescents.

Educational media is developed using AI-generated VR videos. The manufacturing process is carried out through several stages: (1) preparation of the manuscript according to indicators of knowledge and vulva hygiene attitudes, (2) character and background animation creation with an AI video generator (Veo 3 and Canva), (3) integration into a 360° VR format, and (4) expert content validation. The VR device used in this study was a commercially available Smart VR headset (Shinecon 10.0), purchased specifically for research purposes.

The intervention procedure began with pretest administration in both groups. Subsequently, the intervention group received health education through a 3-minute AI-generated VR video, presented in a child-friendly cartoon format focusing on vulva hygiene practices. Participants viewed the video individually using VR headsets in a quiet classroom under researchers' supervision. In contrast, the control group received a conventional lecture of equivalent duration (3 minutes) covering the same educational content. Following the intervention, posttests were administered to both groups using the same instruments. All study procedures (pretest, intervention, and

posttest) were conducted in a single session on the same day, with a total duration of approximately 60 minutes. The study flow is illustrated in Figure 1.

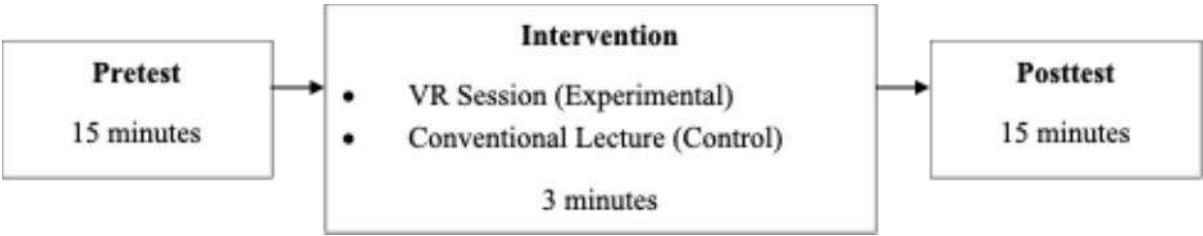


Fig. 1. Research design flowchart with activity duration

Data analysis was carried out using SPSS software version 29. Normality was assessed using the Shapiro–Wilk test. Paired and independent t-tests were applied for normally distributed data, whereas Wilcoxon signed-rank and Mann–Whitney U tests were used for non-normally distributed data. The significance level was set at $\alpha=0.05$. Knowledge scores are converted to a scale of 0–100 and categorized as High (76–100), Moderate (56–75), Low (40–55), and Very Low (<40). Attitudes are categorized as Positive if the

total score of the respondents \geq the average score, and Negative if the $<$ the average score. Because the participants were minors, written informed consent was obtained from parents or guardians, and verbal assent was obtained from the students prior to data collection. Ethical approval was granted by the Research Ethics Committee of Jenderal Achmad Yani University (No. 057/KEPK/FITKes-Unjani/VII/2025).

RESULT

Table 1. Baseline Characteristics of Respondents in Intervention and Control Groups

Category	Intervention		Control	
	Frequen cy (n)	Percentag e (%)	Frequency (n)	Percentag e (%)
Age (Years)				
10-11	17	94.4	15	88.2
12-13	1	5.6	2	11.8
Grade				
4	2	11.1	4	23.5
5	9	50	6	35.3
6	7	38.9	7	41.2
Resources				
No Information Yet	18	100	17	100
Parent/Teacher/Others	0	0	0	0

Based on Table 1, the majority of respondents in both the intervention and control groups were aged 10–11 years. In the intervention group, most participants were enrolled in grade 5 (50.0%), followed by grade 6 (38.9%) and grade 4 (11.1%). In the control group, 23.5% of participants were from grade 4, 35.3% from grade 5, and 41.2% from grade 6.

Table 2. Level of Knowledge about vulva hygiene (n=35)

Group	Category	Pretest n (%)	Posttest n (%)
Intervention	Good	9 (50.0)	15 (83.3)
	Moderate	6 (33.3)	3 (16.7)
	Low	3 (16.7)	0 (0.0)
	Very Low	0 (0.0)	0 (0.0)
Control	Good	6 (35.3)	8 (47.0)
	Moderate	6 (35.3)	9 (53.0)
	Low	5 (29.4)	0 (0.0)
	Very Low	0 (0.0)	0 (0.0)

As presented in Table 2, the proportion of students with good knowledge in the intervention group increased markedly, from 50.0% at pretest to 83.3% at posttest. In contrast, the control group

showed a more modest increase, from 35.3% to 47.0%. No participants in either group remained in the “very low” knowledge category at posttest.

Table 3. Level of Attitude about vulva hygiene (n=35)

Group	Category	Pretest n (%)	Posttest n (%)
Intervention	Positive	9 (50.0)	11 (61.1)
	Negative	9 (50.0)	7 (38.9)
Control	Positive	7 (41.2)	8 (47.1)
	Negative	10 (58.8)	9 (52.9)

Table 3 shows an improvement in attitude scores in both groups following the intervention. In the intervention group, the proportion of participants with a positive attitude increased from 50.0% at pretest to 61.1% at posttest. Similarly, the control group showed a slight increase, from 41.2% to 47.1%. Although improvements were observed in both groups, the increase was greater in the intervention group.

Table 4. Comparison of Knowledge and Attitude Scores on Vulva Hygiene Before and After Intervention (n=35)

Variable	Group	Pretest (Mean \pm SD)	Posttest (Mean \pm SD)	95% CI of mean difference	<i>p</i> -value (within group)	<i>p</i> -value (between groups, posttest)
Knowledge	Intervention	15.00 \pm 2.59	17.50 \pm 2.57	-	<0.001	0.075
	Control	14.18 \pm 3.34	15.76 \pm 2.73	-	0.003	
Attitude	Intervention	44.33 \pm 7.16	48.61 \pm 6.45	1.991 – 6.565	0.001	0.014
	Control	40.65 \pm 6.73	42.88 \pm 6.65	0.614 – 3.856	0.010	

Note: *p*-values for within-group comparisons were obtained using the Wilcoxon signed-rank test for knowledge and the paired *t*-test for attitude. Between-group posttest comparisons were analyzed using the Mann–Whitney *U* test for knowledge and the independent *t*-test for attitude.

Table 4 shows both groups' pretest and posttest scores of knowledges and attitude. Knowledge scores significantly increased after the intervention in both the intervention ($p < 0.001$) and control ($p = 0.003$) groups, although the between-group difference in posttest knowledge was not significant ($p = 0.075$).

For attitudes, significant improvements were observed in both groups ($p = 0.001$; $p = 0.010$), with posttest scores significantly higher in the intervention group ($p = 0.014$), indicating the effectiveness of VR-AI education. Figures 2 and 3 further illustrate participants' active engagement during the immersive VR-AI sessions.



Fig. 2. A student using a virtual reality (VR) headset during the AI-based vulva hygiene educational intervention



Fig. 3. Side-angle view of a student using a virtual reality (VR) headset

DISCUSSION

Interpretation of Key Findings

This study found that the Smart VR–AI intervention yielded differential effects on early adolescents' knowledge and attitudes regarding vulvar hygiene. For knowledge, the Wilcoxon test showed significant improvements in both the intervention ($p < 0.001$) and control ($p = 0.003$) groups. However, the Mann–Whitney *U* test revealed no significant difference between groups ($p = 0.075$), indicating that knowledge gains achieved through Smart VR–AI were not significantly greater than those obtained through conventional lectures. This finding may be explained by the effectiveness of traditional instruction or the presence of a testing or exposure effect, whereby repeated measurement enhances memory and awareness (Yang et al., 2019).

In contrast, attitude-related findings demonstrated a stronger impact of the Smart VR–AI intervention. The paired *t*-test showed significant improvements in attitudes in both the intervention ($p = 0.001$) and control ($p = 0.010$) groups, while the independent *t*-test identified a significant difference between them ($p = 0.014$). These results indicate that the VR–AI intervention produced significantly greater positive changes in attitudes compared with the control condition. The immersive and interactive nature of VR, combined with AI-driven personalization, likely enhanced emotional engagement, contextual understanding, and the internalization of health-promoting attitudes more effectively than conventional lectures (Yang et al., 2019; Budnarowski et al., 2025).

Overall, this study demonstrated significant improvements in both knowledge and attitudes within each group. However, between-group were observed only for attitudes, with the intervention group showing greater gains. This suggests that VR–AI–based education is particularly effective in shaping adolescents' attitudes toward vulvar hygiene, while its additional effect on knowledge, although evident, may be less pronounced in the short term when compared with conventional teaching methods (Park et al., 2023).

Comparison with Previous Studies

These findings are consistent with a growing body of evidence supporting the effectiveness of digital and immersive media in adolescent health education. Previous studies have reported that audiovisual and video-based learning significantly improves reproductive health knowledge and attitudes (Wahyudi & Raharjo, 2023). Moreover, systematic reviews indicate that virtual reality enhances not only knowledge but also positive behavioral change, with a reported standard mean difference of 0.57 (Park et al., 2023).

This study further supports these findings by demonstrating significant knowledge gains in both the intervention and control groups, underscoring the role of repeated exposure to educational content (Yang et al., 2019). The “test effect,” in which completing a pre-intervention questionnaire enhances attention and memory, may have contributed to these results (Muhlisa et al., 2023; Yang et al., 2019). Additionally, participation in health-related surveys can heighten self-awareness and engagement, thereby improving information retention (Muhlisa et al., 2023). This mechanism may explain why, despite significant within-group gains, the between-group difference in knowledge was not statistically significant ($p = 0.075$).

Conversely, the stronger effects observed for attitudes align with prior evidence that VR interventions are particularly effective in influencing affective outcomes (Efendi et al., 2023). Immersive experiences facilitate emotional engagement and enable learners to visualize the consequences of health behaviors, which is often less achievable through traditional instructional methods (Andalib & Monsur, 2024; Lacle-Melendez et al., 2025). Such engagement is especially important in health promotion, where changing attitudes is frequently more challenging than increasing knowledge (Requero et al., 2020).

Previous research has shown that VR-based environments enhance emotional engagement, leading to more positive attitudes and stronger behavioral intentions (Nguyen, 2025). Meta-analyses further confirm that VR enhances satisfaction, confidence, and affective learning outcomes (Sung et al., 2024), and is more effective at shifting social attitudes than non-immersive approaches (Nikolaou et al., 2022).

In reproductive health education, VR interventions have demonstrated significantly greater improvements in adolescent attitudes compared with conventional methods, findings that are consistent with the present study ($p = 0.014$) (Sung et al., 2024). Comparable outcomes have been observed in other fields, such as environmental education, where immersive experiences enhance empathy and attitude change (Xie & Yang, 2025). Collectively, these findings indicate that the VR–AI intervention effectively promoted positive attitudes toward vulvar hygiene.

Notably, the integration of artificial intelligence into VR represents an advancement beyond conventional virtual simulations. AI-driven personalization and adaptive narratives increase content relevance, thereby strengthening attitude change (Ding, 2025). This

suggests that VR–AI-based interventions may offer a novel and promising approach to adolescent health education, with greater potential for sustained behavioral impact than traditional methods (Rowe & Lester, 2020).

