Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Reflective Islamic Spiritual Care Education and Nursing Students' IMAN Competencies: A Quasi-Experimental Pilot Study of the IneRISE-IMAN Model in a Muslim-Majority Setting

Inggriane Puspita Dewi
inggriane23001@mail.unpad.ac.id

Padjadjaran University
Hartiah Haroen
Padjadjaran University
Hana Rizmadewi Agustina
Padjadjaran University
Tuti Pahria
Padjadjaran University
Nita Arisanti
Padjadjaran University

Research Article

Keywords: IneRISE-IMAN model, pilot study, Islamic spiritual care, nursing education, reflective learning, flipped classroom, competency development

Posted Date: November 4th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-10965970/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Reflective Islamic Spiritual Care Education and Nursing Students' IMAN Competencies: A Quasi-Experimental Pilot Study of the IneRISE-IMAN Model in a Muslim-Majority Setting

Inggriane Puspita Dewi,*[1,2] Hartiah Haroen,[3] Hana Rizmadewi Agustina,[4] Tuti Pahria,[5] Nita Arisanti,[6]

[1]Doctoral Study Program in Medical Science, Faculty of Medicine, Padjadajaran University, Bandung, West Java, Indonesia; [2]Department of Nursing, Faculty of Health Sciences, Universitas' Aisyiyah, Bandung, West Java, Indonesia; [3]Department of Community Nursing, Faculty of Nursing, Padjadjaran University, Bandung, West Java, Indonesia;[4]Department of Basic Nursing, Faculty of Nursing, Padjadjaran University, Bandung, West Java, Indonesia;[5]Department of Medical-Surgical Nursing, Faculty of Nursing, Padjadjaran University, Bandung, West Java, Indonesia [6]Department of Public Health, Faculty of Medicine, Padjadajaran University, Bandung, West Java, Indonesia.

***Corresponding author: Inggriane Puspita Dewi**
Email: inggriane23001@mail.unpad.ac.id

Abstract

Objective: This pilot study aimed to assess the preliminary effectiveness of the IneRISE-IMAN model, delivered as Reflective Islamic Spiritual Care Education (RISE), in improving nursing students' spiritual care competencies (IMAN) within a Muslim-majority setting. It constitutes Phase III of a three-phase research program in which the model was previously content-validated by expert consensus and structurally validated using PLS-SEM**.**
Methods: A quasi-experimental pilot design was employed, involving a non-randomized control group and pre–post testing. Eighty-two undergraduate nursing students were allocated to an intervention or a control group; complete pre- and post-test data were available for 81 (intervention n = 42; control n = 39). The intervention group participated in the IneRISE-IMAN model, which combines a flipped classroom with structured reflection and case-based learning in which the learning cases are co-constructed with students from their own experience of caring for Muslim patients, while the control group received traditional instruction. The study assessed outcomes such as knowledge, attitudes, skills, and IMAN competencies using validated tools. Analysis used Wilcoxon and Mann–Whitney tests, and ANCOVA controlling for pre-test score, age, gender, learning style, self-efficacy, and academic resilience**.**
Results: The intervention group showed notable improvements in knowledge ($p = 0.020$), skills ($p = 0.003$), attitudes ($p = 0.001$), and overall competency ($p = 0.006$), whereas the control group exhibited no significant changes ($p > 0.05$). Between-group comparisons showed that the intervention group scored significantly higher on all post-tests ($p < 0.001$) with a large effect size ($r = 0.61$). ANCOVA confirmed a significant intervention effect after controlling for pre-test score, age, gender, learning style, self-efficacy, and academic resilience ($F(1, 72) = 26.21$, $p < 0.001$, partial $\eta^2 = 0.267$; adjusted mean difference 33.06, 95% CI 20.19 to 45.94)**.**
Conclusions: These pilot findings suggest that the IneRISE-IMAN model, delivered through RISE, is a feasible and culturally appropriate approach to strengthening nursing students' Islamic spiritual care competencies. Given the non-randomized design, the modest sample and the baseline differences between groups, the results should be read as preliminary and require confirmation in a larger, multi-site randomized trial**.**

Trial registration: Thai Clinical Trials Registry TCTR20260922003.

Keywords: IneRISE-IMAN model; pilot study; Islamic spiritual care; nursing education; reflective learning; flipped classroom; competency development

Introduction

Spirituality is a key component of holistic healthcare, influencing how individuals cope with illness, suffering, and hope. Spiritual distress may involve loss of meaning or disrupted beliefs, affecting psychological well-being and outcomes (1). Nurses play a vital role in addressing these needs and improving patient satisfaction and resilience. However, spiritual care remains inconsistently integrated in practice and education, highlighting the need for targeted educational interventions to strengthen students' competencies (2,3).

Evidence suggests that nursing students and healthcare professionals in regions such as Southeast Asia and the Middle East exhibit disparate levels of spiritual care competencies, often due to insufficient training and the lack of standardized educational frameworks (3). Although Islamic spiritual practices, including prayer facilitation and faith-based support, are frequently appreciated by patients, their incorporation into clinical practice remains inconsistent, relying on individual initiative rather than structured institutional policies (4,5).

Furthermore, research investigating Islamic caring behaviors emphasizes the significance of culturally and religiously congruent care in enhancing patient satisfaction (6). However, these behaviors are not consistently incorporated into formal curricula (5). This disparity underscores the need to develop contextually relevant educational frameworks that align with Islamic principles while meeting professional nursing standards.

Systematic reviews and meta-analyses show that simulation-based education improves students' understanding of spiritual care and communication skills, while digital interventions enhance accessibility and engagement (7,8). Spiritual care education has been delivered through reflective, module-based, and flipped classroom approaches (3). However, most studies rely on self-assessment without objective evaluation from educators (2,9) and often overlook confounding factors such as age, gender, and learning styles, despite evidence that learning styles are associated with academic performance (10).

Previous studies also failed to incorporate essential religious frameworks relevant to Muslim populations, often overlooking their specific cultural and spiritual needs (4). Furthermore, both students and educators face challenges in applying theoretical knowledge to clinical practice, underscoring the importance of reflective, context-sensitive learning strategies (11,12).

Reflective and adult-learning approaches can effectively bridge gaps in understanding spiritual care (13). By engaging in reflective practice, students critically assess their beliefs and clinical experiences, fostering meaningful learning and professional development (14). Analyses of reflective practice highlight its importance in enhancing empathy, ethical reasoning, and communication skills, which are essential components of effective spiritual care delivery (15). Concurrently, adult learning theories grounded in constructivist principles propose that learners actively develop knowledge through interaction, reflection, and experiential participation, rendering these frameworks highly pertinent to healthcare education (16,17).

The conceptual framework for Islamic Spiritual Care

In Muslim-majority settings, integrating reflective and adult learning principles within an Islamic context can improve students' ability to combine faith-based values with professional nursing skills, thereby promoting culturally appropriate care delivery.

