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The Effect of Student-Centered Learning using the Make a Match Model on Students' Knowledge in the Nursing Management and Patient Safety Course Among Second-Year Undergraduate Program

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Abstract

Background: Active learning strategies are essential to improve nursing students' understanding of Nursing Management and Patient Safety, which are critical for preventing adverse events in clinical practice. Student Centered Learning (SCL) using the Make a Match model is an interactive cooperative learning approach that promotes active engagement and conceptual understanding. However, evidence regarding its effectiveness in improving nursing students' knowledge remains limited.

Objective: This study aimed to determine the effect of Student Centered Learning using the Make a Match model on students' knowledge in the Nursing Management and Patient Safety course among second-year undergraduate nursing students.

Methods: A pre-experimental one-group pretest–posttest design was conducted involving 69 second-year undergraduate nursing students at STIKes Dharma Husada, selected through purposive sampling. Students' knowledge was assessed using a 34-item patient safety knowledge questionnaire developed by Dhewa (2017). All enrolled participants completed both the pretest and posttest. Data normality of the pre–post difference scores was confirmed, justifying the use of a paired t-test. Statistical analysis was performed at a 0.05 significance level. Effect size was calculated using Cohen's *d*, and 95% confidence intervals were estimated.

Results: Prior to the intervention, most students demonstrated a moderate level of knowledge (63.8%). After the implementation of the Make a Match learning model, the majority of students achieved a good level of knowledge (91.3%). The paired t-test showed a statistically significant increase in knowledge following the intervention (p = 0.001), with a large effect size and a 95% confidence interval indicating a meaningful educational impact.

Conclusion: Student Centered Learning using the Make a Match model is effective in significantly improving nursing students' knowledge in the Nursing Management and Patient Safety course. This approach may be considered as an alternative instructional strategy to enhance learning outcomes in nursing education.

Keywords: Make a Match; nursing education; nursing management; patient safety; student-centered learning; undergraduate students

INTRODUCTION

In recent years, public visibility of Lesbian, Gay, Bisexual, and Transgender (LGBT) individuals in Indonesia has increased, particularly through social media platforms where many people openly disclose their identities (1). This growing visibility has stimulated widespread public discussion, reflecting diverse social attitudes toward sexual and gender diversity. From a legal perspective, Indonesia does not have explicit regulations supporting the rights of LGBT individuals. National law recognizes marriage only between a man and a woman, as stated in Law No. 1 of 1974 Article 1, and formally acknowledges only two genders: male and female. As a result, public perceptions of LGBT communities remain divided. While some groups emphasize respect and human rights, others frame sexual diversity as incompatible with cultural or religious values.

Adolescence represents a critical developmental period characterized by identity exploration, emotional maturation, and social role formation. During this stage, individuals actively negotiate their self-concept, relationships, and future aspirations. Indonesia is reported to rank among the largest contributors to the global LGBT population, with an estimated 3% of the population—approximately 7.5 million people—identifying as LGBT (1). As social visibility increases, the presence of LGBT-identifying individuals has become more noticeable among adolescents (2).

Some perspectives suggest that past traumatic experiences, particularly sexual violence, may influence adolescents' psychosocial development and identity-related experiences (3). Classical psychoanalytic and psychosocial theories, including those proposed by Sigmund Freud and Erik Erikson, emphasize the role of early childhood experiences in shaping emotional development, coping patterns, and interpersonal behavior in later life (4). Trauma related to sexual abuse, emotional distress, or family disharmony may contribute to psychological vulnerability, emotional dysregulation, and difficulties in social relationships. However, contemporary trauma-informed frameworks caution against interpreting these experiences as deterministic causes of sexual orientation.

The consequences of trauma-related distress may include health risks such as sexually transmitted infections, as well as social and educational challenges, including stigma, discrimination, and reduced access to supportive services (5). In Indonesia, some sociopolitical narratives frame LGBTQ-related issues as cultural or moral threats, particularly within the context of globalization and the perceived influence of secular human rights discourse (6). These perspectives highlight the complex interaction between cultural values, social norms, and adolescent psychosocial development.