Possible Explanations and Mechanisms

The divergence between knowledge and attitude outcomes in this study can be explained by several theoretical and contextual mechanisms. Regarding knowledge, although both groups showed significant improvement, the absence of a statistically significant difference between the intervention and control groups ($p = 0.075$) may be attributed to testing effects and heightened self-awareness resulting from participation in health surveys (Yang et al., 2019). From a cognitive psychology perspective, repeated measurement enhances familiarity with content, thereby strengthening memory and comprehension even in the absence of targeted interventions (Cowan et al., 2024). Additionally, participants in the control group may have received supplementary information from teachers, peers, or prior learning experiences, which could independently contribute to knowledge gains beyond the Smart VR–AI program.

In contrast, the significant improvement in attitudes observed in the intervention group ($p = 0.014$) underscores the unique advantages of immersive learning. VR creates a strong sense of presence, enabling adolescents to engage with realistic scenarios that activate cognitive, affective, and social processes simultaneously (Arts et al., 2025). This aligns with the Cognitive-Affective Theory of Learning with Media (CATLM), which posits that multimedia experiences integrating visual, auditory, and emotional stimuli facilitate deeper learning and more enduring attitudinal change (Ozcelik & Arslan-Ari, 2024). Moreover, Smart VR–AI’s adaptive and personalized content enhances relevance to learners’ developmental stages, thereby deepening emotional engagement and strengthening the internalization of positive attitudes toward vulvar hygiene (Ding, 2025; Rowe & Lester, 2020).

This approach is particularly impactful during early adolescence (ages 10–13), a critical period for shaping lifelong health-related attitudes, as individuals in this stage are highly receptive to interactive and experiential learning (Mancone et al., 2024). The novelty and immersive qualities of VR–AI not only heighten curiosity but also encourage preference for experiential learning, making this method more effective than conventional approaches (Andalib & Monsur, 2024). These findings suggest that while knowledge acquisition can occur through both traditional and digital methods, affective outcomes, particularly attitudes, are more effectively enhanced through immersive, interactive, and personalized approaches such as VR AI (Xie & Yang, 2025).

Strengths, Limitations, and Implications

This study offers several noteworthy strengths. It introduces an innovative educational approach by integrating virtual reality and artificial intelligence to address vulvar hygiene in early adolescence, an area often overlooked in elementary-level reproductive health education (Ding, 2025). It also examines both cognitive (knowledge)

and affective (attitude) outcomes, providing a more comprehensive understanding of the intervention's impact (Ibrahim et al., 2024). The use of a quasi-experimental design with intervention and control groups also strengthens internal validity and supports cautious causal interpretation (Ibrahim et al., 2024).

However, some limitations should be acknowledged. The relatively small sample size ($n = 35$) and single-school setting limit the generalizability of the findings (Akollo, 2024). The short duration of follow-up restricts conclusions regarding the long-term sustainability of changes in knowledge and attitudes (Isenaj et al., 2025). Moreover, the use of self-administered questionnaires may introduce social desirability bias, and the significant improvements observed in the control group suggest the influence of external factors such as family discussions, extracurricular exposure, or peer interactions beyond the researchers' control (Isenaj et al., 2025; Pakarinen et al., 2020).

Despite these limitations, the findings offer important implications for practice and future research. VR–AI demonstrates strong potential as a scalable tool for school-based health education, particularly for sensitive topics that are difficult to convey effectively through traditional approaches (Heru et al., 2023). Its pronounced effect on attitudes highlights its promise for supporting sustained behavioral change among adolescents (Rowe & Lester, 2020). Future studies should involve larger and more diverse samples, longitudinal designs, and mixed method approaches to explore long-term effects and learner experiences. Further investigation into curricular integration and cost-effectiveness would also provide valuable insights for educators and policymakers seeking to modernize adolescent health education.

CONCLUSION

This study demonstrates that Smart Virtual Reality–Artificial Intelligence (VR–AI)–based interventions are effective in improving early adolescents' knowledge and attitudes regarding vulvar hygiene. Although knowledge scores increased significantly in both the intervention and control groups, the absence of a significant between-group difference suggests that conventional education and repeated testing effects may have contributed to cognitive gains. In contrast, the significantly greater improvement in attitudes observed in the intervention group indicates that VR–AI is particularly effective in facilitating affective learning and fostering positive health-related attitudes.

These findings underscore the potential of VR–AI as an innovative and engaging educational tool for reproductive health, particularly for sensitive topics that are often inadequately addressed through conventional instructional approaches. Further studies involving larger and more diverse samples, longer follow-up periods, and curricular integration are recommended to confirm the long-term effectiveness and scalability of VR–AI–based health education.

ACKNOWLEDGEMENTS

The authors gratefully acknowledge the students, teachers, and parents of the participating school, as well as Universitas Pendidikan Indonesia, for their support in the implementation of this study.

REFERENCES

- Akollo, I. R. (2024). Knowledge, Attitude, and Practices of Mothers Working as Nurses Toward Multidrug-Resistant: Impact of an Educational Program in Neonatal Intensive Care Unit [Letter]. *Infect Drug Resist*, 2285–2286. <https://doi.org/10.2147/IDR.S480707>
- Andalib, S. Y., & Monsur, M. (2024). Co-Created Virtual Reality (VR) Modules in Landscape Architecture Education: A Mixed Methods Study Investigating the Pedagogical Effectiveness of VR. *Education Sciences*, 14(6). <https://doi.org/10.3390/educsci14060553>
- Arts, E., De Castro, B. O., Luteijn, E., Elsendoorn, B., Maric, M., & Vissers, C. T. W. M. (2025). Virtual reality training to improve socio-emotional functioning in adolescents with developmental language disorders: A multiple baseline effectiveness study. *Social Development*, 34(1), e12784. <https://doi.org/10.1111/sode.12784>
- Aziz, Amina, Memon, Salma, Aziz, Farhana, Memon, Farzana, Khawaja, Bakhtawar M Hanif, & Naeem Zafar, Shehla. (2024). A comparative study of the knowledge and practices related to menstrual hygiene among adolescent girls in urban and rural areas of Sindh, Pakistan: A cross-sectional study. *Women's Health*, 20, 17455057241231420. <https://doi.org/10.1177/17455057241231420>
- Brisson, J., Bélisle-Pipon, J.-C., & Ravitsky, V. (2023). Investigating the Influence of Artificial Intelligence on Adolescent Health: An Urgent Call to Action. *Journal of Adolescent Health*, 73(4), 795. <https://doi.org/10.1016/j.jadohealth.2023.06.002>
- Budnarowski, D., Jereczek, D., Detka, K., & Wieczorek, I. (2025). Application of Artificial Intelligence and Virtual Reality in Soft Skills Training with Modeled Personality. *Applied Sciences*, 15(16). <https://doi.org/10.3390/app15169067>
- Cowan, E. T., Zhang, Y., Rottman, B. M., & Murty, V. P. (2024). The effects of mnemonic variability and spacing on memory over multiple timescales. *Proceedings of the National Academy of Sciences*, 121(12), e2311077121. <https://doi.org/10.1073/pnas.2311077121>
- Ding, Z. (2025). The Synergy of AI and VR for Personalized Learning. *Lecture Notes in Education Psychology and Public Media*, 93, 120–125. <https://doi.org/10.54254/2753-7048/2025.BO25217>
- Djaguna, N., Marlina, R., Sembiring, E. F., & Andriyanti. (2024). The Relationship Between Knowledge and Personal Hygiene Behavior in Adolescent Girls During Menstruation: A Literature Review. *International Journal of Scientific Advances (IJSCIA)*, 5(5), 884–887. <https://doi.org/10.51542/ijscia.v5i5.4>
- Efendi, D., Apriliyarsi, R. W., Prihartami Massie, J. G. E., Wong,

- C. L., Natalia, R., Utomo, B., Sunarya, C. E., Apriyanti, E., & Chen, K.-H. (2023). The effect of virtual reality on cognitive, affective, and psychomotor outcomes in nursing staffs: systematic review and meta-analysis. *BMC Nursing*, 22(1), 170. <https://doi.org/10.1186/s12912-023-01312-x>
- Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to Design and Evaluate Research in Education* (M. Ryan, Ed.; 8th ed.). McGraw-Hill.
- Giovanelli, A., Rowe, J., Taylor, M., Berna, M., Tebb, K. P., Penilla, C., Pugatch, M., Lester, J., & Ozer, E. M. (2023). Supporting Adolescent Engagement with Artificial Intelligence–Driven Digital Health Behavior Change Interventions. *J Med Internet Res*, 25, e40306. <https://doi.org/10.2196/40306>
- Heru, M. J. A., Dewi, N. E. C., & Shandy, P. T. (2023). The Use of Virtual Reality to Enhance Practical Skills in Health Education. *International Journal Instructional Technology*, 2(2). <https://doi.org/10.33650/ijit.v2i2.9329>
- Ibrahim, K. A., Omar, S. J., Raghad, A., Hamza, B. N., & Aied, A. S. (2024). Impact of an educational intervention on improving maternity nurses' knowledge and attitudes toward postpartum depression: a quasi-experimental study. *Journal of Medicine and Life*, 17(8), 782–790. <https://doi.org/10.25122/jml-2024-0147>
- Isenaj, Z. S., Moshammer, H., Berisha, M., & Weitensfelder, L. (2025). Effect of an Educational Intervention on Pupil's Knowledge, Attitudes, Perceptions, and Behavior on Air Pollution in Public Schools in Pristina. *European Journal of Investigation in Health, Psychology and Education*, 15(5). <https://doi.org/10.3390/ejihpe15050069>
- Klu, D., Gyapong, M., Agordoh, P. D., Azagba, C., Acquah, E., Doegah, P., Ofori, A., & Ansah, E. K. (2023). Adolescent perception of sexual and reproductive health rights and access to reproductive health information and services in Adaklu district of the Volta Region, Ghana. *BMC Health Services Research*, 23(1), 1456. <https://doi.org/10.1186/s12913-023-10447-1>
- Lacle-Melendez, J., Silva-Medina, S., & Bacca-Acosta, J. (2025). Virtual and augmented reality to develop empathy: a systematic literature review. *Multimedia Tools and Applications*, 84(11), 8893–8927. <https://doi.org/10.1007/s11042-024-19191-y>
- Mancone, S., Corrado, S., Tosti, B., Spica, G., & Diotaiuti, P. (2024). Integrating digital and interactive approaches in adolescent health literacy: a comprehensive review. *Frontiers in Public Health*, Volume 12-2024. <https://doi.org/10.3389/fpubh.2024.1387874>
- Marlissa, V. (2017). Identifikasi Pengetahuan dan Sikap Remaja Putri dalam Vulva Hygiene pada Siswi SMA Kelas 1 di SMAN 8 Surabaya. Universitas Muhammadiyah Surabaya.
- Muhlisa, Amiruddin, R., Moedjiono, A. I., Suriah, Hadju, V., Salmah, U., & Hidayanty, H. (2023). Effectiveness of Health Education for Teenagers in the Digital Era: A Review. *Malaysian Journal of Medicine and Health Sciences*, 19(5), 399–406. <https://doi.org/10.47836/MJMHS.19.5.45>
- Nguyen, S. H. (2025). Leveraging Virtual Reality Experiences to Shape Tourists' Behavioral Intentions: The Mediating Roles of Enjoyment and Immersion. *Journal of Zoological and Botanical Gardens*, 6(2). <https://doi.org/10.3390/jzbg6020024>
- Nikolaou, A., Schwabe, A., & Boomgaarden, H. (2022). Changing social attitudes with virtual reality: a systematic review and meta-analysis. *Annals of the International Communication Association*, 46(1), 30–61. <https://doi.org/10.1080/23808985.2022.2064324>
- Nkrumah, J., Abuosi, A. A., Baku, A. A. A., Yarney, L., Abekah-Nkrumah, G., & Tettey, C. R. (2024). Adolescent sexual and reproductive health literacy needs: a sub-national level assessment in Ghana. *Health Promotion International*, 39(3), daae065. <https://doi.org/10.1093/heapro/daae065>
- Okyere, J., Yeboa, N. K., Nikoi, C., Owusu-Amoako, M., Ferka, L., Nurzhynska, A., & Amo-Adjei, J. (2024). Adolescent sexual and reproductive health needs and utilisation of health services in the Bono East Region, Ghana. *Reproductive Health*, 21(1), 87. <https://doi.org/10.1186/s12978-024-01822-0>
- Ozcelik, E., & Arslan-Ari, I. (2024). Enhancing Multimedia Learning by Emotional Arousal. *The Journal of Experimental Education*, 92(2), 247–261. <https://doi.org/10.1080/00220973.2023.2182263>
- Pakarinen, M., Kylmä, J., Helminen, M., & Suominen, T. (2020). Attitudes, knowledge and sexual behavior among Finnish adolescents before and after an intervention. *Health Promotion International*, 35(4), 821–830. <https://doi.org/10.1093/heapro/daz074>
- Park, S., Chung, C., & Kim, G. (2023). Effects of Health Education Using Virtual Reality for Adolescents: A Systematic Review and Meta-Analysis. *Journal of Korean Academy of Nursing*, 53(2), 177–190. <https://doi.org/10.4040/jkan.23003>
- Radovic, A., & Badawy, S. M. (2020). Technology Use for Adolescent Health and Wellness. *Pediatrics*, 145(Supplement_2), S186–S194. <https://doi.org/10.1542/peds.2019-2056G>
- Requero, B., Briñol, P., Moreno, L., Paredes, B., & Gandarillas, B. (2020). Promoting healthy eating by enhancing the correspondence between attitudes and behavioral intentions. *Psicothema*, 10(1), 60–66. <https://doi.org/10.7334/psicothema2019.154>
- Rowe, J. P., & Lester, J. C. (2020). Artificial Intelligence for Personalized Preventive Adolescent Healthcare. *Journal of Adolescent Health*, 67(2), S52–S58. <https://doi.org/10.1016/j.jadohealth.2020.02.021>
- Sinombor, S. H. (2023, October 8). Topik Kesehatan Reproduksi Masih Tabu Dibicarakan Remaja. *Kompas.Id*.