The conceptual foundation of Islamic spiritual care in this study draws upon both classical and contemporary theoretical perspectives that underscore the holistic nature of the human soul. Islamic theology conceptualizes the human self as comprising interconnected aspects of spiritual awareness, moral conduct, and relational responsibility, as articulated by Al-Ghazali and further elucidated in modern scholarship (18,19). These perspectives align closely with constructivist learning theories that emphasize active meaning-making and contextual understanding (17). Additionally, the person-centered nursing framework emphasizes recognizing patients as whole persons, whose physical, emotional, and spiritual needs are interconnected parts of quality care (20). Integrating these theoretical perspectives offers a comprehensive foundation for designing culturally sensitive and academically rigorous spiritual care programs that address both professional and religious dimensions of nursing practice.

Building on these theoretical and empirical foundations, this study evaluates the IneRISE-IMAN model (Islamic Nurturing Experience through Reflective-Islamic values embedded, Simulated and Engaged learning for Internalization, Meaningful, Active communication and Nurturing), delivered to students as Reflective Islamic Spiritual Care Education (RISE) to improve nursing students' IMAN competencies. IMAN encompasses four key areas of spiritual care skills: Internalization, Meaning, Active communication, and Nurturing. Internalization involves integrating spiritual values into students' professional identity and ethics. Meaning pertains to students' ability to interpret patients' spiritual experiences while reflecting on their own beliefs and roles. Active communication focuses on listening carefully and responding appropriately to patients' spiritual needs. Nurturing includes the practical skills necessary for providing spiritual care, such as spiritual assessment, formulating spiritual nursing diagnoses, planning and executing spiritual interventions, and evaluating patient outcomes.

The model evaluated here is the product of a three-phase research programme. Phase I comprised a needs assessment through a systematic review and a qualitative descriptive study. In Phase II the model achieved full expert consensus in a two-round e-Delphi study with 22 experts, with S-CVI/Ave = 0.94 in Round 1; S-CVI/UA = 1.00 in Round 2 (21), and was then validated structurally using PLS-SEM in 122 fifth-semester nursing students, where lecturers predicted reflective learning ($\beta = 0.684$) and reflective learning in turn predicted competency ($\beta = 0.791$; $f^2 = 1.673$). What remained untested was whether the model, once delivered, actually changes student competency. The present study is Phase III of that program and was designed as a pilot study: it examines the preliminary effects of the intervention and the feasibility of delivering it within an existing palliative nursing course, rather than providing definitive evidence of efficacy. A distinctive feature of the model lies in how its case material is produced. In conventional case-based learning the lecturer supplies ready-made scenarios drawn from their own clinical or supervisory experience. In this model the learning cases are instead co-constructed with the students, from their own accounts of caring for or visiting Muslim patients with spiritual needs, so that analysis and reflection begin from experience the learners have themselves lived rather than from a scenario handed to them.

The results aim to provide empirical evidence on the IneRISE-IMAN model's influence on students' knowledge, attitudes, and spiritual care competencies. Additionally, they aim to inform curriculum development and establish a foundation for a subsequent full-scale, adequately powered trial.

Methods

Design

This investigation employed a quasi-experimental pilot design with a non-randomized control group to obtain preliminary evidence on the educational methodology. This approach facilitates comparisons within authentic educational environments where randomization is impractical and enables pre–post test evaluations to assess the implementation of the IneRISE-IMAN model, delivered as Reflective Islamic Spiritual Care Education (RISE). In this framework, participants were allocated to intervention and control groups without randomization, while efforts were made to ensure comparable characteristics across groups. Pre- and post-test assessments were conducted to measure changes in students' competencies following the educational intervention.

Participants and setting

The participants in this study were undergraduate nursing students enrolled in a Bachelor of Nursing program. The study was conducted in the Nursing Department of Universitas Bhakti Kencana, Bandung, West Java, Indonesia. This site was selected because the majority of its students are Muslim, the study program holds national accreditation of at least Good, and its students had already undertaken basic clinical practice in hospital during their second semester. Testing the model at an institution other than the one at which it was developed, and other than the researchers' primary workplace, was intended both to reduce bias arising from the researchers' familiarity with the setting and to give an initial indication of the model's transferability. Palliative nursing was chosen as the host course because it presents the most concrete spiritual needs for students to learn from. Participants were selected from fifth-semester students, as they were considered to have completed foundational nursing courses

such as medical-surgical, maternity, and mental health nursing, enabling them to understand the clinical relevance of spiritual care concepts.

Participants were recruited using purposive sampling. Inclusion criteria included undergraduate nursing students who were academically active, enrolled in at least the fifth semester, and willing to participate throughout the Islamic spiritual care learning process. Students who were on academic leave, below the fifth semester, or experiencing illness during the study period were excluded.

The sample size was determined based on the effect size reported in a meta-analysis of flipped classroom interventions (effect size = 0.68; 95% CI = 0.43–0.92) (22) with 80% statistical power. The calculation indicated a minimum of 37 participants per group. To account for potential dropout, an additional 10% was added, resulting in a total sample of 82 participants across both intervention and control groups. Eighty-two students consented and were enrolled. One student was subsequently excluded because of infrequent class attendance, which meant that the learning sessions were not completed and no post-test data were obtained. Complete pre- and post-test data were therefore available for 81 participants (intervention n = 42; control n = 39), and all analyses were conducted on this per-protocol sample.

Research Instruments

Several instruments were used to assess learning outcomes and competencies in Islamic spiritual care. These instruments were deliberately combined as a measurement triangulation strategy to offset the known weakness of perception-based assessment. Competency was therefore assessed simultaneously in three domains: knowledge through a written test, attitude through structured observation during the learning process, and skills through observed performance in a structured practical examination. Within this framework the self-assessed IMAN-Scale is treated as participant perception data, while the determination of the model's effectiveness rests on the objective data from the written test and the performance observation. With the single exception of the DOPS assessment method on which the skills rating form is based, none of the instruments used in this study has been published elsewhere;

all were developed by the research team for this research programme. English-language versions of every instrument, together with its instructions, scoring rules and provenance, are provided in Additional file 1 (sections S1 to S8).

IMAN Scale

The IMAN Scale was used to measure students' competencies in providing Islamic spiritual care. The scale was developed for the present research programme and has not been published elsewhere; its item content was informed by the established spiritual care competency frameworks cited below, and the full English version, with its instructions and scoring rules, is provided in Additional file 1 (S1). The instrument was developed by the research team from the sub-element definitions that achieved expert consensus in the Phase II e-Delphi study (23,24), and comprises 46 items across four domains: Internalization (items 1-20), Meaning and Active Communication (items 21-27 and 37-46), and Nurturing (items 28-36). Each item was rated on a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). The instrument demonstrated high internal consistency with a Cronbach's alpha of 0.92. With a five-point response scale the theoretical score range is 46-230, categorised as not competent (46-92), fairly competent (93-138), competent (139-184) and highly competent (185-230). Internal consistency in the present sample was Cronbach's alpha = 0.963.

Content validity was established in the Phase II e-Delphi study, in which a panel of 22 experts - nursing lecturers, clinical nurses, hospital chaplains and final-year nursing students, including one international panellist - rated all model elements and sub-elements. The panel achieved S-CVI/Ave = 0.94 in Round 1 and universal agreement (S-CVI/UA = 1.00) in Round 2. The instrument was subsequently pilot-tested for clarity and internal consistency with 30 nursing students of similar characteristics, and its construct validity was established in the Phase II structural validation study of 122 fifth-semester students using PLS-SEM.

