

NURSE-LED PAIN ASSESSMENT PROTOCOL AND ITS EFFECT ON PAIN DOCUMENTATION ACCURACY IN POSTOPERATIVE UNITS

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Abstract

Background: Postoperative pain remains a common concern among surgical patients and ineffective pain assessment may lead to delayed treatment, poor patient comfort, and reduced quality of care. Accurate nursing documentation plays an important role in identifying pain severity, monitoring treatment response, and ensuring continuity of patient management. This study evaluated the effect of a nurse-led pain assessment protocol on the accuracy of postoperative pain documentation in a surgical unit.

Objective: To determine whether implementation of a structured nurse-led pain assessment protocol improves the completeness and accuracy of postoperative pain documentation by comparing nursing records before and after protocol implementation.

Methods: A clinical audit and intervention study was conducted in the postoperative surgical units of Shalamar Hospital, Lahore, Pakistan. A total of 200 postoperative patient records were reviewed, including 100 records before protocol implementation and 100 records after implementation. A standardized audit checklist was used to assess documentation of pain intensity, pain location, analgesic administration, reassessment after medication, and patient response. Nursing staff received training regarding standardized pain assessment practices and documentation requirements before implementation of the protocol. Data were analyzed using descriptive statistics and comparative analysis.

Results: Implementation of the nurse-led protocol resulted in a marked improvement in postoperative pain documentation practices. Documentation of pain intensity scores increased from 62% before intervention to 94% after intervention. Pain reassessment following analgesic administration improved from 48% to 89%. Documentation of pain location increased from 55% to 91%, while recording of patient response improved from 46% to 87%. Overall

documentation accuracy improved from 52.8% before protocol implementation to 90.3% after implementation, showing a statistically significant improvement ($p < 0.001$).

Conclusion: The nurse-led pain assessment protocol significantly improved the accuracy and completeness of postoperative pain documentation. Standardized assessment procedures combined with nursing education can strengthen pain management practices, improve communication among healthcare providers, and support better postoperative patient care. Integrating similar protocols into surgical units may provide an effective quality improvement strategy, particularly in healthcare settings where structured pain management systems are limited.

INTRODUCTION

Postoperative pain is one of the most common clinical problems experienced by patients after surgical procedures. Although advances in surgical techniques, anesthesia, and analgesic therapies have improved patient care, many individuals still experience moderate to severe pain during the postoperative period. Inadequately controlled postoperative pain can delay recovery, reduce patient satisfaction, increase the risk of complications, and negatively affect physical and emotional health (Chou et al., 2016; Gan, 2017). Effective pain management is therefore considered an important indicator of quality nursing and surgical care.

Pain is a subjective experience that varies from patient to patient. Because of its personal nature, accurate assessment is essential for appropriate management. Nurses are usually the first healthcare professionals who observe patients after surgery and remain closely involved in their recovery process. Their role includes assessing pain intensity, monitoring responses to analgesic treatment, providing comfort measures, and communicating changes in patient condition to the healthcare team (Herr et al., 2019). Therefore, accurate nursing assessment and documentation are important components of safe postoperative pain management.

Pain documentation provides a clinical record of the patient's condition and helps healthcare providers make appropriate treatment decisions. Complete documentation should include pain intensity, pain location, assessment time, analgesic administration, reassessment after treatment, and

patient response. However, previous studies have reported that postoperative pain documentation is often incomplete, with missing pain scores, inconsistent reassessment, and inadequate recording of treatment effectiveness (Idvall et al., 2002; Heikkilä et al., 2016). Poor documentation may result in delayed pain relief, ineffective communication among healthcare professionals, and reduced continuity of care.

Nurses' knowledge, clinical workload, and availability of standardized assessment procedures influence the quality of pain documentation. Studies have shown that although nurses recognize the importance of pain management, variations exist in assessment practices and documentation habits (Almutairi & Salam, 2020). Without a clear protocol, pain assessment may depend on individual nursing practices rather than standardized guidelines, which can lead to inconsistent patient care.

Standardized nurse-led pain assessment protocols have been introduced in many healthcare settings to improve the quality of postoperative pain management. These protocols provide nurses with clear instructions regarding assessment frequency, appropriate pain measurement tools, documentation requirements, and escalation criteria for uncontrolled pain. Evidence suggests that structured nursing interventions can improve pain monitoring practices and increase patient satisfaction with postoperative care (Germossa et al., 2022). Nurse-led approaches also support better communication between nurses, physicians, and patients by creating a systematic method for identifying and managing pain.