- Sung, H., Kim, M., Park, J., Shin, N., & Han, Y. (2024). Effectiveness of Virtual Reality in Healthcare Education: Systematic Review and Meta-Analysis. *Sustainability*, 16(19). <https://doi.org/10.3390/su16198520>
- Suttor, H., Yamayanti, K. P., Astiti, N. L. E. P., Dewi, T., Chenhall, R. D., Ansariadi, A., & Hennegan, J. (2024). Seeking and encountering online information for menstrual health: a qualitative study among adolescent schoolgirls in Gianyar Regency and Denpasar City, Bali, Indonesia. *Sexual and Reproductive Health Matters*, 32(1), 2445936. <https://doi.org/10.1080/26410397.2024.2445936>
- Wahyudi, G., & Raharjo, R. (2023). Positive Impact Of Health Education Through Video Media to the Improvement of Adolescent Reproductive Health Knowledge. *Jurnal Ners Dan Kebidanan (Journal of Ners and Midwifery)*, 405–411. <https://doi.org/10.26699/jnk.v10i3.art.p405-411>
- Xie, T., & Yang, Y. (2025). Use of immersive virtual reality in environmental education: effects on environmental empathy, skill transfer, and attitudes. *Interactive Learning Environments*, 33(4), 3091–3105. <https://doi.org/10.1080/10494820.2024.2436947>
- Yang, B. W., Razo, J., & Persky, A. M. (2019). Using Testing as a Learning Tool. *American Journal of Pharmaceutical Education*, 83(9). <https://doi.org/10.5688/ajpe7324>

Original Research

Nurses' Spiritual Well-Being and Spiritual Care Competence: A Cross-Sectional Study in Indonesia

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ARTICLE INFO

Keywords:

Competence

Indonesia

Nursing, Spiritual
care

Spiritual well-
being

ABSTRACT

Spiritual well-being is a dynamic state wherein individuals may perceive and articulate affirmative emotions, actions, and thoughts in their interactions with themselves, others, the environment, and the transcendence (God). Aimed to analyze the relationship between nurses' spirituality and their competence in providing spiritual care to patients, the study employed a quantitative correlational method and a cross-sectional research design, selecting a sample of 348 Indonesian nurses who were actively working in various care units in hospitals or health centres. Spiritual Well-Being Scale (SWBS) (Cronbach's Alpha = 0.904) was utilized to measure nurses' spirituality, and the Spiritual Care Competency Scale (SCCS) (Cronbach's Alpha = 0.962) was employed to measure nurses' spiritual care competence. A Spearman correlation was conducted to evaluate the relationship between nurses' spiritual well-being and nurses' spiritual care competence. There was a significant positive relationship between the two variables, $r_s(356) = 0.214$, $p < 0.001$. The results indicated that spiritual well-being can enhance nurses' ability to provide spiritual care. Further research can address the limitations and shortcomings of the current study to provide respondents with a more comprehensive understanding of the relationship between spiritual well-being and nurses' spiritual care competence. Additionally, future research can explore the various factors that influence both spiritual well-being and spiritual care competence.

Received 09 July 2025;

Received in revised form 06 November 2025;

Accepted 19 December 2025

<https://doi.org/10.19166/nc.v13i2.10122>

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INTRODUCTION

Spirituality derives from the Latin term “spiritus,” signifying breath, and pertains to the interior energy of an individual that embraces the immaterial dimensions of existence, including relationships with

God, oneself, others, and the environment (Azarsa et al., 2015). The spiritual requirements of patients fall within the responsibilities of nurses, and addressing these needs can significantly enhance overall satisfaction with the care provided (Kirchoff et al., 2021). In reality, however, the spiritual requirements of patients are frequently overlooked or inadequately addressed (Laili et al., 2019; Mascio et al.,

2022). A study examining spiritual care practices in several countries, including Indonesia, reveals that in certain nations, there is an inconsistent provision of spiritual care to patients (Taylor et al., 2023). Spiritual needs constitute a fundamental requirement for all patients; however, research indicates that these needs are predominantly addressed in critically ill patients and those receiving palliative care (Gijssberts et al., 2019; Klimasiński, 2021).

Spiritual care competence refers to a nurse's capacity to effectively provide and meet the spiritual needs of patients according to the intended outcome (Van Leeuwen & Cusveller, 2004). A study discloses that nurses feel they lack the necessary skills to provide spiritual care due to infrequent opportunities to do so in their regular nursing duties and inadequate preparation throughout their schooling (Chen et al., 2020; Green et al., 2020). Furthermore, the ability of nurses to provide spiritual care may be influenced by their own spiritual well-being (Jahandideh et al., 2018; Ross et al., 2016). The reason for this is that spiritual well-being has an impact on the attitudes and behaviours of nurses when it comes to giving spiritual care (Azarsa et al., 2015).

Two studies conducted in Indonesia reveal disparities in the spiritual care competency of nurses. Ardiansyah's (2022) research involving 200 nurses in Makassar revealed that 75% exhibited high spiritual competence, 21.5% demonstrated moderate competence, and merely 3.5% displayed low competence, underscoring the necessity of adequately addressing patients' spiritual needs to ensure holistic care. In contrast, a study by (Azarsa et al., 2015) including 167 nurses in Pontianak, indicated that while 40.1% of participants exhibited high spiritual intelligence, the majority displayed low spiritual nursing competence. These findings underscore the necessity of enhancing spiritual care education and training for nurses to ensure they deliver comprehensive nursing care that adheres to holistic standards. Additional research is required to explore the correlation between nurses' spirituality and their proficiency in delivering spiritual care. Unfulfilled spiritual needs of patients can significantly affect patient well-being, the process of healing, and the overall quality of patient health. Hence, it is crucial to understand the correlation between the spiritual well-being of nurses and their competency in delivering spiritual care. This study aimed to investigate the correlation between the spiritual well-being of nurses in Indonesia and their competency in delivering spiritual care to patients.

METHOD

This study employed a non-experimental correlational quantitative research design, utilizing a cross-sectional technique, measuring the correlation between nurses' spiritual well-being and spiritual care competence. The population involved 668,260 currently employed nurses in Indonesia (Kemenkes RI, 2023). A sample of 348 nurses was selected using the accidental sampling technique, with inclusion criteria that included Indonesian registered nurses working in a clinical setting around Indonesia. The data was collected using three instruments: a demographic questionnaire, the spiritual well-being

scale, and the spiritual care competence scale.

The Spiritual Well-Being Scale (SWBS) instrument has been extensively utilized in spirituality research (Chaiviboontham et al., 2016; Tavel et al., 2022). The SWBS questionnaire was initially created by Paloutzian and Ellison in 1983. The SWBS measurement has been extensively utilized in numerous studies, especially within the health sector (Salman & Lee, 2019; You & Yoo, 2016). The Spiritual Well-Being Scale (SWBS) includes 20 items divided into two subscales: religious well-being (RWB) and existential well-being (EWB). The EWB subscale evaluates an individual's sense of purpose and overall satisfaction with life. The RWB subscale evaluates an individual's relationship with God (Chaiviboontham et al., 2016). The SWBS scale employs a 6-point Likert scale, where higher values indicate increased well-being, and has been validated in Indonesian (Paloutzian & Ellison, 2021).

This study utilized the Spiritual Care Competency Scale (SCCS), developed by Van Leeuwen (2009), to assess nurses' spiritual competence. The SCCS has been subjected to validity and reliability assessments; however, it remains in its original language, English, and was developed within the framework of health education in the Netherlands. The SCCS has been utilized in multiple studies to assess spiritual care competency among nursing research samples (Asgari et al., 2022; Machul et al., 2022). This instrument comprises 27 questions categorized into six domains: assessment and implementation of spiritual care, professionalism and enhancement of spiritual service quality, self-support and patient counseling, referrals, attitudes towards patient spirituality, and communication. A Likert scale ranging from 1 to 5, where 1 indicates strong disagreement and 5 indicates strong agreement, is utilized, with the total mean score calculated accordingly. A higher score indicates higher spiritual care competency. The instrument was translated into Indonesian through forward and backward translation conducted by at least two individuals proficient in English. The questionnaire has undergone testing for both validity and reliability. The validity test indicates that the calculated *r* value ranges from 0.325 to 0.795. The reliability test results indicate a Cronbach's alpha value of 0.942, demonstrating the questionnaire's reliability.