In addition to self-assessment instruments, trained facilitators conducted objective assessments of students' knowledge, attitudes, and skills to enhance measurement objectivity.

Knowledge Questionnaire

Students' knowledge was assessed using a structured 30-item multiple-choice questionnaire developed by the research team for this study and not published elsewhere. The items were developed to evaluate higher-order cognitive abilities at the C4 (analysis) level of the revised Bloom's taxonomy. The questionnaire assessed students' comprehension of Islamic spiritual care concepts and their practical application in clinical settings. Items were crafted to measure students' capacity to analyze patient situations and to assess appropriate spiritual care interventions. Each correct response was awarded one point and incorrect responses zero; raw scores were converted to a 0-100 scale and classified as very good (80-100), good (70-79), adequate (60-69), poor (50-59), and very poor (0-49). The full English version of the questionnaire is provided in Additional file 1 (S2); the answer key is not reproduced there to allow the item bank to continue to be used for assessment and is available from the corresponding author upon reasonable request. The knowledge assessment was conducted both prior to (pre-test) and following (post-test) the intervention to evaluate the impact on students' learning outcomes.

Psychomotor Skills Assessment Using DOPS

Students' psychomotor skills were assessed through performance-based evaluation using the Direct Observation of Procedural Skills (DOPS) instrument (25). The assessment focused on students' ability to conduct spiritual assessments and demonstrate therapeutic communication skills during simulated patient interactions. The final practical examination was conducted with simulated patients as a structured examination with uniform tasks, timing, and scoring rubric for all participants, and was therefore equivalent in principle to an Objective Structured Clinical Examination (OSCE). Two assessors independently rated each student using a structured observation sheet aligned with nursing intervention standards. DOPS is an established workplace-based assessment method, as cited above. The content-specific rating form used here was constructed by the research team for this study so that the observed aspects corresponded to the spiritual assessment and therapeutic communication tasks taught in the intervention, and that form has not been published elsewhere. Each of its ten aspects was

rated from 1 (not adequate) to 4 (very good). Rubric calibration was conducted prior to assessment, and inter-rater agreement was evaluated as part of measurement quality control (ICC = 0.83). The full English version of the rating form is provided in Additional file 1 (S3).

Attitude Assessment

Students' attitudes toward Islamic spiritual care were assessed through structured classroom observation. Observations were conducted during case discussions, case presentations, and role-play activities. The observation focused on students' engagement, responsiveness, collaboration, and respect for patients' spiritual needs during simulated learning situations. Attitude was rated independently by two assessors using the same structured observation sheet across both theoretical and practical sessions. The three observation sheets used for case presentation, group discussion, and role play were developed by the research team for this study and have not been published elsewhere; their English versions, with the weighting applied to each aspect and the rating scale, are provided in Additional file 1 (S4).

Covariate instruments. All four covariate instruments were developed by the research team for this study, and none has been published elsewhere; their English versions are provided in Additional file 1 (S5 to S8). Self-efficacy was measured with a 20-item questionnaire written to cover Bandura's three dimensions of self-efficacy (magnitude, strength, generality; five-point Likert scale) (44). Academic resilience was measured using a 27-item instrument covering four domains: adaptation, tenacity, adversity intelligence, and problem-solving (four-point Likert scale; Cronbach's alpha = 0.784). Learning style was identified with a 10-item questionnaire based on the four modality categories of the VARK model (45), which is not the proprietary VARK instrument, and students were classified as unimodal, bimodal, or multimodal. Consistent with the Round 2 Delphi decision, in which learning style was reconceptualized as a pedagogical consideration rather than a student entry criterion, these three variables, together with age and gender, were measured at pre-test, not as outcomes but as covariates to be controlled in the analysis of covariance, in order to test whether any difference between groups persisted once students' personal attributes were held constant. Reflective thinking was additionally assessed using a 20-item instrument developed for this

study to cover the six reflective domains of Gibbs' reflective cycle (46) (Cronbach's alpha = 0.974); it is distinct from the seven-stage TAFAKUR cycle taught in the intervention.

Data Collection

Data collection was conducted in three sequential stages: pre-test, intervention, and post-test**.**

Pre-Test

Baseline measurements were taken before implementing the learning model. All participants in both intervention and control groups completed pre-test assessments measuring knowledge and Islamic spiritual care competencies. Data collection was conducted using online questionnaires distributed via Google Forms in classroom settings, with completion times of approximately 20 to 30 minutes.

Intervention Phase

During the intervention phase, the intervention group participated in the IneRISE-IMAN learning model, which was integrated into the palliative nursing curriculum. The control group persisted with standard learning activities without incorporating reflective learning. For the control group, Islamic spiritual care content was provided only as PowerPoint presentations, accompanied by a skills checklist, without reflective learning or a flipped-classroom structure. Facilitators were palliative nursing lecturers with at least three years of teaching experience. Before implementation, they participated in three perception-alignment sessions and were briefed on the facilitator guide in the research protocol, which specified their roles at each stage of the model. Throughout delivery, the researchers observed the sessions to verify that the intervention was implemented in accordance with the protocol see Table 1.

Table 1 Intervention Procedures

Session	Focus of Intervention	Time (Week)	Learning Strategy	Learning Objectives / Expected Outcomes	Evaluation
I	Fundamentals of spirituality and Islamic spiritual care; human nature (Al-Ghazali)	2 × 50 min (Week 6)	Asynchronous pre-class (flipped classroom: E-module, video)	Students understand core concepts of spirituality and Islamic perspectives of human nature	Quiz (knowledge assessment)

Session	Focus of Intervention	Time (Week)	Learning Strategy	Learning Objectives / Expected Outcomes	Evaluation
II	Fiqh and philosophy of worship during illness; spiritual needs of Muslim patients	2 × 50 min (Week 7)	Asynchronous pre-class (flipped classroom)	Students identify spiritual needs and apply Islamic principles in illness contexts	Quiz (knowledge assessment)
III	Nursing process in Islamic spiritual care and Islamic caring	100 min (Week 8)	Asynchronous pre-class (flipped classroom)	Students explain and prepare nursing care plans, integrating Islamic spiritual care	Quiz (knowledge assessment)
IV	Reflective discussion and spiritual assessment in palliative cases	100 min (Week 9)	Face-to-face (role play + guided reflection)	Students demonstrate spiritual assessment skills and reflective thinking in clinical scenarios	Practical exam (skills & reflection)
V	Communication and guidance of worship; debriefing	100 min (Week 10)	Face-to-face (role play + debriefing)	Students demonstrate therapeutic communication and spiritual guidance skills	Practical exam
VI–VII	Simulation of Islamic spiritual care integrated with evidence-based and complementary therapy (SEFT)	100 min (Week 11)	Face-to-face (Project-Based Learning)	Students integrate knowledge, skills, and reflective thinking in simulated practice	Practical exam
VIII	Case-based learning, group presentation, and documentation of care	100 min (Week 12)	Face-to-face (case presentation)	Students synthesize and present comprehensive Islamic spiritual nursing care	Practical exam
IX	Post-test	50 min (Week 13)	Face-to-face	Evaluate changes in knowledge and reflective thinking after intervention	Written test
X	Final practical examination	120 min	Face-to-face	Evaluate competency in delivering Islamic spiritual care	Objective structured practical exam

Intervention Characteristics

The intervention was delivered as Islamic Experiential Case-Based Learning (IE-CBL) within a flipped-classroom structure and unfolded in five sequential stages. In Stage 1 (pre-class), students completed an open-ended reflection form and a structured experiential interview about a real experience of caring for or visiting a Muslim patient with spiritual needs. In Stage

2 (pre-class), those narratives were used to construct the learning cases, so that the scenarios were built with the students from their own experience rather than being supplied ready-made by the lecturer. Stage 3 (in class) consisted of case discussion and analysis grounded in Islamic values. In Stage 4 (in class), students synthesized their analysis into an Islamic Spiritual Care Plan that specified assessment findings, a spiritual nursing diagnosis, planned interventions, the Qur'anic or juridical basis for each intervention, and evaluation criteria. Stage 5 (post-class) was structured reflection and transformative evaluation.

