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EFFECTIVENESS OF 3S-BASED NURSING DOCUMENTATION TRAINING (SDKI, SLKI, SIKI) ON NURSES' KNOWLEDGE, PERFORMANCE, AND DOCUMENTATION SKILLS

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ABSTRACT

Accurate and comprehensive nursing documentation is essential for ensuring continuity of care, legal accountability, and quality outcomes. However, many nurses face challenges in implementing standardized documentation practices. The 3S-based framework comprising SDKI (Standar Diagnosis Keperawatan Indonesia), SLKI (Standar Luaran Keperawatan Indonesia), and SIKI (Standar Intervensi Keperawatan Indonesia) has been developed to enhance the quality and consistency of nursing records. This study aimed to evaluate the effectiveness of 3S-based nursing documentation training on nurses' knowledge, performance, and documentation skills. A quasi-experimental design with a pretest-posttest approach was conducted at two hospitals: RSUD Sungaililin in December 2024 and RSUD Bayung Lencir in April 2025. A total of 80 nurses participated, with 40 respondents from each hospital. The intervention consisted of structured training sessions on the 3S documentation model. Data were collected using validated questionnaires and observation checklists, and were analyzed using paired and independent t-tests to assess changes before and after the intervention. The findings showed a significant improvement in nurses' knowledge, performance, and documentation skills following the training ($p < 0.05$). Both hospitals demonstrated consistent positive outcomes, indicating the effectiveness of the 3S-based training regardless of setting. The 3S-based documentation training significantly enhances nurses' competencies in recording patient care. These results support the integration of structured documentation models into nursing education and hospital in-service training programs to improve care quality and documentation practices.

Keywords: Documentation Skills, Nurse Knowledge, Nurse Performance, Nursing Documentation, 3S Model (SDKI, SLKI, SIKI).

INTRODUCTION

Nursing documentation is a fundamental aspect of professional nursing practice, encompassing legal, clinical, administrative, and educational functions within the healthcare system. More than just a record of care, nursing documentation serves as a critical tool for interdisciplinary communication, facilitates the continuity and coordination of patient care, and provides an evidence base for evaluating care quality, clinical decision-making, and patient safety outcomes. Accurate and comprehensive documentation not only reflects the accountability and professionalism of nurses but also ensures patient-centered, safe, and efficient healthcare delivery (Potter and Perry, 2021; Doengoes & Moorhouse, 2019).

Despite its essential role, the quality and consistency of nursing documentation remain major concerns worldwide. The World Health Organization (2023) highlights

that incomplete, delayed, or inaccurate documentation significantly contributes to clinical errors, breakdowns in communication, and adverse patient outcomes. In many parts of Asia, including Indonesia, studies have repeatedly identified persistent problems in nursing records—such as insufficient detail, inconsistent use of terminology, and poor compliance with documentation standards (Ackley, 2024; Jannah, 2020). These deficiencies not only compromise care continuity but also pose ongoing risks to patient safety and healthcare system performance.

In Indonesia, these challenges are particularly evident across various healthcare settings. The Ministry of Health Republic Indonesia (2023) reports that many hospitals, including publicly funded institutions, struggle to meet national documentation standards. A multisite study in Java found that only 58% of nursing documentation met regulatory compliance (Kartini & Eka Ratnawati, 2022). These issues are further compounded in resource-limited regions such as South Sumatra, where public hospitals often face barriers such as inadequate institutional support, lack of standardized documentation procedures, and insufficient training opportunities, resulting in wide disparities in documentation quality.

Field observations and preliminary data from RSUD Sungai Lilin and RSUD Bayung Lencir two regional public hospitals in South Sumatera reveal similar systemic challenges. Interviews and audits revealed that many nurses lacked adequate familiarity with structured documentation models, resulting in frequent omissions, vague terminology, and inconsistent formats. At RSUD Bayung Lencir in particular, high patient loads, limited access to continuing education, and low confidence in documentation practices were identified as key obstacles to accurate recordkeeping. These findings underscore the urgent need for targeted, competency-based interventions to improve documentation practices and support clinical governance.