The data collection occurred following ethical clearance from the Institutional Review Board (IRB) no. 041/KEPFON/I/2024), utilizing Survey Monkey™ from March to April 2024, and leveraging social media and professional networks for questionnaire distribution. The study information and informed consent were presented at the beginning of the survey, allowing those who agreed to participate to proceed with the questionnaire. The survey will automatically close for individuals who choose not to participate. The data were then examined using SPSS, using the Spearman Rank test to investigate the correlation between spirituality and spiritual competence among nurses.

RESULTS

Table 1. Demographic characteristics of respondents (n=348)

Characteristics	Respondents	Frequency	Percentage (%)
Gender	Male	100	28.7
	Female	248	71.3
Age	20-25 years old	116	33.3
	25-30 years old	180	51.7
	30-35 years old	24	6.9
	35-40 years old	14	4
	40-45 years old	10	2.9
	45> years old	4	1.1
Religion	Christian	216	62.1
	Catholic	26	7.5
	Moslem	95	27.3
	Hindu	4	1.1
	Buddhist	7	2
Last Education	Associate Degree in Nursing	52	14.9
	Bachelor's Degree in Nursing	31	8.9
	Bachelor's Degree in Nursing + RN	264	75.9
	Master's Degree in Nursing	1	0.3
Working Experience	1 - 5 years	269	77.3
	6 - 10 years	44	12.6
	11 - 15 years	21	6
	16 - 20 years	4	1.1
	21 - 25 years	7	2
	26 - 30 years	3	0.9
Workplace Location	North Sumatra	50	14.4
	South Sumatra	5	1.4
	West Sumatra	12	3.4
	Bengkulu	6	1.7
	Riau	4	1.1
	Riau islands	3	0.9
	Jambi	7	2
	Lampung	11	3.2
	Bangka Belitung	12	3.4
	Banten	36	10.3
	Special Capital Region of Jakarta	37	10.6
	West Java	14	4
	Central Java	8	2.3
	East Java	20	5.7
	Special Region of Yogyakarta	13	3.7
	Bali	13	3.7
	West Kalimantan	5	1.4
	South Kalimantan	6	1.7
	Central Kalimantan	6	1.7
	East Kalimantan	5	1.4
	North Kalimantan	3	0.9
	East Nusa Tenggara	8	2.3
	West Nusa Tenggara	2	0.6
	Gorontalo	4	1.1
	West Sulawesi	4	1.1
	South Sulawesi	3	0.9
	Central Sulawesi	4	1.1
	Southeast Sulawesi	5	1.4
	North Sulawesi	4	1.1
	North Maluku	6	1.7
	Maluku	19	5.5
	Papua	4	1.1
	West Papua	2	0.6
	Southwest Papua	1	0.3
	Highland Papua	2	0.6
	South Papua	3	0.9
	Central Papua	1	0.3
Work Setting	Hospital	314	90.2

Characteristics	Respondents	Frequency	Percentage (%)
Working Unit	Community Health Center	24	6.9
	Clinic	7	2
	Others	3	0.9
	Outpatient Unit	41	11.8
	Adult Inpatient Unit	127	36.5
	Pediatric Inpatient Unit	15	4.3
	Emergency Room (ER)	39	11.2
	Intensive Care Unit (ICU/ICCU/HCU)	55	15.8
	Special Service Unit (Operating Theatre/Hemodialysis Unit/Stroke Unit)	25	7.2
	Others	46	13.2
Spiritual Care Training	Yes	175	50.3
	No	173	49.7
Spiritual Care SOP in Hospital	Available	261	75
	Not Available	87	25

*SOP = Standard Operational Procedure

The demographic data revealed that 51.7% of the respondents fell between the age range of 25-30 years old, with females comprising the majority at 71.3% and a significant majority of 62.1% identified as Christian. As many as 77.3% respondents had a working

experience ranging from 1 to 5 years, and 90.2% of them were employed in hospitals and 50.3% of the participants had undergone spiritual care training, and 75% of the hospitals had implemented a Standardized Operating Procedure (SOP) for spiritual care.

Table 2. *Spiritual Well Being Scale (SWBS)*

SWBS	Means Score	SD
I don't find much satisfaction in private prayer with God	4.78	0.94
I believe that God loves me and cares about me	4.91	1.23
I believe that God is impersonal and not interested in my daily situations	4.93	0.92
I have a personally meaningful relationship with God	4.77	1.22
I don't get much personal strength and support from my God	5.02	1.04
I believe that God is concerned about my problems	4.86	1.27
I don't have a personally satisfying relationship with God	4.94	0.95
My relationship with God helps me not to feel lonely	4.77	1.24
I feel most fulfilled when I'm in close communion with God	4.60	1.24
My relationship with God contributes to my sense of well-being	4.62	1.31
Religious:	4.82	1.13
I don't know who I am, where I came from, or where I'm going	5.15	0.99
I feel that life is a positive experience	5.11	1.15
I feel unsettled about my future	5.06	0.99
I feel very fulfilled and satisfied with life	4.28	1.26
I feel a sense of well-being about the direction my life is headed in	4.32	1.18
I don't enjoy much about life	4.79	0.83
I feel good about my future	4.48	1.29
I feel that life is full of conflict and unhappiness	4.69	1.04
Life doesn't have much meaning	4.82	0.98
I believe there is some real purpose for my life	5.04	1.14
Existential:	4.77	1.08

According to Table 2, nurses exhibited differences in their perspectives on their connection with God and the significance of life. The average score for the religious aspect was 4.82 (SD = 1.13), whereas the average score for the existential aspect was 4.77 (SD = 1.08). The statement about self-doubt and future obtained the

greatest score in the spiritual well-being evaluation, with a mean score of 5.15 (SD = 0.99). On the other hand, the statement about feeling very content and satisfied with life had the lowest score, with a mean of 4.28 (SD = 1.26). The results showed that the participants' spiritual well-being can be considered.

Tabel. 3 *Spiritual Care Competence Scale (SCCS)*

SCCS	Means Score	SD
I can report orally and/or in writing on a patient's spiritual needs	3.9	0.75
I can tailor care to a patient's spiritual needs/problems in consultation with the patient	3.84	0.72
I can tailor care to a patient's spiritual needs/problems through multidisciplinary consultation	3.68	0.69
I can record the nursing component of a patient's spiritual care in the nursing plan	3.89	0.64
I can report in writing on a patient's spiritual functioning	3.86	0.61
I can report orally on a patient's spiritual functioning	3.87	0.59
Assessment and implementation of spiritual care:	3.8	0.7
Within the nursing ward, I can contribute to quality assurance in the area of spiritual care	3.63	0.66
Within the nursing ward, I can contribute to professional development in the area of spiritual care	3.7	0.67
Within the nursing ward, I can identify problems relating to spiritual care in peer discussion sessions	3.69	0.65
I can coach other care workers in the area of spiritual care delivery to patients	3.34	0.8
I can make policy recommendations on aspects of spiritual care to the management of the nursing ward	3.56	0.72
I can implement a spiritual-care improvement project in the nursing ward	3.76	0.73
I can provide a patient with spiritual care	3.96	0.63
I can evaluate the spiritual care that I have provided in consultation with the patient and in the disciplinary/multi-disciplinary team	3.81	0.75
I can give a patient information about spiritual facilities within the care institution (including spiritual care, meditation centre, religious services)	3.98	0.66
I can help a patient continue his or her daily spiritual practices (including providing opportunities for rituals, prayer, meditation, reading the Bible/Koran, listening to music)	4.04	0.62
I can attend to a patient's spirituality during the daily care (e.g. physical care)	3.95	0.5
I can refer members of a patient's family to a spiritual advisor/pastor, etc. if they ask me and/or if they express spiritual needs	3.76	0.63
Professionalization and improving The quality of spiritual care:	3.8	0.7
I can effectively assign care for a patient's spiritual needs to another care provider/care worker/care discipline	3.58	0.72
At the request of a patient with spiritual needs, I can,	3.77	0.64

SCCS	Means Score	SD
in a timely and effective manner, refer him or her to another care worker (e.g., a chaplain/the patient's own priest/imam)		
I know when I should consult a spiritual advisor concerning a patient's spiritual care	3.78	0.68
Referral:	3.7	0.7
I show unprejudiced respect for a patient's spiritual/religious beliefs regardless of his or her spiritual/religious background	4.01	0.62
I am open to a patient's spiritual/religious beliefs, even if they differ from my own	4.18	0.6
I do not try to impose my own spiritual/religious beliefs on a patient	4.26	0.58
I am aware of my personal limitations when dealing with a patient's spiritual/religious beliefs	4.05	0.64
Attitude towards patient spirituality:	4.1	0.6
I can listen actively to a patient's 'life story' in relation to his or her illness/handicap	4.12	0.6
I have an accepting attitude in my dealings with a patient (concerned, sympathetic, inspiring trust and confidence, empathetic, genuine, sensitive, sincere, and personal)	4.24	0.57
Communication:	4.2	0.6

Table 3 demonstrated that there was variability among nurses in their capability to deliver spiritual care to patients. The mean score for spiritual care assessment and implementation was 3.8 (SD = 0.7), for professionalization and quality improvement of spiritual care was 3.8 (SD = 0.7), for referral was 3.7 (SD = 0.7), for attitude towards patient spirituality was 4.1 (SD = 0.6), and for communication was 4.2 (SD = 0.6). The aspect of nurses' spiritual

care competence that received the highest score in the assessment was their ability to inform patients about spiritual resources available in healthcare institutions, with an average score of 3.98 (SD = 0.66). On the other hand, the aspect that received the lowest score was their ability to guide colleagues in providing spiritual care to patients, with an average score of 3.34 (SD = 0.8).

Table 4. Spearman's rank correlation

		SWBS*	SCCS*
SWBS	Correlation Coefficient	1.000	.214***
	Sig. (2-tailed)	.	<.001
	N	348	348
SCCS	Correlation Coefficient	.214***	1.000
	Sig. (2-tailed)	<.001	.
	N	348	348

*SWBS: *Spiritual Well-Being Scale*

**SCCS: *Spiritual Care Competency Scale*

**Correlation is significant at the 0.01 level (2-tailed)

The Spearman's rho test in Table 4 revealed that the Spiritual Well-Being Scale (SWBS) showed a small but statistically significant positive correlation with the Spiritual Care Competency Scale (SCCS) ($r = .214$, $p < .001$), indicating that higher spiritual well-being is modestly associated with greater competence in providing spiritual care.

DISCUSSIONS

This study discovered a noteworthy correlation between spiritual well-being and spiritual care competence (p -value < 0.001). This aligns with the research conducted by Heidari et al. (2022) regarding the correlation between spiritual well-being and spiritual care competency among nurses employed in hospital settings. The results of this study indicated that nurses who had a higher level of spiritual well-being were more proficient in delivering spiritual care. Furthermore, a strong degree of well-being had a substantial impact on their ability to provide spiritual care (p -value < 0.001). Similarly, research conducted by Azarsa et al. (2015) stated that spiritual well-being and a positive attitude towards spiritual care were closely related to nurses' competence in providing spiritual care. The findings of this study indicated a strong correlation between high levels of spiritual well-being and high levels of competence in providing spiritual care among nurses working in critical care units. The statistical analysis revealed a significant association (p -value < 0.005) between these two variables. Meanwhile, Parveen et al. (2021) conducted a study in Faisalabad, Saudi Arabia during the third wave of the COVID-19 epidemic. Their research revealed that spiritual well-being played a crucial part in ensuring nurses' ability to provide effective spiritual care. The findings indicated a positive correlation between elevated spiritual well-being and enhanced proficiency in delivering spiritual care among 60% of nurses during the epidemic. In line with this, a study conducted in Poland revealed that nurses with a strong sense of spiritual well-being demonstrated a higher degree of skill in providing spiritual care. This study also emphasized the significance of nurses' spiritual well-being in enhancing their competence. Similarly, Alshehry (2018) found that expatriate nurses employed in Saudi Arabia who possessed high levels of spirituality demonstrated good spiritual care competencies.