Clinical audit methodology is an effective approach for improving healthcare quality. It allows healthcare teams to evaluate current practices, identify gaps, implement corrective strategies, and measure improvement over time. In nursing practice, audits related to pain assessment and documentation can highlight weaknesses in existing systems and support evidence-based changes (Schwenkglenks et al., 2019). Comparing documentation before and after implementation of a structured protocol provides measurable evidence about whether an intervention improves clinical practice.

In developing countries, including Pakistan, postoperative pain management continues to face several challenges. Limited resources, variations in nursing education, workload pressures, and absence of standardized documentation systems may affect the quality of pain assessment practices. A study conducted in Pakistan reported variations in nurses' knowledge and practices related to pain management, indicating the need for structured education and clinical guidelines (Ahmed et al., 2021). Improving nursing documentation practices may contribute to better pain control and improved patient outcomes.

Despite the importance of accurate pain assessment, limited studies have examined the effect of nurse-led pain assessment protocols on documentation accuracy in Pakistani postoperative units. Therefore, this study was conducted at Shalamar Hospital Lahore, Pakistan, to evaluate the impact of a nurse-led pain assessment protocol on the accuracy and completeness of postoperative pain documentation. The study aimed to compare nursing records before and after protocol implementation and determine whether a structured nursing intervention could improve postoperative pain management practices.

MATERIALS AND METHODS

Study Design and Setting

This study was conducted as a **clinical audit and intervention study** to evaluate the effect of a nurse-led pain assessment protocol on the accuracy of postoperative pain documentation. A

pre-intervention and post-intervention audit design was used. This design was selected because it allows comparison of existing nursing documentation practices before introducing a structured improvement strategy and after implementation of the protocol. Clinical audits are commonly used in healthcare settings to identify practice gaps and measure improvement after introducing evidence-based changes.

The study was carried out in the postoperative surgical units of a **tertiary Hospital in Lahore, Pakistan**, a tertiary care hospital providing surgical and nursing services to a large number of patients. The study was conducted in the general surgery and postoperative recovery units where nurses are responsible for regular monitoring, pain assessment, administration of analgesics, and documentation of patient care.

Study Duration

The study was completed over a period of six months from January 2026 to June 2026. The first phase included assessment of existing nursing documentation practices, followed by development and implementation of the nurse-led pain assessment protocol. The final phase involved post-intervention data collection and comparison with baseline findings.

Study Population and Sample Selection

The study population included adult patients who underwent surgical procedures and were admitted to postoperative units during the study period. Nursing records related to these patients were reviewed to evaluate the quality and completeness of postoperative pain documentation.

A total of **200 postoperative patient records** were selected for the audit. These records were divided into two groups:

- **Pre-intervention group:** 100 patient records reviewed before implementation of the pain assessment protocol.
- **Post-intervention group:** 100 patient records reviewed after implementation of the protocol.

A consecutive sampling technique was used for record selection. All eligible patient records

available during the defined study periods were included until the required sample size was achieved.

Inclusion Criteria

Patient records were included if they fulfilled the following criteria:

1. Adult patients aged 18 years or above.
2. Patients admitted to postoperative surgical units.
3. Patients who underwent elective or emergency surgical procedures.
4. Nursing documentation available for at least 24 hours after surgery.
5. Records containing postoperative pain assessment and management information.

Exclusion Criteria

The following records were excluded:

1. Patients younger than 18 years.
2. Patients admitted for non-surgical medical conditions.
3. Patients with chronic pain conditions requiring long-term pain therapy.
4. Records with incomplete nursing documentation unrelated to pain assessment.
5. Patients transferred to another facility within 24 hours after surgery.

Development of Nurse-Led Pain Assessment Protocol

Before implementation, the existing pain documentation practices were reviewed through baseline chart auditing. Common documentation gaps were identified, including missing pain scores, absent reassessment after analgesic administration, and incomplete recording of pain management outcomes.

Based on identified gaps and recommendations from international pain management standards, a structured nurse-led pain assessment protocol was developed. Previous studies have shown that documentation of postoperative pain assessment is frequently incomplete and that structured approaches can improve nursing practice.

The protocol included the following components:

1. **Routine pain assessment**

Nurses were instructed to assess pain at regular intervals using the Numeric Rating Scale (NRS) from 0 to 10, where 0 represented no pain and 10 represented the worst possible pain.