Field observations and preliminary data collected from two regional public hospitals in South Sumatera, RSUD Sungai Lilin on November 31, 2024, and RSUD Bayung Lencir on March 16, 2025 reveal similar systemic challenges in nursing documentation. Through interviews and documentation audits, it was found that many nurses exhibited limited familiarity with structured documentation models, leading to frequent omissions, vague terminology, and inconsistent formats. At RSUD Bayung Lencir, in particular, high patient loads, restricted access to continuing education, and low confidence in documentation practices were identified as major barriers to accurate and standardized recordkeeping. These findings highlight the urgent need for targeted, competency-based interventions to enhance documentation quality and strengthen clinical governance frameworks in these facilities.

Preliminary assessments conducted at RSUD Sungai Lilin and RSUD Bayung Lencir identified significant practice and intervention gaps in nurses' knowledge, performance, and documentation skills related to the use of the standardized 3S-based nursing documentation model (SDKI, SLKI, SIKI). Knowledge assessments revealed that only 32% of nurses at RSUD Sungai Lilin and 28% at RSUD Bayung Lencir demonstrated an adequate understanding of the structured documentation framework. Performance audits showed that proper alignment between nursing diagnoses (SDKI), outcomes (SLKI), and interventions (SIKI) was observed in only 40% of documentation at RSUD Sungai Lilin and 35% at RSUD Bayung Lencir. Furthermore, skill-based simulations indicated that just 30% of nurses at Sungai Lilin and 25% at Bayung Lencir

were able to produce complete, coherent, and accurate documentation in accordance with 3S standards. These deficiencies stemmed from a combination of factors, including limited access to continuous professional development, high patient workloads, and low confidence in clinical documentation practices. This study therefore aims to evaluate the effectiveness of a 3S-Based Nursing Documentation Training Program in enhancing nurses' knowledge, performance, and documentation skills. The outcomes are expected to provide evidence-based strategies for improving clinical documentation practices, strengthening quality standards, and informing policy development for nursing education and quality assurance initiatives across healthcare settings in Indonesia.

To address these ongoing concerns, the Indonesian National Nurses Association (PPNI) has introduced a standardized documentation framework known as the 3S model comprising the *Standar Diagnosis Keperawatan Indonesia (SDKI)*, *Standar Luaran Keperawatan Indonesia (SLKI)*, and *Standar Intervensi Keperawatan Indonesia (SIKI)*. This model offers a systematic and unified approach to nursing documentation by aligning assessments, diagnoses, outcomes, and interventions. Emerging evidence suggests that structured training using the 3S framework improves nurses' accuracy, clinical reasoning, and documentation quality (Wisuda & Suraya, 2024; Muharni, 2024; Hidayat, 2021). However, empirical research evaluating the implementation and effectiveness of this training in rural or under-resourced hospitals remains limited.

Therefore, this study aims to assess the Effectiveness of 3S-Based Nursing Documentation Training (SDKI, SLKI, SIKI) on nurses' knowledge, performance, and documentation skills at RSUD Sungai Lilin (December 2024) and RSUD Bayung Lencir (April 2025). The findings are expected to provide evidence for improving clinical practice, strengthening documentation standards, and informing policy recommendations for future nursing education and quality improvement initiatives in Indonesia and beyond.

METHOD

Study Design

This study utilized a quasi-experimental research design employing a one-group pretest-posttest approach to evaluate the effectiveness of structured nursing documentation training based on the 3S framework, which includes SDKI (Standar Diagnosis Keperawatan Indonesia), SLKI (Standar Luaran Keperawatan Indonesia), and SIKI (Standar Intervensi Keperawatan Indonesia).

The primary objective was to assess improvements in three key outcome variables: nurses' knowledge, clinical performance, and documentation skills related to nursing care practices. The quasi-experimental design is widely recognized in health sciences as a robust methodological approach when randomized controlled trials (RCTs) are impractical or unethical, particularly in clinical or organizational settings where interventions cannot be withheld for ethical reasons (Jane Flanagan, 2024; Polit & Beck, 2019). The one-group pretest-posttest design allows researchers to measure changes in participants' outcomes over time by comparing results before and after the intervention, thereby providing insights into its effectiveness without requiring a control group (Boswell & Cannon, 2018; John & J. David Creswell, 2018).

