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The Effect Of Proctor Supervision Model On Nurses' Compliance Level In Performing Wound Care According To SOP (Standard Operating Procedure) In Flamboyan 5 Surgical Inpatient Ward At Dr. Moewardi Regional General Hospital

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ABSTRACT

Introduction
Nurse compliance with wound care procedures remains a challenge in ensuring patient safety, particularly in surgical wards that require precision in clinical practice (Kamil & Wardhani, 2020; Wang & Lee, 2020). Inconsistent adherence to standard operating procedures (SOPs) may increase the risk of infection and affect the quality of nursing services. Therefore, effective supervision is required to improve compliance in clinical practice.

Objective
This study aimed to analyze the effect of the Proctor supervision model on nurses' compliance in performing wound care according to standard operating procedures in the Flamboyan 5 Surgical Inpatient Ward at Dr. Moewardi Regional General Hospital.

Method: This study used a quasi-experimental design with a pre-test and post-test approach without a control group. A total of 19 nurses were selected using the total sampling technique. Data were collected using a Guttman scale observation sheet consisting of 26 wound care procedure indicators. Data were analyzed using univariate and bivariate methods. Because the data were not normally distributed, the Wilcoxon Signed Rank Test was used to examine differences in compliance scores before and after the intervention.

Results: Before supervision, all respondents (100%) were categorized as partially compliant. After the Proctor supervision intervention, seven nurses (36.8%) were categorized as compliant, while twelve nurses (63.2%) remained partially compliant. Statistical analysis showed a significant difference between pre- and post-intervention compliance scores ($p < 0.05$).

Conclusion: The Proctor supervision model can be considered a useful strategy to improve nurse compliance in wound care practice and to support patient safety and nursing care quality.

Keywords : Proctor supervision model, nurse compliance, wound care, SOP (Standard Operating Procedure)

Introduction

Nurses' compliance with standard operating procedures for wound care is an essential element in maintaining the quality of nursing services and patient safety. Wound care requires consistent application of aseptic principles, use of personal protective equipment (PPE), proper wound cleaning techniques, and accurate documentation. Inconsistencies in the implementation of these procedures have the potential to increase the risk of infection, prolong recovery time, and reduce the overall quality of health services (Kamil & Wardhani, 2020; Xiong et al., 2021).

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Various studies report that the level of compliance among nurses in wound care is still not optimal, particularly in the practice of hand hygiene, the use of PPE, and the consistent application of aseptic techniques (Wang & Lee, 2020).

This condition is not only found at the global level, but also in the context of hospital services in Indonesia. The preliminary observation results in the Flamboyan 5 Surgical Inpatient Ward at Dr. Moewardi Regional General Hospital showed that compliance with PPE use has only reached 92%, which indicates that there is still a gap between the established standards and clinical practices.

The low level of compliance among nurses is influenced by various factors, both individual characteristics and organizational factors. Gender, education level, and length of experience are known to contribute to variations in nurse compliance behavior in clinical practice (Kim et al., 2021; Wang & Lee, 2020; Varghese et al., 2022). Additionally, high workload, time constraints, and a lack of direct guidance and supervision in the service unit also contributed to non-compliance with the wound care Standard Operating Procedures (Sari & Pramesti, 2020; Garcia & Santos, 2021) . These findings confirm that increased compliance cannot be achieved through written regulations only, but requires structured and continuous guidance strategies (Weaver et al., 2021).

Clinical supervision is one of the approaches that effectively improves the quality of nursing practice. One of the most widely used supervision models is the Proctor model, which integrates three main functions: the formative function for competency development, the normative function to ensure compliance with the regulations, and the restorative function to provide psychological support to nurses. This approach allows supervision to focus not only on monitoring, but also on reflective learning and strengthening work motivation (Buus & Gonge, 2019; Fowler, 2020).

Some previous studies show that the Proctor supervision model can enhance the consistency of clinical practice, professional accountability, and adherence to nursing procedures (Cross et al., 2020; Ellis & Hogard, 2021). Through a systematic supervision mechanism, nurses receive constructive feedback and support that encourages behavioral changes in their practice towards greater compliance with the standards. However, empirical evidence regarding the effect of the Proctor supervision model on nurse compliance in wound care, particularly in surgical inpatient settings, is still limited (Watkins, 2018; Rodney & Hartrick, 2020).

Based on these conditions, this study was conducted to analyze the effect of the Proctor supervision model on the nurses' level of compliance in performing wound care according to SOPs (Standard Operating Procedures) in the Flamboyan 5 Surgical Inpatient Ward at Dr. Moewardi Regional General Hospital. This study specifically examined the characteristics of the respondents, the level of nurse compliance before and after the supervision, and the compliance changes that occurred as a result of implementing the Proctor supervision model. The results of this study can be used as a foundation for strengthening nursing supervision practices to enhance service quality and patient safety.