Multiple studies have demonstrated that the delivery of spiritual care is impacted by spiritual well-being. In this study, the religious aspect had the highest mean score of 48.20 ($SD=7.3$). Research conducted by Akbayram & Keten (2024) also emphasized that religious beliefs and participation in religious activities had a significant impact on one's spiritual well-being. A correlation was seen between engagement in religious activities and higher levels of spiritual well-being, as evidenced by an average score of 4.5 ($SD = 0.6$). A study reported that participating in religious activities, particularly being part of religious groups, can have a beneficial impact on mental and physical well-being by managing health-related behaviors. (Koh, 2018). Additionally, the study demonstrated that involvement in religious groups positively impacted both mental and physical health, as evidenced by an

average mental well-being score of 4.3 ($SD = 0.7$) and a physical well-being score of 4.2 ($SD = 0.8$). Moreover, another study emphasized the significance of including religious aspects in the healthcare setting. They disclosed that acknowledging and integrating religious aspects in healthcare can enhance patient well-being, particularly regarding emotional and psychological support (Idler et al., 2023). This study supported the current finding that religious aspects of spiritual well-being had the greatest influence on the provision of spiritual care. Within the scope of our research, the religious aspects exhibited the highest average score, with a mean of 96 ($SD = 13.30$) for spiritual well-being and 104.21 ($SD = 10.95$) for spiritual care competence.

Another aspect of spiritual well-being is the existential aspect, which in this study had a mean score of 47.74 ($SD = 6.60$). A study discovered that existential factors had a crucial role in influencing positive mental attitudes and fostering high optimism in individuals (Bezerra et al., 2018). This implies that contemplating the meaning of life, interpersonal connections, and our existence as individuals profoundly influences one's total spiritual welfare. Spirituality and existential well-being were identified as fundamental components of the health dimension of quality of life (Ownsworth & Nash, 2015). Furthermore, a study demonstrated that existential elements were strongly and positively associated with the degree of life satisfaction (Ulliya & Nurmenasari, 2022). This suggests that self-acceptance, the pursuit of meaning, and personal development play crucial roles in attaining holistic well-being. Hence, this research showed that existential factors had an impact on the well-being of nurses when delivering spiritual care to patients.

The study's findings indicated a strong association between nurses' spiritual well-being and their ability to give spiritual care, as evidenced by a significant P -value of 0.001. However, the study revealed a weak positive correlation based on the correlation coefficient. Multiple factors may impact the spiritual well-being of nurses when delivering proficient spiritual care. The study conducted by Han et al. (2023) revealed that several elements, such as social support, professional training, and nursing self-confidence, can have an impact. They found that nurses who got robust social support and comprehensive professional training demonstrate greater competency in providing spiritual care. Furthermore, a strong sense of self-confidence also plays a pivotal part in enhancing nurses' competency in this domain. There are other elements that impact the nurses' competence in delivering spiritual care to patients, including ethnicity, religion, level of education, and clinical experience (Anshasi et al., 2024).

This study has significant practical value for Indonesian nursing by illustrating that enhanced spiritual well-being correlates with improved ability in delivering spiritual care, a fundamental aspect of holistic, patient-centered care. Comparable results from a cross-sectional survey in Indonesia ($r = .235$, $p < .001$) indicated that nurses' favorable perceptions of spirituality were associated with increased frequency of spiritual care practices in clinical

environments, highlighting a quantifiable advantage to patient well-being when nurses' personal spirituality is cultivated (Baguna et al., 2024). This indicates that for nurses in Indonesia, promoting spiritual well-being—via training, reflective practice, and supportive work environments—can directly improve their capacity to address patients' spiritual needs. Ultimately, the comprehensive integration of spiritual care into education, electronic medical records, and hospital policy can enhance this competency, hence boosting nurse satisfaction and patient outcomes.

CONCLUSIONS

The study revealed that the majority of respondents were young female nurses, predominantly Christian, with limited work experience (1–5 years) and primarily employed in hospital settings. Spiritual well-being among nurses was relatively high, with the religious dimension slightly exceeding the existential dimension, indicating a strong sense of connection with God and purpose in life. However, feelings of life satisfaction scored lowest, suggesting areas for improvement in overall well-being. Spiritual care competence was moderate, with the highest scores in communication and attitude toward patient spirituality, reflecting openness and respect for diverse beliefs. Conversely, the ability to coach colleagues and contribute to policy development scored lowest, highlighting gaps in professionalization and leadership in spiritual care.

A small but significant positive correlation between spiritual well-being and spiritual care competence ($r = .214$, $p < .001$) suggests that nurses with higher spiritual well-being tend to demonstrate better competence in providing spiritual care. These findings underscore the importance of fostering both personal spiritual well-being and structured training to enhance nurses' ability to deliver holistic care.

ACKNOWLEDGEMENTS

We would like to sincerely thank the Centre for Research and Community Development for their financial support in funding this research (contract no P-021-S-FoN/I/2024).

REFERENCES

- Akbar, H. T., & Keten, H. S. (2024). The Relationship between Religion, Spirituality, Psychological Well-Being, Psychological Resilience, Life Satisfaction of Medical Students in the Gaziantep, Turkey. *Journal of Religion and Health*, 63(4). <https://doi.org/10.1007/s10943-024-02027-2>
- Akbar, H. T., & Keten, H. S. (2024). The Relationship between Religion, Spirituality, Psychological Well-Being, Psychological Resilience, Life Satisfaction of Medical Students in the Gaziantep, Turkey. *Journal of Religion and Health*, 63(4). <https://doi.org/10.1007/s10943-024-02027-2>
- Alshehry, A. S. (2018). Spirituality and spiritual care competence among expatriate nurses working in Saudi Arabia. *Religions*, 9(12). <https://doi.org/10.3390/rel9120384>
- Anshasi, H. A., Fawaz, M., Aljawarneh, Y. M., & Alkhalaf, J. M. (2024). Exploring nurses' experiences of providing spiritual care to cancer patients: a qualitative study. *BMC Nursing*, 23(1). <https://doi.org/10.1186/s12912-024-01830-2>
- Ardiansyah, A., Hidayah, N., & Risnah, R. (2022). Analisis tingkat kompetensi spiritual perawat di kota Makassar. *Alauddin Scientific Journal of Nursing*, 3(1), 1–12. <https://doi.org/10.24252/asjn.v3i1.26808>
- Asgari, M., Pouralizadeh, M., Javadi Pashaki, N., Maroufizadeh, S., Nourisaeed, A., Jannati, A., & Ghanbari, A. (2022). Perceived spiritual care competence and the related factors in nursing students during Covid-19 pandemic. *International Journal of Africa Nursing Sciences*, 17. <https://doi.org/10.1016/j.ijans.2022.100488>
- Azarsa, T., Davoodi, A., Khorami Markani, A., Gahramanian, A., & Vargaei, A. (2015). Spiritual wellbeing, Attitude toward Spiritual Care and its Relationship with Spiritual Care Competence among Critical Care Nurses. *Journal of Caring Sciences*. <https://doi.org/10.15171/jcs.2015.031>
- Baguna, A. E., Pandeyrot, C. Y. M., Juniarta, & Barus, N. S. (2024). Correlation of nurses' perception of spirituality and spiritual care with spiritual care practices in Indonesia: A cross-sectional survey. *Belitung Nursing Journal*, 10(5), 593–600. <https://doi.org/10.33546/bnj.3467>
- Bezerra, S. M. M. da S., Gomes, E. T., Galvão, P. C. da C., & Souza, K. V. de. (2018). Spiritual well-being and hope in the preoperative period of cardiac surgery. *Revista Brasileira de Enfermagem*, 71(2). <https://doi.org/10.1590/0034-7167-2016-0642>
- Chaiviboontham, S., Phinitkhajorndech, N., Hanucharurnkul, S., & Noipiang, T. (2016). Psychometric properties of the Thai Spiritual Well-Being Scale. *Palliative and Supportive Care*, 14(2). <https://doi.org/10.1017/S1478951515000024>
- Chen, M. L., Chen, Y. H., Lin, L. C., & Chuang, L. L. (2020). Factors influencing the self-perceived competencies in spiritual care of nurses in the long-term care facilities. *Journal of Nursing Management*, 28(6). <https://doi.org/10.1111/jonm.13080>
- Gijsberts, M. J. H. E., Liefbroer, A. I., Otten, R., & Olman, E. (2019). Spiritual care in palliative care: a systematic review of the recent european literature. In *Medical sciences (Basel, Switzerland)* (Vol. 7, Issue 2). <https://doi.org/10.3390/medsci7020025>
- Green, A., Kim-Godwin, Y. S., & Jones, C. W. (2020). Perceptions of spiritual care education, competence, and barriers in providing spiritual care among registered nurses. *Journal of Holistic Nursing*, 38(1), 41–51. <https://doi.org/10.1177/0898010119885266>
- Han, K. H., Hung, K. C., Cheng, Y. S., Chung, W., Sun, C. K., &