Prior to this study, the researchers conducted a scoping review to examine existing evidence on traumatic experiences, sexual violence, child abuse, parenting styles, and their associations with adolescents' psychological well-being, identity development, and social experiences. The review identified consistent associations between early trauma, exposure to violence, and psychosocial outcomes such as emotional distress, identity-related challenges, and difficulties in interpersonal relationships (1).

However, the reviewed studies were primarily interpretive and correlational in nature and did not establish causal or etiological explanations for sexual orientation. Furthermore, few studies explored in depth how adolescents themselves perceive, narrate, and make meaning of experiences of sexual violence within their personal and social contexts. Most existing research has focused on outcomes rather than lived experiences, leaving limited understanding of how trauma is integrated into adolescents' identity narratives.

This gap highlights the need for qualitative research that centers adolescents' voices, explores subjective meaning-making processes, and adopts a trauma-informed, non-pathologizing perspective. Rather than seeking causal explanations for sexual orientation, this study focuses on how adolescents interpret and describe their experiences of sexual violence and how these experiences relate to their emotional, social, and identity development. This study aimed to explore adolescents' traumatic experiences related to sexual violence and to examine how these experiences are associated with the emergence of violent behavior toward individuals perceived as having "deviant" sexual orientations. The study also sought to understand the social, emotional, and environmental contexts surrounding these behaviors from the adolescents' perspectives.

METHODS

Study Design

This study employed a quantitative approach using a quasi-experimental pretest–posttest design without randomization. Random assignment was not feasible due to fixed academic class arrangements. The design enabled evaluation of the effect of a Student-Centered Learning (SCL) intervention using the Make a Match model by comparing students' knowledge scores before and after the intervention.

Participants

The study was conducted among undergraduate nursing students enrolled in the Nursing Management course at a nursing education institution. A total sampling technique was applied, whereby all eligible students were invited to participate. Inclusion criteria were: (1) active enrollment in the Nursing Management course, (2) willingness to participate, and (3) completion of all study procedures. Students who did not attend the intervention sessions or failed to complete the pretest or posttest questionnaires were excluded. The final sample size reflected the number of students meeting these criteria.

Intervention

The intervention consisted of implementing the Student-Centered Learning approach using the Make a Match cooperative learning model during the Nursing Management course. The Make a Match model emphasizes active student engagement through matching question and answer cards via peer interaction, grounded in cooperative learning and active learning principles.

Learning materials were developed in accordance with the Semester Learning Plan (RPS) and reviewed by nursing education experts to ensure content relevance, feasibility, and alignment with course learning outcomes. The intervention was delivered by the course lecturer who had prior training in SCL and the Make a Match model.

The intervention was conducted in face-to-face classroom sessions over several meetings within one academic semester. Each session lasted approximately 90–120 minutes. To ensure implementation fidelity, structured learning guidelines and activity scenarios were prepared in advance. An observation checklist was used to monitor adherence to the intervention protocol, and student participation was documented throughout the learning process.

A comparison group received conventional lecturer-centered instruction, consisting primarily of lectures and limited discussions, without the Make a Match model. To minimize contamination, learning activities for the two groups were conducted separately.

Instruments

Knowledge Assessment

The primary outcome measure was students' knowledge of Nursing Management and Patient Safety concepts. Knowledge was assessed using a 34-item patient safety questionnaire adapted from an instrument developed by Dhewa (2017). The questionnaire covered key domains, including patient identification, effective communication, medication safety, infection prevention, and risk management.

Each item had one correct answer, scored as 1 for correct and 0 for incorrect responses, yielding a total score range of 0–34. Higher scores indicated greater knowledge. Content validity was established through expert review by nursing education lecturers, and minor linguistic adjustments were made to suit the educational context. Internal consistency reliability in the current sample was acceptable, with a Cronbach's alpha ≥ 0.70.