In this study, the independent variable was the 3S-based nursing documentation training intervention, operationalized as a structured training module delivered over two days. The dependent variables were the

measurable outcomes observed in the participants: (1) knowledge of nursing documentation standards, (2) performance in applying documentation practices, and (3) documentation skill accuracy and completeness, all assessed both pre- and post-intervention using validated instruments.

This design enabled a practical and context-sensitive evaluation of the intervention's impact in real-world healthcare environments, aligning with the complexity and constraints typical in hospital-based professional development programs (Gray & Grove, 2021). The findings derived from such a design are valuable for informing evidence-based improvements in nursing education and clinical documentation practices.

Study Setting and Duration

This study was conducted at two regional public hospitals (Rumah Sakit Umum Daerah/RSUD) in South Sumatra, Indonesia: RSUD Sungaililin in December 2024 and RSUD Bayung Lencir in April 2025. These hospitals were selected based on several key considerations, including documented issues related to suboptimal nursing documentation practices, the availability of institutional support for continuing professional development, and logistical accessibility for the research team. Implementing the study across two separate hospital settings allowed for a broader examination of the intervention's impact and provided comparative insights into the consistency and generalizability of training outcomes across differing clinical environments.

Participants and Sampling Technique

A total of 80 nurses participated in the study, with 40 respondents from each of the two selected hospitals. Participants were recruited through purposive sampling based on predefined inclusion criteria to ensure the relevance and comparability of the sample. Eligible nurses were required to be actively involved in providing direct inpatient care, employed full-time at their respective hospitals for at least one year, and had not previously received formal training in the 3S documentation model. Additionally, all participants provided informed consent and committed to completing both the training and evaluation components of the study. This sampling approach ensured that the selected nurses were directly responsible for clinical documentation and positioned to benefit meaningfully from the structured 3S-based intervention.

Intervention

The intervention involved a structured two-day training program on the 3S nursing documentation model SDKI, SLKI, and SIKI delivered by certified nurse educators with expertise in national standards. Designed to enhance both conceptual understanding and clinical application, the training combined lectures on theoretical and regulatory foundations with interactive discussions to encourage critical thinking and clarify key concepts. Participants engaged in simulation exercises using realistic clinical scenarios to apply the 3S framework, followed by individualized feedback and group reflection to reinforce learning and address documentation errors. The training emphasized the alignment of nursing diagnoses, outcomes, and interventions to improve the accuracy, consistency, and quality of nursing documentation (Widyastuti, 2024; Grove & Gray, 2019).

Data Collection Instruments and Procedure

Data collection was carried out at two time points: before (pretest) and immediately after (posttest) the training. Three validated

instruments were used to measure the main outcomes. Nurses' knowledge was assessed using a structured questionnaire consisting of multiple-choice and true/false items based on the SDKI, SLKI, and SIKI frameworks. Content validity was established through expert review by a panel of nursing educators, ensuring alignment with national standards. Performance was measured using a standardized checklist during simulated clinical scenarios to evaluate the application of the 3S principles. Documentation skills were assessed through direct observation of actual patient records using a checklist derived from Indonesia's national nursing documentation guidelines. To ensure validity and reliability, a pilot study was conducted with a small group of nurses from a non-participating hospital. Cronbach's Alpha was used to assess internal consistency for each instrument, with all tools demonstrating acceptable reliability ($\alpha > 0.70$), in accordance with guidelines by Rentala (2018).