- Kao, C. C. (2023). Factors affecting spiritual care competency of mental health nurses: a questionnaire-based cross-sectional study. *BMC Nursing*, 22(1). <https://doi.org/10.1186/s12912-023-01302-z>
- Heidari, A., Afzoon, Z., & Heidari, M. (2022). The correlation between spiritual care competence and spiritual health among Iranian nurses. *BMC Nursing*, 21(1). <https://doi.org/10.1186/s12912-022-01056-0>
- Idler, E., Jalloh, M. F., Cochrane, J., & Blevins, J. (2023). Religion as a social force in health: complexities and contradictions. *BMJ*. <https://doi.org/10.1136/bmj-2023-076817>
- Jahandideh, S., Zare, A., Kendall, E., & Jahandideh, M. (2018). Nurses' spiritual well-being and patients' spiritual care in Iran. *COJ Nursing & Healthcare*, 1(3), 1–5. <https://doi.org/10.31031/cojnh.2018.01.000514>
- Kemenkes RI. (2023, December 3). *Profil tenaga kesehatan*. Direktorat Jendral Tenaga Kesehatan, Kemenkes RI. <https://ditjen-nakes.kemkes.go.id>
- Kirchoff, R. W., Tata, B., McHugh, J., Kingsley, T., Burton, M. C., Manning, D., Lapid, M., & Chaudhary, R. (2021). Spiritual care of inpatients focusing on outcomes and the role of chaplaincy services: a systematic review. *Journal of Religion and Health*, 60(2). <https://doi.org/10.1007/s10943-021-01191-z>
- Klimasiński, M. W. (2021). Spiritual care in the intensive care unit. *Anesthesiology Intensive Therapy*, 53(4), 350–357. <https://doi.org/10.5114/ait.2021.109920>
- Koh, K. B. (2018). The Role of Religion and Spirituality in Health and Illness. In *Stress and Somatic Symptoms*. https://doi.org/10.1007/978-3-030-02783-4_26
- Laili, N. R., Zulkarnain, H., Yasmara, D., & Sriyono. (2019). Promoting spiritual nursing care in an intensive care unit: a systematic review. *Indian Journal of Public Health Research and Development*, 10(8). <https://doi.org/10.5958/0976-5506.2019.02291.5>
- Machul, M., van Leeuwen, R., Ozga, D., Jurek, K., Boczkowska, S., & Dobrowolska, B. (2022). The level of spiritual care competence of Polish nurses and the psychometric properties of the spiritual care competence scale (SCCS). *BMC Nursing*, 21(1). <https://doi.org/10.1186/s12912-022-00889-z>
- Mascio, R., Best, M., Lynch, S., Phillips, J., & Jones, K. (2022). Factors influencing nurse spiritual care practices at the end of life: A systematic review. *Palliative and Supportive Care*, 20(6), 878–896. <https://doi.org/10.1017/S1478951521001851>
- Ownsworth, T., & Nash, K. (2015). Existential well-being and meaning making in the context of primary brain tumor: Conceptualization and implications for intervention. *Frontiers in Oncology*, 5(APR). <https://doi.org/10.3389/fonc.2015.00096>
- Paloutzian, R. F., & Ellison, C. W. (2021). *Manual for the Spiritual Well-Being Scale*. https://www.westmont.edu/sites/default/files/users/user401/SWBS%20Manual%202.0_0.pdf
- Parveen, S. A., Sehar, S., & Mustufa, D. (2021). Spirituality, Spiritual Well-Being and Spiritual Care Competence among Nurses during the Third Wave of Corona Virus in Faisalabad Saudi. *Pakistan. Saudi J Nurs Health Care*, 4(6).
- Ross, L., Giske, T., van Leeuwen, R., Baldacchino, D., McSherry, W., Narayanasamy, A., Jarvis, P., & Schep-Akkerman, A. (2016). Factors contributing to student nurses'/midwives' perceived competency in spiritual care. *Nurse Education Today*, 36. <https://doi.org/10.1016/j.nedt.2015.10.005>
- Salman, A., & Lee, Y. H. (2019). Spiritual practices and effects of spiritual well-being and depression on elders' self-perceived health. *Applied Nursing Research*, 48. <https://doi.org/10.1016/j.apnr.2019.05.018>
- Tavel, P., Jozefiakova, B., Telicak, P., Furstova, J., Puza, M., & Kascakova, N. (2022). Psychometric Analysis of the Shortened Version of the Spiritual Well-Being Scale on the Slovak Population (SWBS-Sk). *International Journal of Environmental Research and Public Health*, 19(1). <https://doi.org/10.3390/ijerph19010511>
- Taylor, E. J., Pariñas, S., Mamier, I., Atarhim, M. A., Angeles, L., Aslan, H., Aktürk, Ü., Erci, B., Soriano, G., Sinaga, J., Chen, Y., Merati-Fashi, F., Odonel, G., Neathery, M., Permatasari, W., Ricci-Allegria, P., Foith, J., Caldeira, S., & Dehom, S. (2023). Frequency of nurse-provided spiritual care: An international comparison. *Journal of Clinical Nursing*, 32(3–4), 597–609. <https://doi.org/10.1111/jocn.16497>
- Ulliya, S., & Nurmenasari, S. (2022). Spiritual Well-Being Perawat Ruang Rawat Inap Di Rumah Sakit X Kota Pontianak. *Jurnal Kepemimpinan Dan Manajemen Keperawatan*, 5(1), 16–24. <https://doi.org/10.32584/jkmk.v5i1.1451>
- Van Leeuwen, R. (2009). Towards Nursing Competencies in Spiritual Care. *Studies in Spirituality*, 19(0), 249–289. <https://doi.org/10.2143/SIS.19.0.2043682>
- Van Leeuwen, R., & Cusveller, B. (2004). Nursing competencies for spiritual care. *Journal of Advanced Nursing*, 48(3), 234–246. <https://doi.org/10.1111/j.1365-2648.2004.03192.x>
- You, S., & Yoo, J. E. (2016). Evaluation of the Spiritual Well-Being Scale in a Sample of Korean Adults. *Journal of Religion and Health*, 55(4). <https://doi.org/10.1007/s10943-015-0010-0>

Original Research

Family Assessment Device Among Families with Stunted Children Under Five Years in Kadu Village, Tangerang

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ARTICLE INFO

Keywords:

Family
functioning

Nutrition

Parental roles

Stunting

Toddler growth

ABSTRACT

Nutritional status serves as an important indicator of health development in infants and young children. Insufficient growth in height and weight during the toddler stage can lead to nutritional issues that negatively impact health and may cause delays in cognitive development. This study aimed to examine the relationship between family functioning and the growth of toddlers with stunting in Kadu Village, Tangerang. A correlational design with a cross-sectional approach was applied, involving 64 families with stunted children under five years old. Data were collected using the Family Assessment Device (FAD), which measures seven dimensions of family functioning: problem-solving, communication, roles, affective responsiveness, affective involvement, behavior control, and general functioning. The height and weight of toddlers were validated through health records and direct measurement. Statistical analysis revealed that the role factor had a significant negative correlation with both child height ($p = 0.001$; $r = -0.395$) and weight ($p = 0.002$; $r = -0.379$), while problem-solving showed a positive correlation with height ($p = 0.03$; $r = 0.271$). These findings indicate that parental roles and involvement in daily care strongly influence toddler growth. Roles and problem-solving are part of the family function. Strengthening family roles and problem-solving skills is essential to improving nutritional outcomes and preventing stunting.

Received 20 November 2025;

Received in revised form 19 December 2025;

Accepted 19 December 2025

<https://doi.org/10.19166/nc.v13i2.10532>

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INTRODUCTION

The period from birth to five years of age is the most important in the human life cycle because during this time, there is rapid physical, cognitive, and emotional growth and development. In supporting growth and development in this period, optimal nutritional status is needed, so that growth and development can follow the age of the child,

and the quality of life of children in adulthood can be optimal (WHO, 2020). During this period, there is very rapid brain development, which becomes the basis for the formation of learning abilities, behavior, and health in children under five years old. Good nutrition serves as a foundation for tissue growth, neural development, and plays a role in the development of endurance. If the nutritional status is not optimal, there will be growth and

development disorders in children under five years old, which results in children under five years old being at risk of disease and lagging in development (Tarmizi, 2024).

The efforts made by the government to improve nutritional status in Indonesia are to carry out Integrated Malnutrition Management by emphasizing the active role of families and communities, as well as multidisciplinary efforts related to malnutrition prevention by recommending outpatient treatment for uncomplicated malnourished children under five years old and hospitalization if there are complications until complications are resolved for children under five aged 6 to 59 months. If less than 6 months old and experiencing malnutrition, hospitalization is recommended, even in the absence of complications (Ministry of Health, 2019). Despite the government's efforts, stunting is still a significant problem of concern in children under five years old, especially in areas with a high prevalence of stunting. Policies and interventions for addressing stunting in each region of Indonesia vary. Some regions have a strong commitment and significant support from across sectors in preventing stunting. Regions with effective program management have successfully reduced the incidence of stunting.

Consumption of less nutritious food can cause nutritional problems in infants and children under five, such as stunting, underweight, and failure to grow, which is here in after referred to as nutritional status, so that good nutrition supports adequate growth of infants and children under five years old (Manurung et al., 2022). According to the 2025 nutrition survey results, the incidence of stunting in Indonesia was 21% (Setyorini & Lieskusumastuti, 2021). This figure remains a concern, particularly in areas with a high prevalence of stunting. The high prevalence of stunting does not only occur outside the island of Java but in Java itself, which is considered one of the regions with the best health levels in Indonesia, and still has a concerning percentage of stunting of more than 20%. East Java ranks first, with a prevalence of 32.8%, followed by Banten province, which has 29.6% of stunting cases, and Tangerang Regency, where 28.8% of stunting cases were recorded (Wardita et al., 2021).

This condition reflects that one in three Indonesian children has impaired growth due to chronic malnutrition. At the regional level, Banten Province has a stunting rate of 29.6% with approximately 209,600 toddlers suffering from stunting, and Tangerang District has a high number of cases of children under five years old with nutritional problems, especially among low-income families with limited access to health services (Badan Pusat Statistik Provinsi Banten, 2023). One village in Tangerang District continues to face challenges in improving the nutritional

status of children under five years old. Based on data from the local community health center, there are several cases of underweight children under five years old, height below age standards, and cases of children under five years old with anemia. This condition indicates that various factors influence the nutritional status of children in the neighborhood, both directly, such as inadequate diet, and indirectly, through factors like parents' education level, socioeconomic conditions, access to clean water, and environmental sanitation (Odoms-Young et al., 2024).

The active role of the family is needed in providing nutrition to children under five. Families can implement strategies to help maintain the nutritional needs of children under five years old. The role of the family in this case is as both educator and provider, where parents prepare food and educate their children to develop good eating habits. Families who play a good role in paying attention to their children's nutrition will have a better child's nutritional status (Siregar, 2016). The role of the family towards children under five years old is a process of interaction between parents and children. This interaction involves the role of parents in implementing daily habits, including parenting, hygiene, and healthcare practices. The family serves as a role model for children under five years old in developing daily living habits. A good family role is the foundation for developing a healthy lifestyle in children under five years old, enabling them to avoid various diseases and prevent stunting optimally.

The family serves as a role model for children under five years old in developing daily living habits, especially in the feeding process, which can influence a child's growth, so that their height and weight are appropriate for their age. There is an influence of the role of the family on the weight status of children (Susilowati et al., 2022). Parents who are busy with work may be less involved in paying attention to what their toddlers eat, which can affect their height, weight, and nutrition. A toddler's height can determine whether or not they are stunted. Toddlers who are too short for their age, usually due to malnutrition, experience weight loss and slowed growth (WHO, 2020)

Inadequate height and weight during toddlerhood can lead to nutritional problems that affect their health, resulting in delayed cognitive development. Impaired cognitive function has a long-term impact, especially during school age, when thinking processes are required. At this age, children will have difficulty absorbing information and understanding learning concepts, resulting in a decline in academic achievement (Handina, 2024). In addition to reduced cognitive function, suboptimal height and weight in toddlers can also cause intellectual disability and make them susceptible to disease, so that as adults they may be at risk of chronic illness (Handayani et al., 2023).

Based on interviews with representatives from the community health center that handles child nutrition issues, there were 75 toddlers suffering from stunting in Kadu Village in 2024. Based on interviews with the village head of Kadu, many efforts have been made to address stunting by involving medical personnel, but stunting still occurs. This shows the need for community involvement, especially families, in addressing stunting. Therefore, researchers are interested in conducting research to examine how family functioning relates to toddler growth, including height and weight in toddlers. The purpose of this study was to identify role factors to height dan weight in children with stunting, specifically in Kadu Village in Tangerang District.

METHODS

This study employed a correlational design with a cross-sectional approach. The study was conducted onsite at all integrated Posyandu in Kadu village, Tangerang District, from February 2024 to June 2024. This study obtained ethical clearance from the Ethics Committee of LPPM UPH, as indicated in number 072/IRB-UPH/VIII/2023.