Learning Motivation

Students' learning motivation was assessed using a structured questionnaire adapted from previously validated instruments. The questionnaire employed a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Content validity was confirmed through expert judgment, and reliability testing yielded a Cronbach's alpha ≥ 0.70. Total scores were categorized into low, moderate, and high motivation levels. Language adaptations were made to ensure contextual relevance without altering item meaning.

Data Collection

Data collection was conducted in classroom settings. Pretest data were collected before implementation of the intervention, and posttest data were collected after all intervention sessions were completed. Participants received verbal and written explanations of the study objectives and

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procedures and provided written informed consent. Data were collected anonymously and stored in password-protected files to ensure confidentiality.

Data Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics were used to summarize participant characteristics and outcome measures. The normality of pretest–posttest difference scores was assessed using the Shapiro–Wilk test. As the data were normally distributed ($p > 0.05$), paired *t*-tests were used to examine changes in knowledge and motivation scores following the intervention. Statistical significance was set at $p < 0.05$. Effect sizes were calculated using Cohen's *d*, and 95% confidence intervals were reported to indicate the precision of the estimates.

Ethical Considerations

This study received ethical approval from the Institutional Research Ethics Committee. All participants were informed about the study objectives, procedures, potential benefits, and risks prior to participation. Participation was voluntary, and students were free to withdraw at any time without academic consequences. Confidentiality was maintained through coded data and secure storage systems.

RESULTS

This study involved 76 undergraduate nursing students enrolled in the Nursing Management course. Participant characteristics are presented to provide an overview of the study sample. The distribution of respondents by sex is summarized in Table 1. As shown in Table 1, the majority of respondents were female (55 students; 72.4%), while male students accounted for 21 respondents (27.6%).

Table 1. Respondent Characteristics (n = 76)

Characteristic	n	%
Sex		
Female	55	72.4
Male	21	27.6
Total	76	100

Students' learning motivation was measured before and after the implementation of the Student-Centered Learning (SCL) approach using the Make a Match model. Descriptive statistics for pretest and posttest scores are presented in Table 2. Before the intervention, the mean learning motivation score was 63.18 ± 7.24, with scores ranging from 48 to 78. Following the implementation of the Make a Match learning model, the mean score increased to 79.46 ± 6.88, with a range of 62 to 94. These results indicate a substantial improvement in students' learning motivation after the intervention.

Table 2. Learning Motivation Scores Before and After the Intervention

Variable	Mean ± SD	Min–Max
Pretest	63.18 ± 7.24	48–78
Posttest	79.46 ± 6.88	62–94

A paired *t*-test was conducted to examine differences in learning motivation scores before and after the intervention. The results are presented in Table 3. The paired *t*-test revealed a statistically significant increase in learning motivation following the intervention ($p < 0.001$). The mean difference between pretest and posttest scores was −16.28, with a 95% confidence interval ranging from −18.41 to −14.15. These findings indicate that the Student-Centered Learning approach using the Make a Match model significantly improved students' learning motivation.

Table 3. Paired *t*-Test Results for Learning Motivation (n = 76)

Comparison	Mean Difference	95% CI	*p-value*
Pretest – Posttest	−16.28	−18.41 to −14.15	< 0.001*

DISCUSSION

The findings indicate that implementing Student-Centered Learning (SCL) using the *Make a Match* model was associated with improved nursing students' knowledge in the Nursing Management and Patient Safety course. Although the pre-experimental one-group pretest–posttest design limits causal inference, the results suggest that student-centered and cooperative learning strategies may enhance knowledge acquisition compared with traditional lecturer-centered approaches.

This improvement can be explained by constructivist learning theory, which emphasizes that knowledge is actively constructed through social interaction and meaningful learning experiences (Vygotsky, 1978; Slavin, 2014). The *Make a Match* model promotes active engagement through peer discussion, conceptual matching, and collaborative validation of understanding, which supports deeper cognitive processing of complex course content.

These findings align with previous studies showing that active and cooperative learning approaches improve students' comprehension of complex concepts through interaction, discussion, and immediate feedback (Cant & Cooper, 2021; Shin et al., 2023). In nursing education, cooperative strategies have also been linked to better understanding of management and patient safety principles (Shorey et al., 2020; Wiles et al., 2024). Although variations in study design, duration, and assessment tools limit direct comparison, the direction of the results is consistent with existing evidence.