Methods

This study used a quasi-experimental design with a pre-test and post-test approach without a control group to assess changes in nurse compliance before and after the supervision intervention (Sugiyono, 2021). The study was conducted from May to October 2025 in the Flamboyan 5 Surgical Inpatient Ward at Dr. Moewardi Regional General Hospital, involving 19 nurses selected through total sampling. The research instrument was a Guttman scale observation sheet with 26 wound care action indicators based on SOPs (Standard Operating Procedures), covering hand hygiene, personal protective equipment (PPE) use, aseptic techniques, dressing removal, wound cleaning, dressing selection, and documentation.

Inter-rater reliability was tested using Cohen's Kappa (K = 1.000), which indicates perfect agreement between raters (McHugh, 2012). In this study, four proctors served as observers responsible for assessing nurses' compliance with the wound care Standard Operating Procedure (SOP). The observations were conducted using a structured observation

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checklist developed based on the established steps of the wound care SOP (Standard Operating Procedure).
The Cohen's Kappa test was applied to evaluate the level of agreement and consistency of assessments among the four proctors, ensuring that the observations were conducted with a similar understanding and interpretation of the assessment criteria.
The result demonstrates that the observers had a highly consistent perception in evaluating nurses' adherence to the wound care procedures.

The study's observation procedure was carried out in the Flamboyan 5 Surgical Inpatient Ward at Dr. Moewardi Regional General Hospital in a sequential manner between May and October of 2025. To establish uniformity in assessing nurses' adherence to the wound care standard operating procedures (SOPs), a perception alignment session was held among the supervisors (Proctors) prior to data collection. A first observation (pre-test) was conducted to determine the baseline level of nurses' compliance in providing wound care after this calibration stage. Following the completion of the baseline measurement, the Proctor model supervision intervention was put into effect by providing nurses with reflective feedback, remedial instruction, demonstration of appropriate procedures, and direct observation during clinical practice. Following the implementation of the supervision intervention, a follow-up observation (post-test) was carried out using the same observation tool to assess changes in nurses' compliance (Koivula et al., 2021; Litherland, 2023).

After the intervention, a follow-up observation (post-test) was conducted using the same instrument to ensure that there was a change in compliance. The distribution of compliance and the traits of the respondents were described by univariate data analysis. After the Shapiro-Wilk normality test revealed that the data were not normally distributed, a bivariate analysis was conducted using the Wilcoxon Signed Rank Test. A significant threshold of $p < 0.05$ was established.

Results

This study involved 19 nurses, most of them are female, who held a Diploma in Nursing (D3) and had less than three years of work experience. So that the majority of respondents were nursing staff in the early stages of their clinical career development. Inter-rater reliability was tested using Cohen's Kappa test (McHugh, 2012).

Variable	Cohen's Kappa values	Error standard	T *Approximate*	Significance	Numbers of respondents
Cohen's Kappa test	1.000	0,000	3,162	0,002	10

Table 1 Inter-rater Reliability Analysis Using Cohen's Kappa

Based on the table above, the results of the inter-rater reliability analysis using Cohen's Kappa test show that the K value = 1.000 with p = 0.002 (N = 10). A Kappa value of 1.000 indicates that the supervisors fully agree on the nurses' compliance with standard operating procedures (SOPs) for wound care. These results indicate that the supervisors' assessments in this study were highly consistent, ensuring that differences in compliance scores were not influenced by assessor subjectivity; indeed, this shows that the actual conditions in the field influenced the variation in scores (McHugh, 2012).

Then, univariate analysis was conducted using respondent characteristics examined based on gender, education level, and length of work experience (Sugiyono, 2021).

Characteristics	Category	n	%
Gender	Female (F)	14	73.7
	Male (M)	5	26.3
Education level	Diploma in Nursing (*D3*)	13	68.4
	Professional Nurse (*Ners*)	5	26.3

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	Bachelor of Nursing (*S.Kep*)	1	5.3
Length of work experience	< 3 years	12	68.4
	3–10 years	3	15.7
	> 10 years	4	21.1

Table 2 Respondents' Characteristics (n = 19)

As shown in Table 2, the majority of respondents were female (73.7%). In terms of educational level, most respondents held a Diploma in Nursing (68.4%), while 26.3% had completed a Professional Nurse degree. Additionally, the majority of respondents had less than three years of work experience (68.4%) (Benner, 2001; Potter et al., 2021).

This indicates that the majority of respondents were nursing staff who were relatively new to clinical practice, particularly in performing wound care in the Flamboyan 5 Surgical Inpatient Ward at Dr. Moewardi Regional General Hospital, Surakarta.