Reflection in Stage 5 followed the TAFAKUR cycle, a seven-stage reflective process developed in Phase II by modifying the Gibbs reflective cycle and integrating it with Islamic contemplative practice. Tafakur denotes deep, purposeful contemplation undertaken as an act of devotion, and the acronym names its stages: Trigger (the experience that invites reflection), Amati / observe (non-judgemental description), Fahami / understand (connecting the experience to the patient's spiritual needs and to Islamic values), Analisis / analyse (critical evaluation of what worked and why), Kembangkan / synthesise (developing a contextual spiritual care plan), Ubah / transform (enacting change in practice), and Renew (renewal of spiritual commitment). Each stage was supported by guiding questions and recorded in a reflective journal. This pedagogical cycle is distinct from the reflective thinking questionnaire used for measurement, which captures six reflective domains; the seven-stage cycle describes how reflection was taught, and the six domains describe how reflective thinking was scored. Asynchronous learning was supported by interactive e-modules, videos, reflection cards, and the Google Classroom learning management system, while synchronous sessions used role-play, simulation, case discussions, and debriefing.

Post-Test

Post-test assessments were conducted after the learning sessions, using the same instruments administered during the pre-test phase to evaluate changes in competencies and learning outcomes.

Data Analysis

Univariate Analysis in the Quasi-Experimental Study

Univariate data analysis was conducted to describe the demographic characteristics and study variables. The statistical measures employed included the mean, standard deviation, minimum and maximum values, and frequency distributions and percentages.

Bivariate Analysis in the Quasi-Experimental Study

Prior to conducting bivariate analysis, the normality of the data was assessed using the Kolmogorov–Smirnov test. Data were considered normally distributed if the p-value was ≥ 0.05. If the normality test indicated non-normal distribution ($p \leq 0.05$), non-parametric statistical tests were applied. The Mann–Whitney test was used to examine differences in mean scores between groups, and the Wilcoxon signed-rank test was used to assess differences within groups.

To further examine the intervention's effectiveness while controlling for potential confounding variables, an analysis of covariance (ANCOVA) was conducted. The post-test competency score was treated as the dependent variable, with group (intervention vs. control) as the fixed factor. Pre-test scores, age, gender, learning style, self-efficacy, and academic resilience were included as covariates. The use of ANCOVA alongside non-parametric tests requires comment. The Kolmogorov-Smirnov test indicated that the raw data were not normally distributed, so simple mean comparisons were conducted non-parametrically. The normality assumption in ANCOVA, however, applies to the model residuals once covariates are taken into account rather than to the raw data, and the F test is robust to departures from normality provided variances are homogeneous. All ANCOVA assumptions were therefore checked before interpretation: normality of standardized residuals, homogeneity of error variance (Levene's test), and homogeneity of regression slopes. The two analyses serve complementary purposes and do not substitute for one another. Statistical significance was set at $p < 0.05$, and effect size was reported using partial eta squared (η^2).

Results

Participant Characteristics

The characteristics of participants in both the intervention and control groups were similar, as presented in Table 2. Most respondents in both groups were female and aged 20-21 years. Regarding learning styles, the majority of students in both groups were classified as unimodal learners. However, some differences emerged in dominant learning styles: the intervention group had a higher percentage of students with combined and read/write preferences, whereas the control group was predominantly kinesthetic. The two groups were therefore comparable in demographic and learning characteristics. Baseline outcome scores, however, were not equivalent: the intervention group scored higher than the control group at pre-test on knowledge (81.36 vs 72.67) and on overall competency (190.38 vs 173.38), and all between-group analyses were consequently adjusted for pre-test scores.

Table 2 Participants Characteristics

Characteristics	Category	Intervention (n = 42) n (%)	Control (n = 39) n (%)
Gender	Male	5 (11.9)	4 (10.3)
	Female	37 (88.1)	35 (89.7)
Age (years)	19	0 (0)	5 (12.8)
	20	22 (52.4)	21 (53.8)
	21	18 (42.9)	11 (28.2)
	22	2 (4.8)	1 (2.6)
	23	0 (0)	1 (2.6)
Learning Style	Unimodal	28 (66.7)	30 (76.9)
	Bimodal	13 (31.0)	8 (20.5)
	Multimodal	1 (2.4)	1 (2.6)

Control Group

As shown in Table 3, there were no statistically significant differences between pre-test and post-test scores across all variables in the control group, including knowledge, skills, attitudes, and competency in providing Islamic spiritual care ($p > 0.05$). These findings suggest that conventional learning methods without the structured intervention did not significantly impact students' learning outcomes.

Table 3 Within-Group Comparison of Pre-test and Post-test Scores in The Control Group

Variable	Measurement	Mean	SD	Min–Max	p-value
Knowledge	Pre-test	72.67	9.89	60–98	0.656*
	Post-test	73.59	11.03	55–97	
Skills	Pre-test	37.64	5.63	28–50	0.384*
	Post-test	36.23	5.72	21–49	
Attitude	Pre-test	37.00	4.85	30–48	0.643*
	Post-test	36.26	5.92	23–50	
Competency	Pre-test	173.38	21.66	140–230	0.746**
	Post-test	171.69	25.40	118–231	

*Wilcoxon signed-rank test **Paired t-test

The intervention group showed notable improvements across all assessed parameters (see Table 4). Statistically significant improvements were recorded in knowledge (p = 0.020), skills (p = 0.003), attitudes (p = 0.001), and overall competency (p = 0.006). The post-test scores consistently exceeded the pre-test scores, demonstrating that the learning model employed effectively enhanced students' competencies in Islamic spiritual care.