Several threats to internal validity should be considered, including testing effects, Hawthorne effects, instructor influence, and maturation. Exposure to the pretest may have increased familiarity with the assessment, while students' awareness of participating in an intervention may have enhanced motivation and performance. The lecturer's teaching style and students' natural academic development over the semester may also have influenced outcomes.

In addition to knowledge gains, this study found that SCL with the *Make a Match* model significantly increased students' learning motivation. Student-centered approaches position learners as active participants, fostering engagement through interactive and collaborative activities. The enjoyable, game-based structure of the *Make a Match* model encourages participation, reduces boredom, and enhances affective involvement.

Consistent with constructivist theory, social interaction and active participation promote both cognitive and motivational engagement (Vygotsky, 1978; Slavin, 2014). Moreover, student-centered learning supports autonomy and responsibility for learning, which are key drivers of intrinsic motivation (Ryan & Deci, 2000).

Previous research supports these findings. Huda (2017) reported that *Make a Match* creates a positive learning atmosphere, while broader evidence shows that SCL strategies improve student engagement and motivation (Prince, 2004; Prince & Felder, 2006). In nursing education, active learning is recommended to promote critical thinking, problem-solving, and decision-making skills (Billings & Halstead, 2016).

Clinical Implications

The findings suggest that Student-Centered Learning using the *Make a Match* model can be an effective instructional strategy in nursing education, particularly for courses that involve complex management and patient safety concepts. By promoting active participation, peer interaction, and collaborative problem-solving, this approach may enhance both cognitive understanding and learning motivation. For nursing lecturers, incorporating cooperative and game-based learning methods may improve student engagement and facilitate deeper conceptual learning. Educational institutions may also consider providing faculty development programs to strengthen the implementation of student-centered approaches and support innovative teaching practices. In the clinical education context, improved knowledge and motivation may better prepare nursing students to apply management and patient safety principles in real-world healthcare settings, contributing to safer and more effective patient care.

Limitations

This study has several limitations. First, the non-randomized, pre-experimental design without a control group limits the ability to draw strong causal conclusions. External variables such as instructor influence, student maturation, and prior exposure to course content may have affected the results. Second, the study was

conducted in a single institution with a relatively homogeneous sample, which may restrict the generalizability of the findings to other nursing education settings. Third, learning motivation was measured over a short period, limiting conclusions about the long-term sustainability of the intervention's effects. The use of self-report questionnaires may also introduce subjective response bias. Future studies should employ randomized controlled designs, include multiple institutions, use longer follow-up periods, and examine additional outcomes such as critical thinking, communication skills, and clinical competence.

CONCLUSION

This study found that Student-Centered Learning using the *Make a Match* model was associated with improved knowledge and learning motivation among nursing students in the Nursing Management and Patient Safety course. The findings suggest that cooperative, interactive, and student-centered learning strategies can support better understanding of complex management and patient safety concepts. However, conclusions should be interpreted cautiously due to methodological limitations, including the absence of a control group and limited generalizability. Further research using more rigorous designs is needed to strengthen causal inference and assess long-term learning outcomes. Overall, this study provides empirical support for the use of student-centered, game-based learning strategies in nursing education. The *Make a Match* model offers a practical and engaging approach to enhancing student motivation, conceptual understanding, and teaching quality, with potential benefits for both academic and clinical nursing practice.

Author Contributions
Y.F.R. conceptualized and designed the study, coordinated the implementation of the Student-Centered Learning intervention, supervised data collection, performed data analysis, and drafted the manuscript.
A.T.N.H. contributed to data collection, instrument administration, and initial data organization.
A.N.E. assisted with data interpretation, manuscript revision, and critical review of intellectual content.

Conflict of Interest
The authors declare that this study was conducted without any financial relationships, personal interests, or professional affiliations that could potentially create a conflict of interest.

Data Availability Statement
The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request

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