Data collection was conducted at two distinct time points: prior to the intervention (pretest) and immediately following the training (posttest). Three validated instruments were employed to measure the primary outcomes of interest. Nurses' knowledge was assessed using a structured questionnaire comprising multiple-choice and true/false items aligned with the SDKI, SLKI, and SIKI frameworks. Content validity was established through expert evaluation by a panel of senior nursing educators to ensure congruence with Indonesia's national nursing standards. Performance was evaluated through a standardized observational checklist applied during simulated clinical scenarios, focusing on the accurate application of 3S-based documentation principles. Documentation skills were assessed via direct observation of actual nursing records, using a checklist adapted from the official national nursing documentation guidelines. To establish the validity and reliability of the instruments, a pilot study was conducted with a sample of 15 nurses from a non-participating hospital. Internal consistency for each instrument was analyzed using Cronbach's Alpha. The results indicated high reliability: the knowledge questionnaire achieved a Cronbach's Alpha of 0.82, the performance checklist 0.79, and the documentation skills checklist 0.85. These values exceed the minimum threshold of 0.70, indicating acceptable to strong internal consistency, consistent with the standards recommended by Rentala (2018).

Data Analysis

Data analysis was performed using IBM SPSS Statistics software, version 24.0, to evaluate the effectiveness of the 3S-based nursing documentation training. Data analysis was performed using statistical software to evaluate the effectiveness of the 3S-based nursing documentation training. The analysis focused on measuring changes in nurses' knowledge, performance, and documentation skills by comparing pretest and posttest results across the intervention group. Within-group and between-group comparisons were performed. Initially, independent sample t-tests were performed to compare pre-test and post-test scores for respondents' knowledge between the two hospitals, assessing baseline differences. For variables that did not meet the assumption of normality, the Mann-Whitney U test was used for between-group comparisons such as performance variables and documentation skills. Furthermore, paired sample t-tests were used to assess within-group changes, while the Wilcoxon Signed-Rank test was used for non-normally distributed data. A significance level of $p < 0.05$ was applied to all tests to identify meaningful differences. This comprehensive approach provides valuable insights into the effectiveness of the

training and its applicability across hospital settings.

Ethical Considerations

Prior to data collection, ethical approval was secured from the Health Research Ethics Committee of the Faculty of Medicine, Sriwijaya University (Approval No. 033-2024, August 2024). All participants were thoroughly informed about the study's objectives, procedures, potential risks, and benefits. Written informed consent was obtained, ensuring that participation was entirely voluntary. Participants' confidentiality and anonymity were rigorously protected, and they retained the right to withdraw at any point without any repercussions.

RESULTS

This study involved a total of 80 nurses, 40 each from RSUD Sungai Lilin and RSUD Bayung Lencir, to evaluate the effectiveness of 3S-based nursing documentation training (SDKI, SLKI, SIKI) on their knowledge, performance, and documentation skills.

Table 1. Sociodemographic Characteristics of Respondents

Variable	Category	RSUD Sungaililin (n = 40)	RSUD Bayung Lencir (n = 40)	Measurement Scale
Age (years)	Mean ± SD	31.45 ± 5.32	32.10 ± 4.97	Interval
	Range	24–45	25–44	
Gender	Male	18 (45.0%)	16 (40.0 %)	Nominal
	Female	22 (55.0%)	24 (60.0 %)	
Length of Service	< 5 years	10 (25.0%)	8 (20.0 %)	Ordinal
	5–10 years	18 (45.0%)	20 (50.0 %)	
	> 10 years	12 (30.0%)	12 (30.0 %)	
Education Level	Vocational (D3 Nursing)	28 (70.0%)	30 (75.0 %)	Nominal
	Professional (S1 Ners)	12 (30.0%)	10 (25.0 %)	

Table 2. Overview of Pre-test and Post-test Values of Knowledge, Performance, and Documentation Skills of Nurses at RSUD Sungaililin and RSUD Bayung Lencir

Variable	Hospital	Pre-test (n=40)	Post-test (n=40)
Knowledge	RSUD Sungai Lilin	Low: 12 (30%) Moderate: 20 (50%) High: 8 (20%)	Low: 2 (5%) Moderate: 14 (35%) High: 24 (60%)
	RSUD Bayung Lencir	Low: 10 (25%) Moderate: 22 (55%) High: 8 (20%)	Low: 3 (7.5%) Moderate: 10 (25%) High: 27 (67.5%)
Performance	RSUD Sungai Lilin	Poor: 14 (35%) Fair: 18 (45%) Good: 8 (20%)	Poor: 3 (7.5%) Fair: 11 (27.5%) Good: 26 (65%)
	RSUD Bayung Lencir	Poor: 16 (40%) Fair: 17 (42.5%) Good: 7 (17.5%)	Poor: 4 (10%) Fair: 12 (30%) Good: 24 (60%)
Documentation Skills	RSUD Sungai Lilin	Inadequate: 15 (37.5%) Adequate: 18 (45%) Excellent: 7 (17.5%)	Inadequate: 3 (7.5%) Adequate: 12 (30%) Excellent: 25 (62.5%)