The frequency distribution of wound care compliance levels before and after the Proctor supervision model intervention among respondents was divided into three groups based on scores:

Score	Compliance Level
0–15	Non-compliant
16–25	Partially compliant
> 26	Compliant

Table 2 Compliance Level

Compliance level	N	%
Non-compliant	0	0.0
Partially compliant	19	100
Compliant	0	0
Total	19	100

Table 3 Distribution of Wound Care Compliance Before Intervention (Pre) (n = 19)

Before the Proctor supervision model intervention, all respondents were in the partially compliant category for wound care compliance, with 19 respondents (100%). No respondents were categorized as compliant or non-compliant.

After the Proctor supervision model intervention, there was an increase in wound care compliance levels. Seven respondents (36.8%) were in the compliant category, while 12 respondents (63.2%) remained in the partially compliant category. No respondents were found in the non-compliant category. This change in distribution indicates an improvement in wound care compliance behavior following the Proctor supervision model intervention (Fowler, 2020; Cross et al., 2020).

Statistic	Pre Intervention	Post Intervention
n	19	19
Mean	21.16	24.68
Std Dev	1.01	1.34
Min	19	22
Max	23	26
Median	21	25

Table 5 Descriptive Statistics Table for Pre-Post Intervention

The results of compliance measurements in the pre-intervention stage showed that all nurses (100%) were in the partially compliant category with an average score of 21.9 out of 26 indicators. These findings indicate that prior to supervision, most SOP (Standard Operating Procedure) steps had not been optimally implemented, especially regarding hand hygiene, aseptic technique, dressing removal, and care documentation (World Health Organization, 2020; Potter et al., 2021). After the Proctor supervision model intervention was implemented, there was a significant increase in compliance. The percentage of nurses in the compliant category increased to 36.8%, while 63.2% remained partially compliant. The average

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compliance score increased to 25.1, representing an increase of 3.2 points or approximately 12.3% compared to pre-intervention levels.
This improvement was evident across most indicators, especially in critical steps such as pre-procedure hand hygiene, application of proper aseptic techniques, wound cleaning according to protocols, appropriate dressing selection, and clinical documentation (Weller et al., 2020)..

The compliance data were initially recorded as numerical scores derived from 26 wound care observation indicators. A normality test was conducted on these numerical scores to determine the appropriate statistical method for analyzing differences in compliance before and after the intervention. The categorized compliance levels (non-compliant, less compliant, and compliant) were used solely for descriptive presentation of the findings and were not used in the normality analysis. The Shapiro–Wilk test was applied to assess the distribution of the compliance scores because the sample size was fewer than 50 respondents (Ghasemi & Zahediasl, 2012). The results of the normality test indicated that the data were not normally distributed; therefore, a non-parametric statistical test, namely the Wilcoxon Signed Rank Test, was used to analyze the differences in compliance scores between the pre-intervention and post-intervention measurements.

Variable	p-value	Description
Pre-test Compliance	0.0767	Normally distributed (P > 0.05)
Post-test Compliance	0.0057	Not normally distributed (P < 0.05)

Table 6 Shapiro-Wilk Normality Test Results

The p-value for both variables ($p < 0.05$) indicates that the data distribution is not normally distributed. Therefore, the Wilcoxon Signed Rank Test, a non-parametric test, is used for the statistical analysis to determine the difference in compliance scores pre- and post-intervention (Field, 2018).

Variable	Mean Rank	Z	p-value	Description
Pre vs Post Test Compliance	4.38	-3.827	0.00018	Significant

Table 7 Wilcoxon Signed Rank Test Results

The statistical analysis using the Wilcoxon Signed Rank Test showed a p-value < 0.05, indicating a significant difference between compliance scores before and after supervision. Thus, it can be suggested that the implementation of the Proctor model of supervision was associated with an improvement in nurses' compliance in performing wound care according to the standard operating procedures (Fowler, 2020; Cross et al., 2020).

Discussion

1. Respondent Characteristics and Their Implications on Compliance

The results of the study show that the majority of respondents were female (73.7%). The dominance of females in nursing is a global phenomenon, as reported by the WHO, and it is consistent with the characteristics of the profession in various countries (World Health Organization, 2020). Several studies mention that gender can influence procedural compliance behavior, with a tendency for female nurses to have higher levels of accuracy and compliance in certain clinical steps (Garcia & Santos, 2021). However, the evidence of gender's influence on service quality is not always conclusive because it is also influenced by organizational factors, experience, and education (Carayon & Gurses, 2019).

Most respondents had a Diploma in Nursing (D3) education background (68.4%), while 26.3% were professional nurse degree (Ners) graduates. This shows that most of the nursing staff in that ward came from vocational education. Previous studies have confirmed that educational level influences clinical reasoning skills, understanding of protocols, and the application of evidence-based practices (Benner et al., 2010; Potter et al., 2021). However, these differences can be minimized through sustainable training, competency development programs, and structured clinical supervision (Fowler, 2020).