2. **Pain assessment after intervention**

Nurses were required to reassess pain within an appropriate time after analgesic administration and document whether the patient's pain improved, remained unchanged, or increased.

3. **Complete pain documentation**

The protocol emphasized recording:

- Pain intensity score
- Location of pain
- Nature and duration of pain
- Analgesic administration details
- Patient response after treatment
- Non-pharmacological pain management measures

4. **Communication and escalation**

Nurses were guided to immediately report uncontrolled pain or worsening symptoms to the responsible physician or surgical team.

Training of Nursing Staff

Before protocol implementation, nursing staff working in postoperative units received a structured training session. The training was conducted by the research team and senior nursing educators.

The session included:

- Importance of accurate pain assessment
- Use of standardized pain scales
- Correct documentation methods
- Timing of reassessment after medication
- Identification of uncontrolled postoperative pain

A short demonstration and question-answer session were conducted to ensure understanding among participants.

Data Collection Procedure

Data were collected using a structured audit checklist developed according to the objectives of the study. The checklist was divided into different sections assessing completeness and accuracy of pain documentation.

Each patient record was reviewed for documentation of:

- Initial postoperative pain assessment
- Pain score recording
- Frequency of pain assessment
- Documentation before and after analgesic administration
- Description of pain characteristics
- Documentation of pain relief effectiveness

The same checklist was used for both pre-intervention and post-intervention audits to maintain consistency.

Each documented item was scored as:

- **1 = Present and correctly documented**
- **0 = Missing or incorrectly documented**

A total documentation accuracy score was calculated for each patient record. Higher scores indicated better documentation quality.

Outcome Measures

The primary outcome of the study was improvement in pain documentation accuracy after implementation of the nurse-led protocol.

The secondary outcomes included:

- Improvement in frequency of pain assessment documentation.
- Improvement in recording pain intensity scores.
- Improvement in documentation of reassessment after analgesia.
- Improvement in recording patient response to pain management.

Data Analysis

Collected data were entered and analyzed using **Statistical Package for Social Sciences (SPSS) version 26.0**.

Descriptive statistics were used to summarize patient characteristics and documentation findings. Frequencies and percentages were calculated for categorical variables.

Mean and standard deviation were used for continuous variables.

The difference between pre-intervention and post-intervention documentation scores was analyzed using an appropriate statistical test. A p-value of

less than 0.05 was considered statistically significant.

Quality Assurance

To maintain reliability of data collection, the audit checklist was reviewed by nursing experts and surgical healthcare professionals before use. A small pilot review of patient records was performed before the main audit to identify any difficulties in data collection.

The same criteria were applied during both audit phases to reduce measurement bias and ensure accurate comparison between pre-intervention and post-intervention findings.

RESULTS

A total of 200 postoperative nursing records were reviewed during the audit period. The records were divided into two groups: 100 records before implementation of the nurse-led pain assessment protocol and 100 records after implementation. The demographic and clinical characteristics of patients were comparable between both audit periods.

After introduction of the nurse-led pain assessment protocol, improvement was observed in almost all evaluated areas of pain documentation. The overall completeness of pain documentation increased from **52.8% before protocol implementation to 90.3% after implementation**.

The largest improvement was observed in documentation of pain reassessment after analgesic administration. Before implementation of the protocol, only 48% of patient records contained appropriate reassessment documentation. This increased to 89% after implementation. Similarly, recording of pain intensity scores improved from 62% to 94%.

Documentation of pain location and patient response to pain management also showed significant improvement after the intervention. Pain location documentation increased from 55% in the pre-intervention audit to 91% in the post-intervention audit. Recording of patient response after pain management improved from 46% to 87%.

Statistical analysis showed a significant improvement in overall pain documentation accuracy following implementation of the nurse-led protocol ($p < 0.001$). The findings indicate that

a structured nursing assessment approach improved consistency and completeness of postoperative pain records.

