

The Effectiveness of Structured Clinical Supervision on the Ability of Nurses in Lifestyle Education of Heart Patients

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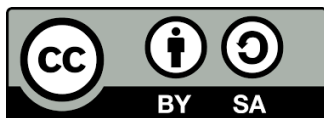
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Abstract

Lifestyle education is essential for cardiac patients; however, inconsistent delivery may limit its contribution to continuity of care. Structured clinical supervision supported by educational tools may strengthen nurses' ability to provide comprehensive and systematic patient education. This study aimed to assess changes in nurses' ability to provide lifestyle education following structured clinical supervision at Arifin Achmad Hospital, Pekanbaru, Indonesia. This quantitative study employed a one-group pretest–posttest design and included 34 inpatient nurses. The intervention consisted of two structured clinical supervision sessions supported by lifestyle education cards addressing diet, physical activity, smoking and alcohol avoidance, medication adherence, stress management, and recognition of warning signs. Nurses' lifestyle education ability was assessed using a 20-item questionnaire, with item-level content validity indices (I-CVI) ranging from 0.90 to 1.00 and a scale-level content validity index (S-CVI) of 0.975. Pretest and posttest scores were compared using the Wilcoxon signed-rank test. The median score increased from 30.0 to 36.0, while the mean score increased from 29.18 to 34.06. Overall, 31 nurses demonstrated improved scores, one showed no change, and two demonstrated decreased scores. The difference between pretest and posttest scores was statistically significant ($p < 0.001$). These findings suggest that structured clinical supervision combined with lifestyle education cards may support more systematic patient education by nurses. However, causal attribution remains limited because of the absence of a control group. Further controlled studies are warranted to determine whether structured clinical supervision produces sustained improvements in nurses' educational abilities and contributes to better patient self-management and clinical outcomes.



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INTRODUCTION

Cardiovascular disease is a major health problem, and hypertension is one of the principal risk factors for coronary heart disease, heart failure, and stroke. Risk reduction relies not only on medical therapy but also on sustained lifestyle modifications, including a healthy diet, regular physical activity, smoking cessation, medication adherence, and stress management (Organization, 2024). For hospitalized patients, the period of hospitalization provides an important opportunity to strengthen patients' and families' understanding of the

behaviors and self-management practices that should be continued after discharge (Zerda & Wang, 2022).

Nurses play a strategic role in patient education because they interact extensively with patients and their families throughout the care process. However, a preliminary survey conducted in inpatient units caring for cardiac patients at Arifin Achmad Hospital in Pekanbaru indicated that education tended to be provided reactively when patients asked questions and that structured tools had not been consistently used to communicate lifestyle modifications. These conditions may result in variations in the content, sequence, and completeness of educational messages among healthcare providers. Therefore, a structured coaching mechanism is needed to assist nurses in delivering patient education systematically, consistently, and with appropriate documentation (Johnson et al., 2025).

Clinical supervision is a professional development approach that provides nurses with opportunities to receive guidance and feedback and to engage in reflection and evaluation of their practice. (Delvira et al., 2025) demonstrated that structured clinical supervision could improve nurses' adherence to nutritional education protocols for cardiac patients. Similarly, (Shahzeydi et al., 2024) reported improvements in nursing practice performance following the implementation of a clinical supervision model. Thus, structured clinical supervision has the potential to strengthen not only adherence to established procedures but also nurses' ability to fulfill their role as patient educators.

In this study, structured clinical supervision was combined with lifestyle education cards as educational aids. The cards summarized six practical areas: a healthy diet, physical activity, avoidance of smoking and alcohol, medication adherence, stress management, and recognition of warning signs (Sunonnam et al., 2025; Tian et al., 2024; Wu et al., 2024). Concise educational materials may improve the consistency of messages delivered by nurses and facilitate patients' recall of key information. This approach is consistent with the findings of (Okube et al., 2023), who reported that nurse-led educational interventions could improve knowledge of modifiable cardiovascular risk behaviors. Similar findings were reported by (Bagheri et al., 2022; Son et al., 2020), indicating that nurse-led education and counseling can improve self-efficacy and reduce the risk of hospital readmission among patients with cardiovascular conditions, thereby reinforcing the importance of strengthening nurses' educational capacity as part of routine care (Koontalay et al., 2025; Miah et al., 2025; Zhao et al., 2025).

Structured clinical supervision offers a potential approach to addressing this professional development need through guidance, feedback, reflection, and evaluation of clinical practice. (Shahzeydi et al., 2024) investigated a clinical supervision model among 70 nursing internship students assigned to intervention and control groups. The intervention consisted of six sessions conducted over three months, and nursing process performance improved significantly in the intervention group, whereas the control group did not demonstrate a comparable improvement. These findings support clinical supervision as a means of bridging theoretical knowledge and clinical practice. Nevertheless, evidence obtained from nursing internship students cannot be directly generalized to practicing nurses who provide lifestyle education to cardiac patients. The relevance of this study to the present investigation lies in the proposed learning mechanism, whereby repeated guidance and feedback may help practitioners

translate educational expectations into more consistent nursing practices (Huang & Chair, 2025; Longhini et al., 2025; Yang et al., 2026).