The questionnaire used in this study was the Family Assessment Device (FAD), which consists of 53 questions covering seven factors: problem-solving, communication, roles, emotional responses, emotional involvement, behavior control, and general functioning. This questionnaire is already available in Indonesian and has been tested for validity and reliability using item factor analysis (IFA) with a total of 2,740 respondents by (Mutiah et al., 2023).The results of the IFA indicated that the seven-factor model correlated well with the data. answer choices on a Likert scale, namely always, often, sometimes, and never. The ordinal Cronbach's alpha (α) for each aspect was around 0.467 to 0.830 (Mutiah et al., 2023).The results of the IFA indicated that the seven-

correlated factor model fit the data acceptably [χ^2 (1304) = 4983.556, $p < .001$; RMSEA = .032 (90% CI = .031-.033), CFI = .904, TLI = .899, SRMR = .089].

The population was families (parents) with a child under five years old who had nutritional problems (stunting) and resided in the Kadu villages in Tangerang Regency. The study employed a total sampling approach to collect respondents, using inclusion criteria that included families (parents) who care for children under five years old experiencing nutritional problems (stunting). Following the inclusion criteria, a total of 64 respondents were included in this study. Validation was conducted by researchers in coordination with Posyandu cadres to verify records in the maternal and child health book (KMS) and measure the children's weight and height. The way to determine whether a toddler is stunted is by measuring their weight and height, comparing it with the WHO growth curve on the child health book (KMS) and finding that it is below -2 SD (Z-score). Subjects who agreed to participate were asked to complete an informed consent form. Data was collected directly by the researcher after the respondents had finished their Posyandu services, which took around 15-20 minutes.

Univariate and bivariate analyses were performed in this study. All variables are normally distributed except for the Roles factor. Therefore, we used the Pearson correlation for the variable with normally distributed data and Spearman's rho for the variable with data that do not meet normality assumptions (The role factors with Child's height and Child's weight).

RESULTS

The study findings were presented in Tables 1-3. Based on Table 1, it can be observed that 64 respondents with toddlers suffering from stunting had an average age of 31 years old, and their toddlers were 28 months old

Table 1. Characteristics of Respondents (n=64)

Characteristics	Mean	Minimum-Maximum	Standard Deviation	Lower-Upper 95 % CI
Mother's Age (y.o)	31.98	23 - 51	6.925	30.25 - 33.71
Family Income (Rp)	3,914,062	1,000,000 - 16,000,000	2,334,820	3,330,841 - 4,497,283
Child's Age (months)	28.27	2 - 58	15.612	24.37 - 32.17
Child's Height (Cm)	81.09	47 - 103	11.698	78.17 – 84.01
Child's Weight (Kg)	9.41	3 - 15	2.188	8.86 – 9.95

Table 2. Distribution Factors of Family Assessment Device (n=64)

Factors	Mean Score	Min-Max	Standard Deviation	Lower-Upper 95% CI
Problem-solving (Question 1-5)	15.86	11-20	1.94	15.37-16.34
Communication (Question 6-11)	18.06	11-23	2.70	17.39-18.74
Roles (Question 12-29)	21.05	13-54	5.01	19.79-22.30
Affective responsiveness (Question 20-25)	17.13	11-22	2.15	16.59-17.66
Affective involvement (Question 26-32)	20.25	14-25	2.21	19.7-20.8
Behaviour control (Question 33-41)	26	16-34	3.122	25.22-26.78
General functioning (Question 42-53)	35.03	20-47	4.41	33.93-36.13

Table 2 revealed that 64 respondents, in carrying out family functions, most performed general functions, with an average score of 35.03.

Table 3. Correlation of Family Assessment Factors with Child's Height (n=64)

Factors	Child's Height	
	p-value	r
Problem-solving	0.03	0.271
Communication	0.565	0.073
Roles	0.001	-0.395
Affective responsiveness	0.494	0.087
Affective involvement	0.084	0.024
Behaviour control	0.063	0.233
General functioning	0.221	-0.155

Based on Table 3, it can be observed that problem-solving and roles factor correlate with the child's height.

Table 4. Correlation of Family Assessment Factors with Child's Weight (N=64)

Factors	Child's Weight	
	p-value	r
Problem-solving	0.057	0.24
Communication	0.441	0.098
Roles	0.002	-0.379
Affective responsiveness	0.685	0.052
Affective involvement	0.729	0.044
Behaviour control	0.068	0.229
General functioning	0.384	-0.111

DISCUSSION

In addressing the issue of stunting, many efforts have been made that involve factors outside the family itself. However, the incidence of stunting remains a focus in health issues. Factors within the family are an important part of overcoming this problem, so it is essential to involve the family in overcoming stunting, especially the role and function of the family in caring for infants and toddlers (Rahayuwati et al., 2025)

According to the study results, the maternal age of more than 31 years is associated with a higher risk status compared to mothers under 31 years old. It suggests that older maternal age makes a significant contribution to the fulfillment of children's nutritional needs. In the process of self-adaptation, the older the age, the more experience that shapes one's behavior (Priana et al., 2023). Mothers of a younger age have less experience and knowledge in fulfilling nutritional needs and accessing health services. However, maternal age does not have a significant relationship with nutritional problems in children under five, as it cannot be considered a single factor in determining these problems. In this modern era, there are numerous ways to obtain information, allowing individuals without prior experience to access a wealth of information, particularly information related to toddler nutrition (Priana et al., 2023).

The purchasing power of food needs can be determined by the income earned. Foodstuffs to be purchased will be adjusted to income. If food ingredients are expensive, it will undoubtedly reduce the family's interest in purchasing them, so they may not be able to provide these ingredients for consumption (Illahi, 2017). However, in this study, families with incomes above the minimum wage still have children under five with nutritional problems. In providing and processing food, it also requires the skills of mothers or those responsible for fulfilling the family's nutrition. Even though they have high purchasing power for food, if they cannot manage and prepare food consumed by the family, it can also be a factor in not fulfilling the family's nutritional needs optimally (Kasumayanti & Z.R, 2020).

Family function plays an important role in fulfilling a toddler's nutritional needs. One of the family functions performed by parents is the role (Mutiah et al., 2023). Based on the results of the study, parents' role is related to the height and weight of toddlers. This means that the role performed by parents has an impact on the growth of children, especially toddlers. The role of parents in monitoring the growth and development of toddlers is very important because it will influence the child's growth (Gandini et al., 2024). The influence of parental roles in toddler growth is the role of parents in caring for and providing nutrition to toddlers, thereby affecting their physical growth, namely their height and weight. Parents act as primary caregivers, ensuring that children receive adequate nutrition and stimulation during the critical early years, which directly impacts height and weight development.

Research shows that parental involvement in monitoring growth and development is essential because parents are the closest individuals to the child and serve as the first source of education and health guidance (Gandini et al., 2024). Parents' active role in providing balanced nutrition, promoting healthy routines, and monitoring growth is a critical determinant of toddlers' physical development.

The role of parents is a determining factor in toddler growth. Parental support in health, hygiene, and monitoring of child development contributes directly to height and weight. Regularly, parents are needed to monitor the physical development of children, as well as their health (Lufthiani et al., 2023). Growth monitoring of children by parents is an early detection method for identifying possible growth delays, enabling parents to plan appropriate interventions to optimize their children's growth (Rahayuwati et al., 2025). The role of parents is a determining factor, as parental education and awareness of health practices and services influence growth indicators in toddlers (Dariotis et al., 2023).

The role of parents involves parents in meeting the basic needs of toddlers, such as nutrition, rest, and stimulation, which affect child growth. Adequate nutrition during the first two years of life is critical for physical growth and cognitive development, as this period represents the most rapid phase of brain and body growth. The important role of parents is to ensure that toddlers eat a variety of nutritious foods and to monitor their eating habits, which will prevent nutritional deficiencies and ensure that toddlers have optimal height and weight (Gross et al., 2019). Parents' active role in meeting basic needs is not only a matter of care but a determinant of toddlers' physical and developmental trajectory.

Family support in fulfilling nutritional needs is evident when the family carries out its functions properly. Based on the results of this study, there is no significant relationship between family function and nutritional status in children under five who have nutritional problems. In fulfilling family nutrition, especially for children under five, nutritional problems can arise due to various factors, which are often interrelated (Hanifah et al., 2017). Family function is not the only factor that causes nutritional problems in children under five. External factors from the family, such as socioeconomic status, access to health services, and environmental conditions, can also contribute to nutritional problems in children under five (Siramaneerat et al., 2024). Families may not perform their functions well, but they can provide nutritionally complete food, allowing children under five years old to avoid nutritional problems. Conversely, families may perform their functions well but struggle to meet their nutritional needs, thereby putting children under five years old at risk of nutritional problems.

The condition of families that carry out good family functions but are not necessarily able to meet the basic needs, especially in fulfilling the nutritional needs of children under five years old. Parents' knowledge of nutritional needs according to age, as well as their ability to process food ingredients, are considered in the nutritional

status of children under five years old. Even though parents perform family functions effectively, if they lack knowledge of age-appropriate toddler nutrition, it can also contribute to toddler nutrition problems (Rachmawati et al., 2021).

The nuclear parents do not always carry out the caregiving role in the family. The culture of caregiving in Indonesia is also carried out by close relatives from the family, such as grandmothers or aunts. There is different information from the biological parents regarding toddler nutrition (Ciptanurani & Chen, 2021). The involvement of close relatives in caregiving can lead to different information on fulfilling toddler nutrition. Different experiences in providing food, serving, organizing menus, and determining quality meals for children under five can also affect the occurrence of nutritional problems in children under five who are cared for (Irene Fioresta et al., 2024).

Under certain conditions, family dynamics can contribute to nutritional problems in children under five years old. Families that lack internal functions, specifically a lack of communication, inadequate support for each family member, and insufficient emotional involvement in each family member, are at risk of having children under five years old with stunting (Wahyudi et al., 2023). Families that function well, characterized by good communication, can resolve conflicts effectively, and each family member exhibits reasonable behavioral control, tend to have children under five years old with good nutritional status as well (Al Isnaini et al., 2020). Caring for children under five requires cooperation among family members who support one another. Good and open communication is one way to solve and exchange ideas and information in preparing food for the nutritional completeness of children under five years old. Therefore, good family function can affect the nutritional problems of children under five years old.

One of the family's functions is the healthcare function, which involves the family's ability to recognize problems, decide on appropriate actions, and utilize health services. If a family does not perform an optimal healthcare function, then children under five years old in the family are at risk of nutritional problems (Kurniawati & Kulla, 2022). Based on this, the family's function in the form of a healthcare function can affect nutritional problems in children under five years old, as seen in the family's ability to recognize toddler nutrition problems and decide on the right actions related to fulfilling toddler nutrition needs. If the family can carry out this function well in caring for toddler nutrition, the risk of nutritional problems in children under five years old will be reduced (Yanti & Laksmi, 2021).

The limitation of this study is that the sample used should have been a total sample of 75, but due to the situation and data collection process, only 64 respondents were successfully collected. However, this sample is representative of one village because the sample comes from all health posts in the village.