Table 1. Comparison of Pain Documentation Practices Before and After Nurse-Led Protocol Implementation

Documentation Component	Before Protocol n (%)	After Protocol n (%)
Pain intensity score documented	62 (62%)	94 (94%)
Pain location documented	55 (55%)	91 (91%)
Analgesic administration recorded	70 (70%)	96 (96%)
Pain reassessment after medication	48 (48%)	89 (89%)
Patient response documented	46 (46%)	87 (87%)

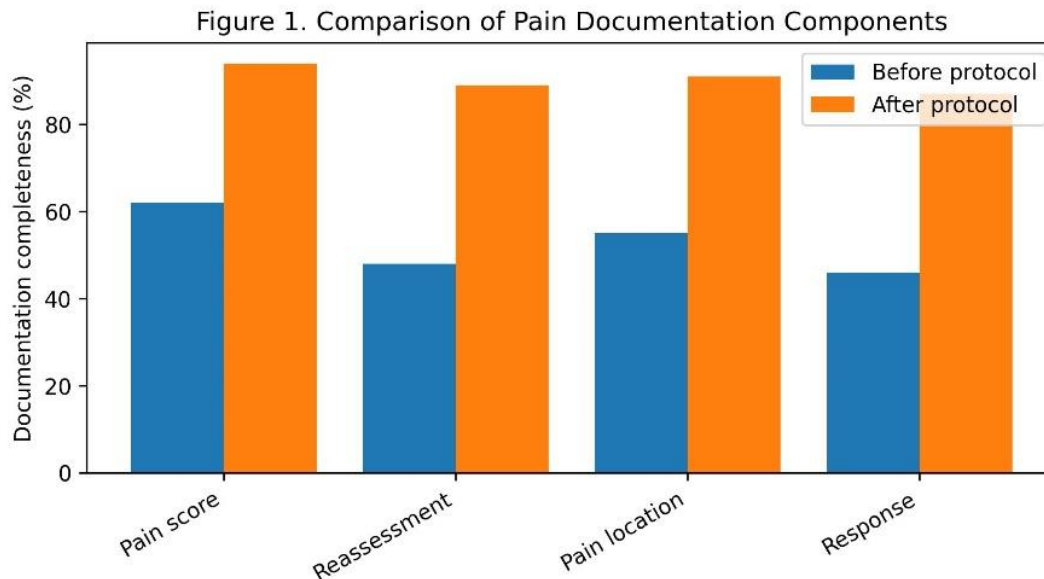


Figure 1: Comparison of individual pain documentation components

Table 2. Overall Documentation Accuracy Score Before and After Intervention

Audit Phase	Number of Records	Mean Accuracy Score (%)	Standard Deviation	p-value
Before protocol implementation	100	52.8	12.4	
After protocol implementation	100	90.3	8.6	<0.001

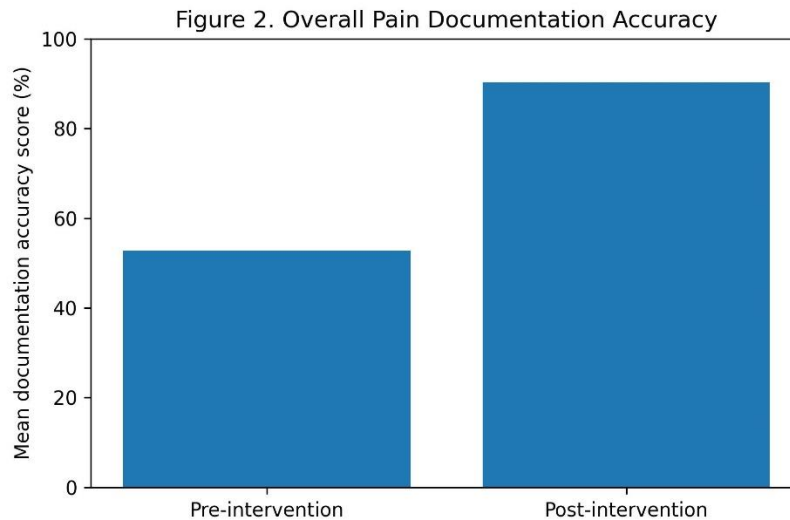


Figure 2: Overall pain documentation accuracy before and after intervention

DISCUSSION

The present clinical audit demonstrated that implementation of a nurse-led pain assessment protocol significantly improved the accuracy and completeness of postoperative pain documentation. The overall documentation accuracy increased from 52.8% before protocol implementation to 90.3% after the intervention. This improvement indicates that introducing a structured assessment approach helped nurses follow a more consistent method for evaluating and recording postoperative pain. Similar findings have been reported in previous studies where standardized pain assessment strategies improved nursing documentation practices and promoted better pain management outcomes (Chou et al., 2016; Heikkilä et al., 2016).