	RSUD Bayung Lencir	Inadequate: 17 (42.5%) Adequate: 17 (42.5%) Excellent: 6 (15%)	Inadequate: 5 (12.5%) Adequate: 13 (32.5%) Excellent: 22 (55%)

Table 3: Differences in Knowledge, Performance, and Documentation Skills between RSUD Sungaililin and RSUD Bayung Lencir – Pre-Test Intervention

Variable	Hospital	Mean ± SD / Median (IQR)	p-value	Test Used	Interpretation
Knowledge Score	Sungai Lilin	65.2 ± 8.4	0.207	Independent t-Test	No significant difference
	Bayung Lencir	66.7 ± 7.9	0.213	Independent t-Test	No significant difference
Performance Score	Sungai Lilin	Median = 63 (IQR 58–70)	0.130	Mann-Whitney U Test	No significant difference
	Bayung Lencir	Median = 61 (IQR 56–69)	0.142	Mann-Whitney U Test	No significant difference
Documentation Skills	Sungai Lilin	Median = 60 (IQR 55–68)	0.112	Mann-Whitney U Test	No significant difference
	Bayung Lencir	Median = 58 (IQR 54–66)	0.116	Mann-Whitney U Test	No significant difference

Table 4: Differences in Knowledge, Performance, and Documentation Skills between RSUD Sungaililin and RSUD Bayung Lencir – Post-Test Intervention

Variable	Hospital	Mean ± SD / Median (IQR)	p-value	Test Used	Interpretation
Knowledge Score	Sungai Lilin	85.3 ± 6.2	0.032	Independent t-Test	Significant difference, higher in Sungai Lilin
	Bayung Lencir	81.5 ± 7.4	0.04	Independent t-Test	No significant difference, lower than Sungai Lilin
Performance Score	Sungai Lilin	Median = 85 (IQR 80–90)	0.001	Mann-Whitney U Test	Significant difference, higher in Sungai Lilin
	Bayung Lencir	Median = 80 (IQR 75–85)	0.001	Mann-Whitney U Test	Significant difference, lower than Sungai Lilin
Documentation Skills	Sungai Lilin	Median = 88 (IQR 80–92)	0.014	Mann-Whitney U Test	Significant difference, higher in Sungai Lilin

Bayung Lencir	Median = 82 (IQR 75–85)	0.028	Mann-Whitney U Test	Significant difference, lower than Sungai Lilin

Table 5: Differences in Knowledge, Performance, and Documentation Skills between RSUD Sungaililin and RSUD Bayung Lencir – Pre-Test and Post-Test Intervention

Variable	Hospital	Pre-Test	Post-Test	p-value	Test Used	Interpretation
Knowledge Score	RSUD Sungai Lilin	65.2 ± 8.4	85.3 ± 6.2	< 0.001	Paired t-Test	Significant increase after training
	RSUD Bayung Lencir	66.7 ± 7.9	81.5 ± 7.4	< 0.001	Paired t-Test	Significant increase after training
Performance Score	RSUD Sungai Lilin	Median = 63 (IQR 58–70)	Median = 85 (IQR 80–90)	< 0.001	Wilcoxon Signed-Rank Test	Significant improvement in performance
	RSUD Bayung Lencir	Median = 61 (IQR 56–69)	Median = 80 (IQR 75–85)	< 0.001	Wilcoxon Signed-Rank Test	Significant improvement in performance
Documentation Skills	RSUD Sungai Lilin	Median = 60 (IQR 55–68)	Median = 88 (IQR 80–92)	< 0.001	Wilcoxon Signed-Rank Test	Significant improvement in documentation skills
	RSUD Bayung Lencir	Median = 58 (IQR 54–66)	Median = 82 (IQR 75–85)	< 0.001	Wilcoxon Signed-Rank Test	Significant improvement in documentation skills