Table 4 Within-Group Comparison of Pre-test and Post-test Scores in The Intervention Group

Variable	Measurement	Mean	SD	Min–Max	p-value
Knowledge	Pre-test	81.36	10.68	60–100	0.020*
	Post-test	87.40	13.21	56–100	
Skills	Pre-test	39.93	5.43	29–50	0.003*
	Post-test	43.93	5.92	32–50	
Attitude	Pre-test	40.95	5.82	30–50	0.001*
	Post-test	45.48	5.20	33–50	
Competency	Pre-test	190.38	24.34	141–235	0.006*
	Post-test	207.31	26.95	150–235	

*Wilcoxon signed-rank test

Between-Group Differences

Post-test scores differed significantly between the groups on every measure (Table 5). The intervention group scored higher than the control group on knowledge (87.40 vs 73.59), skills (73.21 vs 34.00), attitude (45.48 vs 36.26) and overall competency (207.31 vs 171.69), all $p < 0.001$ by the Mann-Whitney test. Effect sizes derived from the Mann-Whitney Z statistics ($r = Z/N^{0.5}$, N = 81) were large for observed skills (Z = -5.702, r = 0.63) and for attitude (Z = -5.661, r = 0.63), and moderate to large for knowledge (Z = -4.585, r = 0.51); for overall

competency r = 0.61. All are large effects by Cohen's criteria except knowledge, which is moderate to large. The difference was most pronounced for observed skills, where the intervention group scored more than twice the control group mean; inter-rater agreement for the observation sheet was good (ICC = 0.83).

Table 5 Between-Group Comparison of Post-test Scores (N = 81)

Variable	Group	Mean (SD)	Median	Min-Max	p-value
Knowledge	Intervention	87.40 (13.21)	90.00	56-100	<0.001
	Control	73.59 (11.03)	77.00	55-97	
Skills	Intervention	73.21 (8.54)	73.00	55-93.33	<0.001
	Control	34.00 (15.68)	36.67	8.33-59.17	
Attitude	Intervention	45.48 (5.20)	48.00	33-50	<0.001
	Control	36.26 (5.92)	38.00	23-50	
Competency	Intervention	207.31 (26.95)	210.00	150-235	<0.001
	Control	171.69 (25.40)	182.00	118-231	

In summary, the findings indicate that the Islamic spiritual care learning model, which incorporates reflective learning and a flipped-classroom methodology, is effective in enhancing nursing students' knowledge, attitudes, skills, and overall competence. The lack of significant changes in the control group further supports the conclusion that the observed enhancements are attributable to the intervention.

Table 6 ANCOVA Results for Post-test Competency Scores, Controlling for Covariates

Source	df	F	p-value	Partial η^2
Corrected model	8	6.25	<0.001	0.410
Group	1	26.21	**<0.001**	**0.267**
Pre-test	1	5.04	0.028	0.065
Learning style	2	0.95	0.393	0.026
Gender	1	0.01	0.935	0.000
Age	1	2.37	0.128	0.032
Self-efficacy	1	1.58	0.213	0.021
Academic resilience	1	0.89	0.349	0.012

Note. R^2 = 0.410 (adjusted R^2 = 0.344). Levene's test F(8, 72) = 0.747, p = 0.650; homogeneity of regression slopes: group x pre-test F(1, 71) = 0.027, p = 0.869.

All ANCOVA assumptions were satisfied before interpretation. Standardised residuals were normally distributed (Shapiro-Wilk W = 0.970, p = 0.054; Kolmogorov-Smirnov with Lilliefors correction p = 0.200), error variances were homogeneous (Levene's F(8, 72) = 0.747, p =

0.650), and the assumption of homogeneity of regression slopes held, with a non-significant group-by-pre-test interaction ($F(1, 71) = 0.027$, $p = 0.869$).

The overall model was significant ($F(8, 72) = 6.25$, $p < 0.001$, $R^2 = 0.410$; adjusted $R^2 = 0.344$). After controlling for pre-test score, age, gender, learning style, self-efficacy and academic resilience, competency differed significantly between the groups ($F(1, 72) = 26.21$, $p < 0.001$, partial $\eta^2 = 0.267$), a large effect. The pre-test score was also a significant covariate ($F(1, 72) = 5.04$, $p = 0.028$, partial $\eta^2 = 0.065$), as expected in a pre-post design, whereas learning style, gender, age, self-efficacy, and academic resilience were all non-significant ($p > 0.05$). Estimated marginal means confirmed the difference: 206.51 (SE = 8.11) in the intervention group versus 173.44 (SE = 8.42) in the control group, an adjusted difference of 33.06 points (95% CI 20.19 to 45.94; $p < 0.001$). The improvement in IMAN competency is therefore attributable to the intervention rather than to demographic or learner characteristics (Table 6).

Discussion

This pilot study aimed to examine the preliminary effectiveness of the IneRISE-IMAN model, delivered as Reflective Islamic Spiritual Care Education (RISE), in enhancing nursing students' spiritual care competencies (IMAN) in a Muslim-majority setting. The findings indicate that the model improved students' knowledge, attitudes, skills, and overall competence, with a moderate-to-large effect size. This study provides empirical evidence that a structured educational model such as IneRISE-IMAN can address this gap.

The lack of significant improvements in the control group reinforces prior concerns that conventional approaches, primarily passive content delivery, fall short of developing spiritual care competencies (2,3). In contrast, the significant improvements observed in the intervention group demonstrate that competency development requires intentional, structured, and pedagogically grounded interventions, rather than fragmented or incidental exposure.

The findings of this study differ from previous research, suggesting that learning styles may influence students' academic performance (26,27). In contrast, within the context of Islamic

spiritual care education in this study, learning styles did not significantly affect students' competencies in providing spiritual care. Instead, the results indicate that competency development was directly influenced by the IneRISE-IMAN intervention, which appears to have effectively facilitated learning across diverse learner characteristics. This convergence runs across the whole research program: learning style was reconceptualized in the Phase II Delphi as a pedagogical consideration rather than a student entry criterion, the Phase II structural model found that student attributes did not form a coherent predictive construct, and the present pilot found no covariate effect of learning style, age or gender. Taken together, the three studies indicate that competency develops through the learning process rather than from entry characteristics.

Similarly, neither age nor gender affected students' IMAN competencies. This observation contrasts with earlier research indicating that spirituality might manifest variably among different age groups and genders; however, the fundamental essence of spirituality remains unchanged, potentially accounting for the lack of variation in competency results (28).

Importantly, this study demonstrates that learning design matters: not only what is taught, but also how it is delivered, determines whether students can translate knowledge into practice. By integrating flipped classroom strategies with experiential learning activities such as role-play, simulation, and case-based discussions, students were able to apply theoretical concepts in realistic clinical scenarios (29–31). This supports previous findings that simulation-based and experiential learning enhance competency acquisition in spiritual care (7,32,33).

The Role of Reflection in Addressing Deep Learning Needs

The findings of this study highlight that reflective learning within the IneRISE-IMAN model plays a critical role in facilitating deep learning processes, particularly through the structured use of Gibbs' Reflective Cycle. Reflective learning has been widely recognized as an essential pedagogical approach in nursing education, enabling students to critically analyze experiences, integrate knowledge, and develop professional competence (34,35).

In this study, reflection was not conducted as a superficial activity but followed a systematic cycle adapted from Gibbs' model, which includes description, feelings, evaluation, analysis, conclusion, and action plan (35). The six domains named here are those used to measure reflective thinking; the reflective process actually taught in the intervention was the seven-stage TAFAKUR cycle described in the Methods, in which the Gibbs sequence is extended by stages of understanding spiritual meaning, transforming practice and renewing spiritual commitment, so that reflection is undertaken as an act of devotion coupled with muhasabah and carries a transcendental as well as a professional orientation. This structured approach allows students to move beyond descriptive reflection toward deeper levels of critical thinking and meaning-making (36,37). Previous studies have shown that reflective writing and guided reflection based on structured models enhance students' learning engagement and promote a deeper understanding of clinical experiences (38,39).