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Thus, the dominance of D3 graduates is not a major obstacle if the institution provides consistent guidance mechanisms.

In addition, 68.4% of nurses had less than three years of work experience. This finding is important because less experienced nurses are generally still adapting to the unit culture, workload, and consistent (Standard Operating Procedure) implementation (Benner, 2001). Previous studies have confirmed that nursing staff with limited work experience require more intensive supervision to ensure consistency in clinical procedures and prevent non-compliant work habits from developing (Cross et al., 2020). Therefore, the respondent characteristics in this study—predominantly female nurses with vocational education backgrounds and relatively new clinical experience—provide crucial context for understanding the low pre-intervention compliance rates and the need for effective clinical supervision.

2. Pre-Intervention Analysis and Associated Factors

All respondents in this study were classified as partially compliant prior to the Proctor supervision model intervention. This condition demonstrates that although nurses possessed basic skills, there was an inconsistency in wound care (Standard Operating Procedure) implementation. This situation aligns with studies showing that high workloads, large patient volumes, and fast-paced work dynamics in surgical wards often contribute to reduced procedural compliance (Kim et al., 2021; Varghese et al., 2022). Non-compliance in wound care can increase the risk of surgical site infections, prolong hospital stays, and increase healthcare costs (World Health Organization, 2020; Weller et al., 2020).

Other contributing factors include technical competence issues and lack of regular training. Several studies indicate that without guidance, feedback, and direct supervision, nurses tend to unconsciously experience declining compliance (Fowler, 2020; Ellis & Hogard, 2021). This is reinforced by findings that suboptimal organizational culture and patient safety systems can cause Standard Operating Procedures to be regarded as mere formalities (Weaver et al., 2021).

Additionally, the low pre-test compliance scores indicate that the previous supervision system had not been functioning effectively. International literature confirms that clinical supervision without direct observation, formative guidance, and psychological support is unlikely to improve procedural consistency (Cross et al., 2020). The Proctor model itself emphasizes three functions—formative, normative, and restorative—which have been proven to enhance clinical practice quality (Proctor, 2001; Fowler, 2020).

The pre-intervention findings in this study also relate to work motivation. Nurses who lack emotional support, recognition, or feedback tend to perform tasks mechanically without attention to quality (Ryan & Deci, 2020). Thus, the low compliance prior to intervention highlights the need for a more structured and comprehensive supervisory approach.

3. Post-Intervention Analysis Results and Effectiveness of the Proctor Model Supervision

The implementation of the Proctor supervision model showed a significant impact on improving nurse compliance. The average score increased from 21.9 to 25.1 (12.3% improvement), and the compliance category changed significantly from 94.7% "partially compliant" to 52.6% "compliant." This change is both statistically and clinically significant, indicating that supervision plays a crucial role in improving wound care procedural consistency (Cross et al., 2020; Ellis & Hogard, 2021).

The greatest improvement occurred in technical procedures such as hand hygiene, aseptic technique, dressing removal, wound cleaning, and dressing selection according to wound condition. This demonstrates that a supervision mechanism combining demonstration, real-time correction, and direct feedback is highly effective in developing procedural skills (Fowler, 2020). Improvements in clinical reasoning aspects, such as dressing selection, also demonstrate that supervision not only improves technical skills but also enhances nurses' analytical abilities (Benner et al., 2010).

From a learning theory perspective, the effectiveness of this intervention aligns with the concept of observational learning, where modelling, observation, and reinforcement are key to clinical behavior change. Proctor supervision provides all three elements,

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thereby improving nurses' self-efficacy, which, according to recent studies, is closely associated with enhanced procedural compliance (Bandura, 1997; Ryan & Deci, 2020).

Overall, the 12% increase in compliance scores has significant implications for patient safety. Consistent wound care performed according to Standard Operating Procedures has been proven to reduce the risk of wound infections and improve clinical outcomes. Thus, these findings strengthen the evidence that the Proctor supervision model is an effective intervention for improving clinical practice quality, particularly among nursing staff with relatively limited experience (Cross et al., 2020; Fowler, 2020).

Conclusion

This study concludes that Proctor supervision significantly improves nurse compliance in performing wound care according to Standard Operating Procedures in the Flamboyan 5 Surgical Inpatient Ward at Dr. Moewardi General Hospital. The increase in compliance scores from pre- to post-intervention demonstrates that supervision conducted through three supervisory functions as formative, normative, and restorative, successfully enhances technical skills, behavioral consistency, and nurses' understanding of the importance of standard procedure implementation. The Proctor model not only improves technical aspects but also promotes changes in nurses' attitudes and motivation through psychological support and continuous feedback. These findings confirm that structured clinical supervision is an effective strategy for improving nursing care quality, strengthening safety culture, and reducing surgical site infection risk. Therefore, implementation of the Proctor supervision model is recommended for routine application as an integral component of hospital nursing development systems.

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