Table 1 presents the sociodemographic profiles of respondents from RSUD Sungai Lilin and RSUD Bayung Lencir, each consisting of 40 nurses. The average age of nurses at RSUD Sungai Lilin was 31.45 ± 5.32 years, while at RSUD Bayung Lencir it was 32.10 ± 4.97 years, indicating a relatively similar age distribution. Gender distribution was also comparable, with a slightly higher proportion of females in both hospitals. In terms of length of service, most respondents had 5–10 years of experience, accounting for 45% at Sungai Lilin and 50% at Bayung Lencir, suggesting a moderately experienced workforce. Regarding educational background, the majority of nurses held a vocational diploma (D3 in Nursing), with 70% at RSUD Sungai Lilin and 75% at RSUD Bayung Lencir, while the remaining held a professional degree (S1 Ners). Overall, the two groups were demographically comparable, supporting the validity of subsequent interventional comparisons.

Table 2 illustrates the distribution of knowledge, performance, and documentation skills among nurses at RSUD Sungai Lilin and RSUD Bayung Lencir before and after the 3S-based documentation training. At baseline, most respondents in both hospitals demonstrated moderate levels of knowledge, with only 20% achieving high scores. Following the intervention, there was a marked increase in the proportion of nurses in the high knowledge category rising to 60% at RSUD Sungai Lilin and 67.5% at RSUD Bayung Lencir. Similarly, performance improved significantly; the percentage of nurses rated as having "good" performance increased

from 20% to 65% at RSUD Sungai Lilin and from 17.5% to 60% at RSUD Bayung Lencir. Documentation skills also showed substantial enhancement: the proportion of nurses categorized as having "excellent" skills rose from 17.5% to 62.5% in RSUD Sungai Lilin and from 15% to 55% in RSUD Bayung Lencir. These findings indicate that the training program was effective in improving all three domains across both hospitals.

Table 3 shows a comparison of nurses' knowledge, performance, and documentation skills between RSUD Sungai Lilin and RSUD Bayung Lencir prior to the 3S-based documentation training. The pre-test results indicate no statistically significant differences between the two hospitals in any of the measured variables. Knowledge scores were comparable ($p = 0.207$), as were performance scores ($p = 0.130$) and documentation skills ($p = 0.112$). These findings suggest that baseline levels of knowledge, clinical performance, and documentation proficiency were relatively similar across both hospital groups before the intervention, thereby supporting the comparability of the two cohorts for evaluating the training's effectiveness.

Table 4; The post-test comparison indicates that RSUD Sungai Lilin outperformed RSUD Bayung Lencir in all measured variables following the intervention. Nurses at RSUD Sungai Lilin achieved significantly higher knowledge scores (85.3 ± 6.2) than those at RSUD Bayung Lencir (81.5 ± 7.4), with a p-value of 0.032, suggesting a meaningful difference in knowledge acquisition. Similarly, performance scores were significantly higher in Sungai Lilin (Median = 85, IQR 80–90) compared to Bayung Lencir (Median = 80, IQR 75–85), with a p-value of 0.001. Documentation skills also showed a statistically significant advantage in Sungai Lilin (Median = 88, IQR 80–92) over Bayung Lencir (Median = 82, IQR 75–85), with a p-value of 0.014. These results suggest that while both groups benefitted from the training, the nurses at RSUD Sungai Lilin exhibited greater post-intervention improvements.

Table 5 demonstrates the significant impact of the 3S-based nursing documentation training on nurses' knowledge, performance, and documentation skills in both RSUD Sungai Lilin and RSUD Bayung Lencir. In both hospitals, post-test scores showed statistically significant improvements across all variables. At RSUD Sungai Lilin, knowledge scores increased from 65.2 ± 8.4 to 85.3 ± 6.2 ($p < 0.001$), performance improved from a median of 63 (IQR 58–70) to 85 (IQR 80–90), and documentation skills rose from a median of 60 (IQR 55–68) to 88 (IQR 80–92). Similarly, RSUD Bayung Lencir showed significant gains, with knowledge increasing from 66.7 ± 7.9 to 81.5 ± 7.4 ($p < 0.001$), performance from a median of 61 (IQR 56–69) to 80 (IQR 75–85), and documentation skills from a median of 58 (IQR 54–66) to 82 (IQR 75–85). These results confirm that the intervention effectively enhanced nurses' competencies in both settings.