More directly relevant evidence comes from (Delvira et al., 2025) who examined structured clinical supervision and nurses' adherence to nutritional education protocols for cardiac inpatients in Riau Province, Indonesia. Their quasi-experimental study involved 38 nurses and included intervention and control groups. After four weeks of supervision, the intervention group's mean adherence score increased from 68.4 to 88.2, whereas the control group showed no significant change. This study provides an important foundation for examining structured supervision in cardiac nursing education. However, adherence to nutritional education protocols represents a narrower outcome than nurses' educational ability across multiple lifestyle and self-management domains. Therefore, an important question remains regarding whether structured supervision, supported by a concise educational tool, is associated with improvements in nurses' ability to provide broader guidance encompassing daily lifestyle behaviors, medication adherence, and recognition of warning signs.

This question is particularly relevant to the inpatient setting at Arifin Achmad Hospital in Pekanbaru. According to the preliminary survey reported in the present study, lifestyle education was often provided in response to patients' questions, and nurses did not consistently use structured tools to guide the educational process. These observations suggest a need to examine the organization of patient education within routine nursing care, particularly the completeness and consistency of messages delivered by different nurses. The local issue concerns how existing professional knowledge can be translated into systematic educational practice. Because these preliminary observations were not derived from a quantified hospital-wide assessment, they provide contextual justification for the present investigation rather than evidence of the prevalence or severity of educational deficiencies throughout the institution.

Addressing this issue is important because hospitalization provides a limited opportunity for patients and their families to prepare for continued disease management after discharge. The intervention in the present study combined structured clinical supervision with lifestyle education cards covering six areas: a healthy diet, physical activity, avoidance of smoking and alcohol, medication adherence, stress management, and recognition of warning signs requiring medical attention. The cards were designed to provide a standardized framework for educational messages, while structured clinical supervision provided opportunities for guidance and feedback regarding their use. The rationale underlying this approach was that combining professional support with a practical educational aid could help nurses organize and deliver patient education more consistently. However, whether this combined approach results in measurable improvements in nurses' educational ability requires empirical assessment.

The distinctive contribution of this study lies in extending the focus from adherence to nutritional education protocols to broader lifestyle education abilities among practicing inpatient nurses at Arifin Achmad Hospital. The study examined an integrated approach in which lifestyle education cards supported two structured clinical supervision sessions, with nurses' educational ability assessed before and after the intervention. This approach represents a contextual and practical extension of the existing literature rather than suggesting that clinical supervision or educational cards are entirely novel interventions. The study provides

preliminary evidence regarding changes associated with this combined intervention within a specific hospital setting. However, its scope is limited to nurses' educational ability; patient behaviors, clinical outcomes, long-term retention of nurses' educational competencies, and the independent effects of structured supervision and lifestyle education cards were not evaluated.

Accordingly, this study aimed to assess changes in nurses' ability to provide lifestyle education to cardiac patients before and after structured clinical supervision supported by lifestyle education cards at Arifin Achmad Hospital in Pekanbaru. The specific objectives were to describe the characteristics of participating nurses, assess their educational ability before and after the intervention, and determine whether there was a statistically significant difference between paired pretest and posttest scores. The findings are expected to inform nursing managers when considering strategies for professional development and the organization of patient education. They may also provide a foundation for subsequent controlled studies examining the sustainability of improvements in nurses' educational performance and their effects on patient outcomes. Given the one-group pretest–posttest design, the present study provides evidence of changes observed following the intervention; however, causal attribution requires further investigation.

METHOD

This study employed a quantitative approach with a one-group pretest–posttest quasi-experimental design. Nurses' ability to provide lifestyle education was assessed before and after the structured clinical supervision intervention. The study was conducted in the inpatient units of Arifin Achmad Hospital, Pekanbaru, from April 28 to July 15, 2026.

The study population consisted of staff nurses working in inpatient units that provided care for cardiac patients, including patients with hypertension. A total of 34 nurses met the eligibility criteria and agreed to participate, and complete pretest and posttest data from all 34 participants were included in the analysis. Eligible participants were staff nurses who had worked in the relevant units for at least three months, were actively employed during the intervention and evaluation periods, and provided written informed consent. Nurses who were on leave or rotated out of the unit, held managerial positions, or had recently participated in intensive training related to clinical supervision or cardiac patient education were excluded.