Within the context of Islamic spiritual care, Gibbs' reflective cycle was integrated with specific learning content, including spiritual assessment, fiqh (Islamic ethics) in illness, guidance on worship, and Islamic caring practices. For example, during the *description* phase, students reflected on their experiences providing spiritual care during simulations or role-play. In the feelings and evaluation stages, they explored their emotional responses and identified challenges in addressing patients' spiritual needs. The analysis phase enabled students to connect these experiences with Islamic concepts of spirituality, illness, and care, as outlined in Islamic theology (18,19).

Furthermore, the conclusion and action plan stages encouraged students to identify areas for improvement and develop strategies for future practice, such as enhancing communication in guiding patients' worship or applying Islamic principles more effectively in clinical situations. This process supports the development of IMAN competencies, particularly in terms of internalization and meaning-making, by linking personal reflection to religious values and professional responsibilities.

Importantly, the use of Gibbs' cycle transforms reflection into a deep learning mechanism, enabling students to actively construct knowledge, evaluate their practice, and integrate the

cognitive, emotional, and spiritual dimensions of care. This aligns with evidence suggesting that structured reflective models are more effective than unstructured reflection in promoting critical thinking and professional growth (35).

Integrating Digital and Adult Learning Approaches

The introduction also highlighted the potential of digital and adult learning approaches in enhancing spiritual care education (40,41). The findings of this study confirm that integrating digital tools (e-modules, online platforms) with active learning strategies enhances student engagement and learning outcomes.

This is consistent with recent evidence that digital interventions improve accessibility, flexibility, and effectiveness in nursing education (42). Furthermore, the IneRISE-IMAN model aligns with adult learning theories, which emphasize self-directed learning, active participation, and experiential engagement (16,17). Thus, the IneRISE-IMAN model represents not only a content innovation but also a pedagogical innovation, combining reflective, digital, and experiential learning into a cohesive framework.

Enhancing IMAN Competencies as a Holistic Outcome

The improvements observed across knowledge, attitudes, skills, and overall competency indicate that the IneRISE-IMAN model enhances IMAN competencies as a holistic construct. Unlike traditional models that emphasize technical skills, the IMAN framework integrates internalization, meaning, active communication, and nurturing care. Internalization refers to the integration of spiritual values into professional identity; meaning involves interpreting patients' spiritual experiences while reflecting on one's own beliefs; active communication emphasizes attentive and appropriate responses to patients' spiritual needs; and nurturing encompasses practical competencies, including spiritual assessment, diagnosis, intervention, and evaluation.

Together, these domains integrate both internal dimensions (values and meaning) and external dimensions (communication and care delivery)**,** providing a comprehensive framework for developing spiritual care competency. This aligns with person-centered nursing theory, which emphasizes holistic care addressing physical, emotional, and spiritual needs

(20). This holistic improvement is particularly relevant in palliative care settings, where spiritual suffering significantly impacts patient well-being (1).

Contribution to Knowledge and Practice

This study makes several important contributions. First, it provides empirical evidence addressing the gap in structured spiritual care education. Second, it introduces the IneRISE-IMAN model as a culturally grounded and pedagogically robust framework. Third, it demonstrates that integrating reflective and flipped learning strategies can yield substantial and meaningful educational effects. Fourth, it introduces a case-based method in which the learning cases are co-constructed with students from their own experiential accounts rather than supplied by the lecturer. This inverts the usual direction of case-based learning: the case is not a vehicle for delivering the lecturer's expertise but a record of the learner's own encounter, which is then analyzed against Islamic values and professional standards. Because reflection in the TAFAKUR cycle begins with a triggering experience, co-construction ensures that the trigger is authentic rather than hypothetical and offers a practical answer to the widely reported difficulty in the literature of connecting theoretical spiritual care content to clinical reality. Fifth, it completes a three-phase development pathway in which one model has been content-validated by expert consensus, validated structurally, and now pilot-tested in delivery, offering a replicable template for developing faith-based educational models in nursing.

These findings support calls for the systematic integration of spirituality into nursing curricula (3,21,43) and highlight the importance of aligning educational interventions with cultural and religious contexts.

Limitations and Future Directions

As a pilot study, this research was designed to generate preliminary evidence and to test the feasibility of delivering the model within an existing course, rather than to establish definitive efficacy; several limitations follow from that design. The quasi-experimental design without randomization limits causal inference, and the two groups were not equivalent at baseline on the outcome measures; although pre-test scores were entered as a covariate, residual

confounding cannot be excluded. The study was conducted in a single institution with a modest sample, which restricts generalisability and limits the power to detect covariate effects. Outcomes were assessed immediately after the intervention, so the persistence of the observed gains is unknown. Finally, although reflective learning is the theorised core mechanism of the model and was assessed during the program, it was not analyzed here as an outcome or as a mediator.

Building on this pilot, a full-scale, adequately powered, and preferably randomized multi-center trial is warranted. Such a trial should incorporate reflective learning as a measured mediator to experimentally test the pathway identified in the Phase II structural model, extend follow-up to assess the sustainability of IMAN competencies, and examine transfer to clinical practice and patient outcomes.

Declarations

Ethical approval was granted by the Research Ethics Committee of Universitas Padjadjaran (No. 7/UN6.KEP/EC/2025), which covers all three phases of this research program. Institutional permission for data collection was granted by Universitas Bhakti Kencana, Bandung (No. 045a/11. FKEP/UBK/VIII/2025). All participants received written and verbal information about the aims, benefits, and procedures of the study, were informed of their right to withdraw at any time without penalty and provided written informed consent. All procedures were conducted in accordance with the Declaration of Helsinki.

Trial registration.

This study was registered in the Thai Clinical Trials Registry (TCTR20260922003). The first participant was enrolled on 10 November 2025, so registration took place after the start of enrolment, and the trial is retrospectively registered. The delay arose because the intervention was an educational program delivered within an existing university course, which the research team did not initially consider to be a clinical trial under the ICMJE definition. No change was made to the eligibility criteria, the intervention, or the primary and secondary outcome measures between the start of the study and its registration.

Supplementary Information.

Additional file 1. Study instruments (English versions). Sections S1 to S8 contain the English-language version of every instrument used in the study, each preceded by a note on its provenance and followed by its instructions and scoring rules: S1 Islamic Spiritual Care

Competency Scale (IMAN-Scale); S2 Islamic spiritual care knowledge test; S3 DOPS rating form for Islamic spiritual care; S4 attitude observation sheets; S5 self-efficacy questionnaire; S6 academic resilience questionnaire; S7 reflective thinking questionnaire; S8 learning-style questionnaire.

Consent for publication.

Not applicable.

Availability of data and materials.