DISCUSSION

This study aimed to assess the effectiveness of the 3S-based nursing documentation training (SDKI, SLKI, SIKI) on improving nurses' knowledge, performance, and documentation skills across two hospitals: RSUD Sungai Lilin and RSUD Bayung Lencir. The results demonstrate significant improvements in all three domains knowledge, performance, and documentation skills post-intervention in both hospitals. However, differences were observed in the extent of improvement between the two hospitals, suggesting that

hospital-specific factors may play a role in the effectiveness of the training.

The sociodemographic characteristics of nurses from both RSUD Sungai Lilin and RSUD Bayung Lencir, as presented in Table 1, revealed no statistically significant differences in variables such as age, gender, length of service, or educational attainment. This baseline similarity ensures that both groups were demographically comparable prior to the intervention, thereby enhancing the internal validity of the study. Such homogeneity minimizes the risk of confounding factors that could influence the outcomes independently of the training, allowing for a more accurate attribution of observed changes in knowledge, performance, and documentation skills to the 3S-based training intervention itself. By establishing a balanced foundation, this comparability strengthens the reliability of the intergroup comparisons and supports the robustness of the study's conclusions.

The analysis of pre-test and post-test results (Table 2) showed a substantial improvement in nurses' knowledge, performance, and documentation skills following the 3S-based training. In both hospitals, the proportion of nurses achieving high knowledge scores increased significantly, with 60% of nurses at RSUD Sungai Lilin and 67.5% at RSUD Bayung Lencir demonstrating high knowledge post-intervention. Similarly, the improvement in performance was notable, as the percentage of nurses rated as having "good" performance increased significantly. Documentation skills also showed considerable improvement, with a rise in the proportion of nurses achieving "excellent" documentation skills, particularly at RSUD Sungai Lilin, where 62.5% of nurses achieved "excellent" skills after the training. These findings are consistent with previous studies that have shown the positive impact of targeted training programs on nursing competencies (Berman et al., 2021; Sari et al., 2021).

The pre-test comparison (Table 3) revealed no significant differences in knowledge, performance, or documentation skills between the two hospitals. This suggests that the groups were comparable at baseline, and any differences observed post-intervention can be attributed to the training itself rather than pre-existing disparities in skills or knowledge. The post-test comparison (Table 4), however, showed that RSUD Sungai Lilin outperformed RSUD Bayung Lencir in all measured variables, with statistically significant differences in knowledge, performance, and documentation skills. While both hospitals benefited from the training, the greater improvements observed at RSUD Sungai Lilin suggest that other factors, such as hospital-specific resources or organizational support for the training, may have contributed to these results.

The 3S-based nursing documentation training is grounded in the theory of adult learning, which emphasizes the importance of practical, real-world applications of knowledge. By focusing on real-time documentation practices, the training aligns with the concept of experiential learning, where nurses gain skills through active engagement and reflection on their practice (Purnamasari et al., 2023; Sege et al., 2022; Wisuda, 2020). The significant improvements in documentation skills observed in both hospitals reflect the success of this hands-on, practice-oriented approach. Moreover, the improvements in knowledge and performance highlight the potential of training programs to foster lifelong learning among nurses, an essential aspect of professional development in healthcare (Meadus, 2023; Ambarwati et al., 2019). The use of evidence-based practices in training ensures that nurses not only enhance their skills but also contribute to the overall

quality of patient care by improving the accuracy and comprehensiveness of nursing documentation.

The choice of statistical tests was based on the normality of the data. For normally distributed data, independent and paired sample t-tests were employed, whereas for non-normally distributed data, the Mann-Whitney U and Wilcoxon Signed-Rank tests were applied. This methodological rigor ensured the reliability of the findings and allowed for valid comparisons between the two hospitals. The use of $p < 0.05$ as the threshold for statistical significance provided confidence that the observed differences were unlikely due to chance.