Nurses' educational ability was assessed using a 20-item questionnaire. Content validity was evaluated through expert judgment by 10 validators with relevant academic and clinical expertise. The item-level content validity index (I-CVI) and scale-level content validity index (S-CVI) were calculated according to (Polit & Beck, 2006). The I-CVI values ranged from 0.90 to 1.00, and the S-CVI was 0.975, indicating satisfactory content validity. Content validation was performed to ensure that the instrument adequately represented the construct being assessed (Halek et al., 2017).

The intervention consisted of two structured clinical supervision sessions delivered to 34 nurses. The supervision focused on coaching, guidance, feedback, and evaluation of nurses' delivery of lifestyle education. Lifestyle education cards were used to support standardized education across six areas: a healthy diet, physical activity, avoidance of smoking and alcohol, medication adherence, stress management, and recognition of warning signs requiring medical attention. A prototype supervision application was also developed as a proof of concept to

support supervision documentation; however, its effectiveness was not evaluated as an independent component of the intervention.

Data were analyzed descriptively to summarize participant characteristics and pretest and posttest scores. The Shapiro–Wilk test indicated that both pretest ($p = 0.001$) and posttest ($p < 0.001$) scores were not normally distributed. Therefore, differences between paired pretest and posttest scores were analyzed using the Wilcoxon signed-rank test, with statistical significance set at $p < 0.05$. The primary results were summarized using the median and interquartile range, while the mean and standard deviation were reported as supplementary descriptive statistics.

Administrative permission to conduct the study at Arifin Achmad Hospital, Pekanbaru, was obtained before data collection, and all participants provided written informed consent.

RESULTS AND DISCUSSION

A total of 34 nurses had complete pretest and posttest data and all of them were recorded as having participated in clinic supervision. The characteristics of the respondents showed that the majority were female, educated as nurses, and had ASN (State Civil Apparatus) status. The average age of respondents was 38.94 ± 6.27 years with a range of 27-54 years, while the average length of work was 13.41 ± 5.58 years with a range of 4-25 years.

Table 1. Characteristics of Respondents (n=34)

Features	n (%) / Statistics	Range
Age (years)	38.94 ± 6.27 ; median 39.0	27-54
Gender: Female	27 (79,4%)	-
Gender: Male	7 (20,6%)	-
Education: Nurses	24 (70,6%)	-
Education: D3 Nursing	10 (29,4%)	-
Employee status: ASN	27 (79,4%)	-
Employee status: P3K	7 (20,6%)	-
Length of service (years)	$13,41 \pm 5,58$; median 15,0	4-25

The results of the questionnaire content validation showed that all 20 items had an I-CVI of 0.90-1.00 and an S-CVI of 0.975. Thus, the instruments used in the pretest-posttest analysis met the content validity criteria based on the assessment of the expert panel. This value supports the use of the instrument to assess changes in educational ability in the context of this study, without interpreting the results as proof of construct validity or overall reliability.

Table 2. Changes in Nurses' Educational Ability Scores Before and After Clinical Supervision

Measurement	Mean $\pm$ SD	Median (IQR)	Min-Max	p-value*
Pretest	$29,18 \pm 2,89$	30,0 (3,5)	21-34	<0.001

Measurement	Mean ± SD	Median (IQR)	Min-Max	p-value*
Posttest	34.06 ± 3.25	36,0 (3,75)	26-36	
Changes (post-pre)	+4.88 ± 3.44	+5,5 (2,0)	-3 n.d. +15	

Individually, 31 of 34 nurses (91.2%) experienced an improvement in score after the intervention, one nurse (2.9%) had a fixed score, and two nurses (5.9%) experienced a decrease in score. The Wilcoxon test showed a significant difference between scores before and after clinical supervision ($p < 0.001$). These findings showed an improvement in educational ability after intervention in the same group.

Changes in Nurses' Educational Abilities After Clinical Supervision

The study showed an improvement in the ability of nurses to provide lifestyle education after the implementation of structured clinical supervision. The median score increased from 30.0 to 36.0 and 91.2% of respondents showed higher scores on the posttest. The difference was statistically significant based on the Wilcoxon test. Since the study design did not use a control group, these results are most appropriately interpreted as improvements that occurred after the intervention and have not proven that all changes were caused solely by clinical supervision.

The direction of the research findings is consistent with Delvira et al. (2025), who report that structured clinical supervision improves nurses' adherence to nutrition education protocols in cardiac patients. Supervision provides a coaching structure that allows educational standards to be translated into practice through direction, monitoring, feedback, and evaluation. This process is important because educational ability is influenced not only by knowledge, but also by consistency of implementation, communication, and work habits in the service unit.