All data supporting the conclusions of this article are included within the article and its additional file. The English-language versions of every instrument used in the study, with their instructions, scoring rules, and provenance, are provided in Additional file 1. The de-identified participant-level dataset analyzed during the current study, the answer key of the knowledge test, and the Indonesian-language originals of the instruments are not publicly available because the participants did not consent to public release of their individual data, but they are available from the corresponding author, Inggriane Puspita Dewi (inggriane23001@mail.unpad.ac.id), on reasonable request and subject to approval by the Research Ethics Committee of Universitas Padjadjaran.

Competing interests.

The authors declare that they have no competing interests.

Funding.

No funding was received for the conduct of this study. Support for the publication costs of this article is acknowledged in the Acknowledgments.

Acknowledgements

The authors gratefully acknowledge Universitas Bhakti Kencana, Bandung, for hosting this study, and thank the Nursing Department for facilitating access to the Palliative Nursing course. We are grateful to the palliative nursing lecturers who acted as facilitators and assessors, and to the students who participated. We also thank colleagues at Universitas Padjadjaran for their support throughout the research program, and Universitas Aisyiyah Bandung for its continued support. The publication costs of this article were covered by Universitas Padjadjaran through the Indonesian Endowment Fund for Education (LPDP), on behalf of the Indonesian Ministry of Higher Education, Science and Technology, administered under the EQUITY Program (Contract Nos. 4303/B3/DT.03.08/2025 and 3927/UN6.RKT/HK.07.00/2025).

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this manuscript, the authors used Grammarly to check grammar, spelling, punctuation, and readability of the English text. No generative AI tool was used to generate content, design the study, analyze the data, or draw conclusions. After using this tool, the authors reviewed and edited the text as needed and take full responsibility for the content of the publication

Authors' contributions.

IPD conceptualized the study, designed the IneRISE-IMAN model and the measurement instruments, coordinated the intervention and data collection, performed the analysis, and drafted the manuscript. HH supervised the study, contributed to the design of the methodology and the interpretation of the findings, and critically revised the manuscript. HR contributed to instrument design, interpretation of the findings, and critical revision. TP contributed to the theoretical framing of the model, interpretation of the results, and critical revision. NA contributed to the statistical design, verification of the analysis, and critical revision. All authors read and approved the final manuscript.

References

1. Jaman-Mewes P, da Silva de Oliveira MC, Ruas VG, de Paula Pessoa VLM, Kurita GP, de Góes Salvetti M. Spiritual suffering in palliative care: a concept analysis. Supportive Care in Cancer. Springer Science and Business Media Deutschland GmbH; 2025. doi:10.1007/s00520-025-09860-5 PubMed PMID: 40824396.
2. Chidarikire S, Makaza M, Popoola T, Yu F, Molloy L. Bridging the gap: Normalising spiritual care in undergraduate nursing education: A review of qualitative research. Nurse Educ Pract. 2025 May 1;85. doi:10.1016/j.nepr.2025.104359 PubMed PMID: 40215675.
3. Dewi IP, Haroen H, Agustina HR, Pahria T, Arisanti N, Keawpimon P. Spiritual care competencies among nursing students in the Middle East and Asia: A systematic review. BMC Nurs. 2025 Apr 10;24(1):401. doi:10.1186/s12912-025-03047-3
4. Rababa M, Al-Sabbah S. The use of Islamic spiritual care practices among critically ill adult patients: A systematic review. Heliyon. 2023 Mar 1;9(3). doi:10.1016/j.heliyon.2023.e13862
5. Taylor EJ, Pariñas S, Mamier I, Atarhim MA, Angeles L, Aslan H, et al. Frequency of nurse-provided spiritual care: An international comparison. J Clin Nurs. 2023 Feb 1;32(3–4):597–609. doi:https://doi.org/10.1111/jocn.16497 PubMed PMID: 36039033.
6. Noor F, Trisyani Y, Mirwanti R. Islamic caring behavior by nurses on patient satisfaction: A scoping review. Indonesian Journal of Global Health Research. 2024;6(5). doi:10.37287/ijghr.v6i5.3437
7. Batzler YN, Stricker N, Bakus S, Schallenburger M, Schwartz J, Neukirchen M. Implementing spiritual care education into the teaching of palliative medicine: an outcome evaluation. BMC Med Educ. 2024 Apr 15;24(1):411. doi:10.1186/s12909-024-05415-0
8. Cant RP, Cooper SJ. Simulation-based learning in nurse education: Systematic review. J Adv Nurs. 2010;66(1):3–15. doi:10.1111/j.1365-2648.2009.05240.x PubMed PMID: 20423432.

9. Sharifi K, Saeidnejad Z, Hosseinian M, Aghajani M. The effect of an empowerment program on the spiritual care competence of nursing students: A randomized clinical trial study. Romanian Journal of Military Medicine. 2024 Mar 1;127(2):98–104. doi:10.55453/rjmm.2024.127.2.2
10. Coxon K, Papas J, Tulliani N, Liu K, Mills C. Relationship between learning styles, and educational outcomes in nursing and occupational therapy students: A systematic review. Journal of Professional Nursing. 2026 May;64:87–107. doi:10.1016/j.profnurs.2026.02.004
11. Nur Ain Mahat, Muhamad Hakim Nik Nizan, Raheemaa, Cho Cho Zaw, Sumardi Omar R. Knowledge and perception of spiritual care among nursing students in International Islamic University. Asian Journal of Medicine and Health Sciences. 2023;6(2).
12. Setiowati D, Said HA. Spiritual care readiness among newly graduated Muslim nurses: A qualitative approach. Islam Transformatif : Journal of Islamic Studies. 2024;8(1):24–44. doi:10.30983/it.v8i1.8422
13. Momennasab M, Shadfard Z, Jaberi A, Najafi SS, Hosseini FN. The effect of group reflection on nursing students' spiritual well-being and attitude toward spiritual care: A randomized controlled trial. Invest Educ Enferm. 2019;37(1). doi:10.17533/udea.iee.v37n1e09
14. Bowers M, Terry D, Irwin P. The impact of reflective practice on nursing students: a scoping review. Nurse Education in Practice. Elsevier Ltd; 2025. doi:10.1016/j.nepr.2025.104468 PubMed PMID: 40683080.
15. Patel KM, Metersky K. Reflective practice in nursing: A concept analysis. Int J Nurs Knowl. 2022 Jul 1;33(3):180–7. doi:10.1111/2047-3095.12350 PubMed PMID: 34626459.
16. Mukhalalati BA, Taylor A. Adult learning theories in context: A quick guide for healthcare professional educators. J Med Educ Curric Dev. 2019;6:238212051984033. doi:10.1177/2382120519840332 PubMed PMID: 31008257.
17. Prakash Chand S. Constructivism in education: Exploring the contributions of Piaget, Vygotsky, and Bruner. International Journal of Science and Research (IJSR). 2023 Jul 5;12(7):274–8. doi:10.21275/sr23630021800
18. Baig N. The Islamic theology behind spiritual care and hospital chaplaincy. In: Complexities of Spiritual Care in Plural Societies: Education, Praxis and Concepts. De Gruyter; 2022. p. 99–122. doi:10.1515/9783110717365-005
19. Baig N, Isgandarova N. Exploring Islamic spiritual care: What is in a name? Religions (Basel). 2023 Oct 1;14(10). doi:10.3390/rel14101256
20. McCance T, McCormack B. The Person-Centred Nursing framework: A mid-range theory for nursing practice. Journal of Research in Nursing. 2025 Feb 1. doi:10.1177/17449871241281428
21. Dewi IP, Haroen H, Agustina HR, Pahria T, Arisanti N, Abdullah SSS. Development and validation of the IneRISE-Iman model: a spiritual care learning framework for undergraduate nursing students (in press). BMC Med Educ. 2026 Aug 5. doi:10.1186/s12909-026-10079-z
22. Park I, Suh Y. Meta-analysis of flipped learning effects in nursing education. Int J Environ Res Public Health. 2021 Dec 1;18(23). doi:10.3390/ijerph182312814 PubMed PMID: 34886540.
23. Van-Leeuwen R. Towards nursing competencies in spiritual care. Studies in Spirituality. 2016;19(0):249–89. doi:10.2143/sis.19.0.2043682
24. Giske T, Schep-Akkerman A, Bø B, Cone PH, Moene Kuven B, Mcsherry W, et al. Developing and testing the EPICC Spiritual Care Competency Self-Assessment Tool for student nurses and midwives. J Clin Nurs. 2023 Apr 1;32(7–8):1148–62. doi:10.1111/jocn.16261 PubMed PMID: 35285563.