CONCLUSIONS AND SUGGESTIONS

The study concludes that family roles significantly correlate with the height and weight of toddlers with stunting, while problem-solving is associated with height. This suggests that the way parents perform their caregiving roles, including monitoring growth, providing nutrition, and ensuring health practices, directly impacts physical development. However, family functioning alone does not guarantee optimal nutritional status, as external factors such as socioeconomic conditions and access to health services also play a role. Therefore, interventions should focus on empowering families to strengthen their roles and problem-solving abilities while addressing external barriers to nutrition.

To address the high prevalence of stunting and improve toddler growth outcomes, it is recommended that health education programs be strengthened to enhance parents' knowledge of age-appropriate nutrition, hygiene, and growth monitoring. Community-based support systems, such as Posyandu, should be optimized to provide continuous guidance and early detection of growth delays. Integrated interventions involving health, education, and social sectors are essential to overcome socioeconomic and environmental barriers that hinder adequate nutrition. Furthermore, empowering families through training on problem-solving and caregiving roles will help them fulfill basic needs such as nutrition, rest, and stimulation. Finally, future research should employ longitudinal designs to explore causal relationships between family functioning and child growth, ensuring evidence-based strategies for stunting prevention.

ACKNOWLEDGMENTS

The researcher would like to thank LPPM Universitas Pelita Harapan for supporting the funds and publication of the study, number: P-52-FoN/VII/2023.

REFERENCES

- Al Isnaini, F., Susanto, T., Susumaningrum, L. A., Rasnii, H., Siswayo, S., Keperawatan, F., Jember, U., Gizi, D. K., Kegawatdaruratan, D., & Panti, P. (2020). Hubungan Fungsi Keluarga Dengan Status Gizi Balita Pada Keluarga Tiri Di Kecamatan Panti Kabupaten Jember. *Jurnal Ilmu Keperawatan Komunitas*, 3(1), 1–10. <https://doi.org/10.32584/JIKK.V3I1.558>
- Badan Pusat Statistik Provinsi Banten. (2023). *Profil Kesehatan Provinsi Banten* 2022. <https://banten.bps.go.id/id/publication/2023/09/29/121a8057198bf151f32f8c3a/profil-kesehatan-provinsi-banten-2022.html>
- Ciptanurani, C., & Chen, H. J. (2021). Household structure and concurrent stunting and overweight among young children in Indonesia. *Public Health Nutrition*, 24(9), 2629. <https://doi.org/10.1017/S1368980021001385>

Dariotis, J. K., Chen, F. R., Park, Y. R., Nowak, M. K., French, K.

- M., & Codamon, A. M. (2023). Parentification Vulnerability, Reactivity, Resilience, and Thriving: A Mixed Methods Systematic Literature Review. *International Journal of Environmental Research and Public Health* 2023, Vol. 20, Page 6197, 20(13), 6197. <https://doi.org/10.3390/IJERPH20136197>
- Gandini, A. L. A., Ummu Salmah, A., Stang, Arsunan Arsin, A., & Mallongi, A. (2024). The Role of Parents in Monitoring the Growth and Development of Toddlers: A Systematic Review. *Pharmacognosy Journal*, 16(3), 682–686. <https://doi.org/10.5530/pj.2024.16.114>
- Gross, D., Bettencourt, A. F., Taylor, K., Francis, L., Bower, K., & Singleton, D. L. (2019). What is Parent Engagement in Early Learning? Depends Who You Ask. *Journal of Child and Family Studies* 2019 29:3, 29(3), 747–760. <https://doi.org/10.1007/S10826-019-01680-6>
- Handayani, S., Kebidanan, J., & Kesehatan Kemenkes Jakarta, P. I. (2023). Selamatkan Generasi Bangsa Dari Bahaya Stunting. *Journal of Midwifery Science and Women's Health*, 3. <https://doi.org/10.36082/jmswh.v3i2.1082>
- Handina, W. P. (2024). mrizal1,+18.+Artikel+BAHAYA+STUNTING. *Jurnal Review Pendidikan Dan Pengajaran*, 2(7), 4650–4653. <http://journal.universitaspahlawan.ac.id/index.php/jrpp>
- Hanifah, U. A., Arisanti, N., Agustian, D., & Hilmanto, D. (2017). Hubungan Fungsi Keluarga dengan Status Gizi Anak di Kecamatan Soreang Kabupaten Bandung. *Jurnal Sistem Kesehatan*, 2, 200–206. <https://doi.org/https://doi.org/10.24198/jsk.v2i4.12498>
- Illahi, R. K. (2017). Hubungan Pendapatan Keluarga, Berat Lahir, dan Panjang Lahir dengan Kejadian Stunting Balita 24-59 Bulan di Bangkalan. *Jurnal Manajemen Kesehatan Yayasan RS. Dr. Soetomo*, 3(1), 1–7. <https://doi.org/10.29241/JMK.V3I1.85>
- Irene Fioresta, A., Trisnawati, E., Studi Kesehatan Masyarakat Fakultas Ilmu Kesehatan Universitas Muhammadiyah Pontianak, P., & Penulis, K. (2024). Perilaku Nenek dalam Praktik Pemberian Makan pada Balita Stunting di Wilayah Komunitas Dayak Kabupaten Landak: *Media Publikasi Promosi Kesehatan Indonesia (MPPKI)*, 7(1), 194–200. <https://doi.org/10.56338/MPPKI.V7I1.4275>
- Kasumayanti, E., & Z.R, Z. (2020). Hubungan Pendapatan Keluarga Dengan Status Gizi Balita Di Desa Tambang Wilayah Kerja Puskesmas Tambang Kabupaten Kampar Tahun 2019. *Jurnal Ners*, 4(1). <http://journal.universitaspahlawan.ac.id/index.php/ners>
- Kemenkes RI. (2019). Pedoman Pencegahan Dan Tatalaksana Gizi Buruk Pada Balita. *Kementerian Kesehatan Republik Indonesia*, 1–120.
- Kurniawati, P., & Kulla, P. D. K. (2022). Hubungan Fungsi Keluarga dengan Status Gizi Balita Usia 0-24 Bulan di Wilayah Kerja Puskesmas Kuta Baro Kecamatan Kuta Baro Kabupaten Aceh Besar. *JOURNAL OF HEALTHCARE TECHNOLOGY AND MEDICINE*, 8(2), 575–589. <https://jurnal.uui.ac.id/index.php/JHTM/article/view/2305>
- Lufthiani, Karota, E., Siregar, C. T., Ariga, R. A., Nasution, S. Z., Tanjung, D., & Wardani, A. (2023). Parents' Role in Monitoring the Children's Growth and Development. *AIP Conference Proceedings*, 2626(1). <https://doi.org/10.1063/5.0136038/2892845>
- Manurung, E. I., Pakpahan, M., Gultom, E. C. V., Siregar, D., & Tahulending, P. S. (2022). Orang Tua Peduli Gizi Balita di Masa Pandemi. *JURNAL KREATIVITAS PENGABDIAN KEPADA MASYARAKAT (PKM)*, 5(11), 3707–3719. <https://doi.org/10.33024/jkpm.v5i11.7273>
- Mutiah, D., Mayasari, R., & Deviana, T. (2023). Validating an Indonesian version of the Family Assessment Device among Indonesian Muslim university students during the COVID-19 pandemic. *Mental Health, Religion and Culture*, 26(4), 324–338. <https://doi.org/10.1080/13674676.2021.1976124>
- Odoms-Young, A., Brown, A. G. M., Agurs-Collins, T., & Glanz, K. (2024). Food Insecurity, Neighborhood Food Environment, and Health Disparities: State of the Science, Research Gaps and Opportunities. *American Journal of Clinical Nutrition*, 119(3), 850–861. <https://doi.org/10.1016/j.ajcnut.2023.12.019>
- Priana, A. W., Ningsih, R., Tambunan, E. S., Supartini, Y., & Sulastri, T. (2023). Perilaku Ibu dan Pemenuhan Gizi pada Balita Usia 3-5 Tahun. *JKEP (Jurnal Keperawatan)*, 8(1).
- Rachmawati, P. D., Triharini, M., & Suciningtyas, P. D. (2021). The contribution of family functions, knowledge and attitudes in children under five with stunting. *Enfermería Clínica*, 31, S296–S300. <https://doi.org/10.1016/J.ENFCLI.2020.12.035>
- Rahayuwati, L., Yani, D. I., Hendrawati, S., Setiawan, A. S., Irza, D., & Fauziah, S. R. (2025). Correlations between family characteristics and childcare in optimizing the growth of children under six years. *BMC Public Health* 2025 25:1, 25(1), 807-. <https://doi.org/10.1186/S12889-025-21931-0>
- Setyorini, C., & Lieskusumastuti, A. D. (2021). Gambaran Status Gizi Bayi Dan Balita Pada Masa Covid-19 Di Kelurahan Jetis Sukoharjo. *Avicenna: Journal of Health Research*, 4(1996), 6. <https://doi.org/https://doi.org/10.36419/avicenna.v4i1.465>
- Siramaneerat, I., Astutik, E., Agushybana, F., Bhumkittipich, P., & Lamprom, W. (2024). Examining determinants of stunting in Urban and Rural Indonesian: a multilevel analysis using the population-based Indonesian family life survey (IFLS). *BMC Public Health*, 24(1), 1–13. <https://doi.org/10.1186/S12889-024-18824-Z/TABLES/4>
- Siregar, E. (2016). Hubungan Peran Keluarga , Status Ekonomi Dan Penyakit Infeksi Terhadap Status Gizi Balita Di Wilayah Kerja Puskesmas Paal V Kota Jambi Tahun 2015 Pendahuluan Anak umur 0-5 tahun merupakan periode penting dalam tumbuh kembang anak , karena masa ini merupak. *Scientia Journal*, 4(04), 343–350.

- Susilowati, E., Saputro, H., & Acob, J. R. U. (2022). Analysis of the Family's Role on the Status of Weight and Height of Children at Pelita Hati Early Childhood Education. *Open Access Health Scientific Journal*, 3(2), 50–57. <https://doi.org/10.55700/oahsj.v3i2.29>
- Tarmizi, S. N. (2024). *Membentengi Anak Dari Stunting*. <https://link.kemkes.go.id/mediakom>
- Wahyudi, F., Nugraheni, A., Margawati, A., Suharto, Hariyana, B., & Adespin, D. A. (2023). Correlation Between Family Function with Stunting. *Unnes Journal of Public Health*, 12(2), 26–35. <https://doi.org/10.15294/UJPH.V12I2.54953>
- Wardita, Y., Suprayitno, E., & Kurniyati, E. M. (2021). Determinan Kejadian Stunting pada Balita. *Journal Of Health Science (Jurnal Ilmu Kesehatan)*, 6(1), 7–12. <https://doi.org/10.24929/jik.v6i1.1347>
- WHO. (2020). *Levels And Trends in Child Malnutrition*. <https://www.who.int/publications/i/item/9789240003576>
- Yanti, N. L. G. P., & Laksmi, I. G. A. P. S. (2021). Hubungan Fungsi Perawatan Kesehatan Keluarga Dengan Pemberian MP-ASI pada Balita Usia 6-12 Bulan. *Jurnal Ilmu Keperawatan Anak*, 4(1), 19–26. <https://doi.org/10.32584/JIKA.V4I1.970>