These findings are also in line with Shahzeydi et al. (2024), who showed that clinical supervision models can improve the performance of nursing practices, and (Gheisari et al., 2024) who reported improvements in nurses' self-efficacy and communication skills in the patient handover process after the implementation of the clinical supervision model. Although the study population was different, the learning mechanism was relevant: supervision provided participants with the opportunity to receive feedback on practice, identify shortcomings, and improve on subsequent actions. In this study, two supervision sessions could be a structured stimulus that directs nurses to improve the way they deliver lifestyle education and ensure that important components are not missed. These results are also in line with evidence that nurse-led education and counseling can improve the self-efficacy of patients after acute coronary syndrome (Bagheri et al., 2022) and reduce the risk of readmission in heart failure patients (Son et al., 2020), which confirms that strengthening the capacity of nurse educators has the potential to have an impact on patient outcomes, although this has not been directly measured in this study.

The Role of Lifestyle Cards as an Educational Aid Media

Lifestyle cards provide a concise and uniform message framework regarding diet, physical activity, cigarettes and alcohol, medication adherence, stress management, and red flags. The existence of this media has the potential to reduce the variation of educational messages between nurses and help nurses remember the order in which material needs to be delivered. At the same time, patients obtain a more structured and action-oriented message.

The findings of Okube et al. (2023) show that nurse-led interventions can increase knowledge about modifiable cardiovascular risk behaviors, so strengthening nurses' educational capacity is an important component in efforts to change patient behavior.

The use of lifestyle cards in this study does not stand alone, but is placed as a tool in the supervision process. This combination is important because good media does not automatically guarantee consistency of use if there is no coaching and evaluation. On the contrary, structured supervision becomes more applicable when nurses have concrete tools to translate supervisor directions into daily educational communication.

Validity of Instrument Content and Clinical Significance of Findings

The questionnaire used obtained an I-CVI of 0.90-1.00 and an S-CVI of 0.975 from 10 validators. These values show high agreement on the relevance of the content of the item. Halek et al. (2017) emphasized the importance of evaluating the validity of the content as part of the development of the instrument to ensure that the item represents the domain to be assessed. Polit and Beck (2006) also emphasized that the calculation methods of I-CVI and S-CVI need to be reported explicitly because there is more than one method of calculation that can produce different values. However, the validity of the content cannot replace the test of reliability or validity of the construct; therefore, the development of the instrument in subsequent studies needs to complement the psychometric evidence.

Descriptively, the mean increase of 4.88 points and the dominance of respondents with improved scores showed consistent changes in most participants. However, because the instrument's theoretical maximum score range was not explicitly listed in the available research documents, this manuscript did not convert the score difference into a percentage improvement or establish a large category of clinically significant effects. This approach was chosen to keep the interpretation consistent with the available evidence.

Research Limitations

The study has several limitations. First, the one-group pretest-posttest design without a control group makes the results vulnerable to other factors outside of the intervention, such as work experience during the study period, exposure to other information, or the effects of repeated measurements. Second, the study was conducted in a single hospital with 34 nurses, so generalizations to other hospitals or units need to be done carefully. Third, the evaluation only describes changes immediately after the intervention and has not assessed long-term ability retention or its impact on the patient's knowledge, adherence, or clinical output. Fourth, the prototype of the supervision application is still in the proof-of-concept stage and does not yet have sufficient evidence of user testing to be assessed as an operational system.

CONCLUSION

The implementation of structured clinical supervision supported by lifestyle education cards at Arifin Achmad Hospital, Pekanbaru, was associated with a significant improvement in nurses' ability to provide lifestyle education to cardiac patients, with most participants demonstrating higher scores after the intervention. These findings support structured clinical supervision as a practical professional development approach for strengthening nurses' roles as patient educators. However, causal conclusions should be interpreted cautiously because the study did not include a control group.

Future research should employ controlled study designs with longer follow-up periods to evaluate the retention of nurses' educational abilities and determine their effects on patient adherence, self-management, and clinical outcomes. Hospital nursing management should consider integrating structured clinical supervision and lifestyle education cards into routine professional development programs for nurses caring for cardiac inpatients. In addition, the supervision application prototype should undergo usability testing and operational evaluation before being considered for implementation as a clinical supervision support system in hospital settings.

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CONFLICT OF INTEREST

The author states that there is no conflict of interest in the implementation of the research or the preparation of this manuscript. This research is free from commercial, financial, institutional, or other interests that have the potential to affect the objectivity and integrity of the research results.

AUTHOR CONTRIBUTION

All authors contribute in a balanced manner in each stage of research, including the development of research ideas and concepts, the preparation of methodologies, data analysis and interpretation, and the preparation and revision of manuscripts. All authors also review and approve the final version of the manuscript and are responsible for the content and integrity of the scientific paper.

GENERATIVE ARTIFICIAL INTELLIGENCE USAGE STATEMENT

In the preparation of this manuscript, the author uses the help of Artificial Intelligence (AI) only for grammar improvement and language checking. AI is not used to generate data, conduct analysis, determine research results, or compile scientific interpretation. All substance and content of the manuscript remain the responsibility of the author.

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