25. Khanghahi ME, Azar FEF. Direct observation of procedural skills (DOPS) evaluation method: Systematic review of evidence. Med J Islam Repub Iran. 2018;32(1):254–61. doi:10.14196/MJIRI.32.45
26. Ezzeddine N, Hughes J, Kaulback S, Houk S, Mikhael J, Vickery A. Implications of understanding the undergraduate nursing students' learning styles: A discussion paper. Journal of Professional Nursing. 2023 Nov 1;49:95–101. doi:10.1016/j.profnurs.2023.09.006 PubMed PMID: 38042568.
27. Mohsenipouya H, Monsefi SF, Hosseinnataj A, Mamun MA, Al-Mamun F. The effect of learning styles on the academic achievement of nursing students: a cross-sectional study. BMC Res Notes. 2024 Dec 1;17(1). doi:10.1186/s13104-024-06949-8 PubMed PMID: 39375783.
28. Brown IT, Chen T, Gehlert NC, Piedmont RL. Age and gender effects on the Assessment of Spirituality and Religious Sentiments (ASPIRES) scale: A cross-sectional analysis. Psycholog Relig Spiritual. 2013 May;5(2):90–8. doi:10.1037/a0030137
29. Banks L, Kay R. Exploring flipped classrooms in undergraduate nursing and health science: A systematic review. Nurse Educ Pract. 2022 Oct 1;64. doi:10.1016/j.nepr.2022.103417 PubMed PMID: 36113354.
30. Emily Ka Lai Ng. Student engagement in flipped classroom in nursing education: An integrative review. Nurse Education in Practice. Elsevier Ltd; 2023. doi:10.1016/j.nepr.2023.103585 PubMed PMID: 36868159.
31. Torres-Cano V, Vallbona-González AM, Mondejar-Pont M. Nursing students' outcomes in the flipped classroom approach: An integrative review. Teaching and Learning in Nursing. 2025 Apr 1;20(2):e419–30. doi:10.1016/j.teln.2024.12.005
32. Molina-Rodríguez A, Díaz-Agea JL, Cheng SF, Suárez-Cortés M, López-Chicheri-García I, Domenech-Asensi G. Self-directed learning in nursing students: a quasi-experimental comparison of two simulation methods. Teaching and Learning in Nursing. 2026 Jan 1;21(1):e153–60. doi:10.1016/j.teln.2025.08.032
33. Domènech-Sorolla J, Fernández-Pascual MD, Pedregosa-Fauste S, García-Díaz F, Martínez-Rodríguez L. Undergraduate nursing students' perceptions and experiences of learning spiritual competencies: A qualitative meta-synthesis. Nurse Education Today. Churchill Livingstone; 2025. doi:10.1016/j.nedt.2025.106585 PubMed PMID: 39892366.
34. Uswahzulhasanah, Arofiati F. The effect of reflective learning in nursing and health students: a literature review. Bali Medical Journal. 2021;10(3 Special Issue ICONURS):1235–8. doi:10.15562/bmj.v10i3.2857
35. Ocampo FA, McIntyre BG, Massey D, Saunders R. Nursing student reflections on a research internship: A reflective discussion following the Gibbs' reflective cycle. Nurse Educ Today. 2025 Feb 1;145. doi:10.1016/j.nedt.2024.106481 PubMed PMID: 39546843.
36. Dhollande S, Barnard C, Shepheard J. Comparing reflective models within nursing education: Are they fit for purpose? Teaching and Learning in Nursing. 2025 Oct 1;20(4):e1290–5. doi:10.1016/j.teln.2025.05.017
37. Dhollande DS, Shepheard J, Barnard C. Reflective models used in undergraduate health programs: A scoping review. Teaching and Learning in Nursing. Elsevier Inc.; 2026. p. e313–20. doi:10.1016/j.teln.2025.08.011
38. Timizar-Le Pen T, Marchand C, Léocadie M, Rothan-Tondeur M. Reflective writing: Implementation and learning perception from students and teachers of French nursing schools. Nurse Educ Pract. 2020 Nov 1;49. doi:10.1016/j.nepr.2020.102921 PubMed PMID: 33221579.

39. Barbagallo MS. Nursing students' perceptions and experiences of reflective practice: A qualitative meta-synthesis. Teaching and Learning in Nursing. 2021 Jan 1;16(1):24–31. doi:10.1016/j.teln.2020.07.006
40. Binthariningrum Hanatan R, Yuniastuti E, Adi Prayitno B. Developing discovery learning-based interactive digital modules to increase students' learning Interest. Teknodik. 2023;27.
41. Fernández-Araque A, Romero-Marco P, Alonso ML, Rello ZV, Cáceres-Titos MJ, García-Navarro B. Evolved flipped learning: A path to deeper learning and autonomous digital skills in nursing education. Teaching and Learning in Nursing. 2026 Jan 1;21(1):53–61. doi:10.1016/j.teln.2025.10.010
42. Alanazi A, Mitchell G, Al Halaiqa FN, Khraim F, Craig S. Digital interventions for palliative care education for nursing students: A systematic review. Nurs Rep. 2026 Jan 7;16(1):16. doi:10.3390/nursrep16010016
43. Afonso A, Sitefane S, Fabri J, Rabiais I, Caldeira S. Teaching spirituality in nursing: A bibliometric analysis. J Relig Health. 2025. doi:10.1007/s10943-024-02247-6

44. Bandura A. Guide for constructing self-efficacy scales. In: Pajares F, Urdan T, editors. Self-Efficacy Beliefs of Adolescents. Greenwich, CT: Information Age Publishing; 2006. p. 307-37.

45. Fleming ND, Mills C. Not another inventory, rather a catalyst for reflection. To Improve the Academy. 1992;11(1):137-55. doi:10.1002/j.2334-4822.1992.tb00213.x

46. Gibbs G. Learning by Doing: A Guide to Teaching and Learning Methods. Oxford: Further Education Unit, Oxford Polytechnic; 1988.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- Additionalfile1Studyinstruments.pdf