The selection of statistical tests in this study was guided by the results of the Shapiro-Wilk normality test, conducted separately for each variable and hospital. For the knowledge scores, the data were normally distributed, with Shapiro-Wilk p-values as follows: RSUD Sungai Lilin pre-test = 0.207**,** RSUD Bayung Lencir pre-test = 0.213**,** RSUD Sungai Lilin post-test = 0.132, and RSUD Bayung Lencir post-test = 0.145**.** As all values exceeded the 0.05 threshold, parametric tests were deemed appropriate. Accordingly, independent sample t-tests were used to compare knowledge scores between the two hospitals, while paired sample t-tests evaluated pre- and post-intervention differences within each hospital. Conversely, the performance scores and documentation skills did not meet normality assumptions, with Shapiro-Wilk test p-values consistently below 0.05 (e.g., performance score RSUD Sungai Lilin pre-test = 0.031**,** documentation skills RSUD Bayung Lencir pre-test = 0.027**)**, indicating non-normal data distribution. As a result, non-parametric tests were employed. The Mann-Whitney U test was used for inter-hospital comparisons, and the Wilcoxon Signed-Rank test was used for within-hospital comparisons across pre- and post-intervention phases. This rigorous methodological approach ensured that each statistical test aligned with the underlying data characteristics, thus enhancing the validity and reliability of the findings. A significance level of $p < 0.05$ was consistently applied to confirm that any observed differences were statistically meaningful and unlikely due to chance.

The significant improvements in all three domains (knowledge, performance, and documentation skills) after the intervention, as demonstrated in Table 5, suggest that the 3S-based training is an effective strategy for enhancing nursing competencies. These results are consistent with other studies that have highlighted the positive impact of structured training programs on improving nurses' clinical and documentation skills (Tauran & Tunny, 2023; Sulistyawati & Susmiati, 2020)

This study demonstrates that the 3S-based nursing documentation training significantly improves nurses' knowledge, performance, and documentation skills in both RSUD Sungai Lilin and RSUD Bayung Lencir. The findings suggest that such training can enhance nursing competencies and improve the quality of patient care. However, hospital-specific factors may influence the degree of improvement, and further research is needed to explore these variables. Overall, this study supports the effectiveness of the 3S-based training program and highlights its potential for application across diverse hospital settings.

Strengths and Limitations

This study provides valuable insights into the effectiveness of the 3S-based nursing documentation training (SDKI, SLKI, SIKI), demonstrating significant improvements in nurses' knowledge, performance, and documentation skills. The comparative design across two hospitals

enhanced the generalizability of the findings, suggesting the program's broad applicability. Additionally, the use of robust statistical analyses ensured the reliability of the results, with both normal and non-normal data distributions being appropriately addressed. These strengths contribute to the validity of the findings and underscore the program's potential in improving critical nursing competencies that directly impact patient care.

However, the study has notable limitations. The absence of long-term follow-up assessments prevents the evaluation of knowledge and skill retention over time, which is essential for understanding the sustained impact of the training. Additionally, reliance on self-reported measures introduces the possibility of response biases, and future studies would benefit from incorporating objective assessments. Organizational factors, such as leadership support and hospital resources, were not explored, yet these may influence the effectiveness of the training. Furthermore, while the sample size is adequate, a larger, more diverse sample would improve the generalizability of the findings across different hospital settings. Future research addressing these limitations will help refine the training and assess its long-term sustainability.

CONCLUSION

In conclusion, this study demonstrates that the 3S-based nursing documentation training (SDKI, SLKI, SIKI) effectively improves nurses' knowledge, performance, and documentation skills at both RSUD Sungai Lilin and RSUD Bayung Lencir. Significant improvements were observed across all three domains post-intervention, with notable differences between the two hospitals, suggesting that hospital-specific factors may influence the degree of improvement. The findings highlight the potential of this training program to enhance nursing competencies and contribute to higher quality patient care. However, further research is needed to explore the impact of organizational factors and to assess the long-term sustainability of these improvements.

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