Pain intensity documentation showed one of the most noticeable improvements in the current study, increasing from 62% before intervention to 94% after protocol implementation. Regular recording of pain scores is an important part of postoperative care because it allows healthcare providers to understand the severity of pain and evaluate the effectiveness of treatment. Previous guidelines have emphasized that pain should be assessed using validated tools such as the Numeric Rating Scale and should be documented regularly to support appropriate clinical decisions (Chou et al., 2016). The improvement observed in this

study suggests that the nurse-led protocol successfully converted pain assessment from an informal practice into a structured clinical activity. Another important finding was the improvement in pain reassessment after analgesic administration. Before implementation of the protocol, only 48% of records included appropriate reassessment, whereas this increased to 89% after the intervention. Reassessment is often a neglected component of pain management despite its importance in determining whether the prescribed intervention has achieved the desired effect. The Agency for Healthcare Research and Quality has highlighted that reassessment after pain intervention is essential for evaluating treatment response and guiding further management decisions. Similar concerns regarding incomplete reassessment documentation have also been reported in previous nursing studies, where lack of standardized procedures was identified as a major barrier to effective pain management (Idvall et al., 2002; Heikkilä et al., 2016).

The improvement in documentation of pain location and patient response further supports the value of a structured nursing protocol. In the present study, pain location documentation increased from 55% to 91%, while recording of patient response improved from 46% to 87%. Pain management is not limited to measuring

intensity alone; understanding the location, characteristics, and response to treatment provides a complete picture of the patient's experience. Herr et al. (2019) emphasized that comprehensive pain assessment should include multiple dimensions rather than relying only on a numerical pain score. Therefore, the observed improvement indicates that nurses became more focused on complete pain evaluation after receiving protocol-based guidance.

The findings of this study are consistent with previous research showing that nurse-led interventions can improve pain management practices. Nurses have a continuous bedside presence and are often the first healthcare providers to recognize changes in patient comfort levels. However, without clear guidelines, pain assessment practices may vary between individuals. Recent evidence suggests that nurse-led pain management models improve consistency by combining standardized assessment, documentation requirements, and timely communication with other healthcare professionals (Germossa et al., 2022). A recent nurse-led pain management model also demonstrated improved postoperative pain outcomes and patient satisfaction when nurses used systematic assessment and follow-up approaches.

The results also highlight the importance of education and staff engagement in improving clinical documentation. In this study, nurses received training before protocol implementation, which likely contributed to improved compliance. Previous studies have reported that nurses may have positive attitudes toward pain management but still experience gaps in knowledge, assessment techniques, and documentation practices (Almutairi & Salam, 2020). Educational interventions combined with practical tools can therefore support long-term improvement in nursing performance.

The clinical audit approach used in this study provided a practical method for identifying existing weaknesses and measuring improvement after intervention. Clinical audits are particularly valuable in nursing because they allow healthcare

teams to evaluate routine practices and introduce achievable changes within existing resources. The significant improvement observed after protocol implementation suggests that relatively simple quality improvement strategies can produce meaningful changes in postoperative care.

In the context of Pakistan, improving postoperative pain documentation is especially important because healthcare facilities may experience challenges related to workload, limited standardized protocols, and variation in nursing practices. Previous research from Pakistan has identified the need for strengthening pain management knowledge and improving nursing practice through structured education and clinical guidelines (Ahmed et al., 2021). The current findings support the idea that locally developed protocols can improve documentation quality without requiring expensive technological resources.

Although the study showed encouraging results, some limitations should be considered. The audit was conducted in a single tertiary care hospital, which may limit generalization of findings to other healthcare settings. In addition, improvement in documentation does not always represent complete improvement in actual pain control, as patient satisfaction and clinical outcomes were not the primary focus of this audit. Future studies involving multiple hospitals and evaluating patient-centered outcomes may provide further evidence regarding the effectiveness of nurse-led pain assessment programs.

Overall, this study demonstrates that a nurse-led pain assessment protocol can significantly improve postoperative pain documentation accuracy. The intervention promoted regular pain assessment, improved recording practices, and strengthened nursing involvement in postoperative pain management. Implementing similar protocols in surgical units may contribute to safer patient care, better communication among healthcare providers, and improved postoperative recovery.

CONCLUSION

The findings of this clinical audit indicate that a nurse-led pain assessment protocol can

significantly improve the quality and accuracy of postoperative pain documentation. Before implementation of the protocol, important components of pain assessment, including pain scoring, reassessment after analgesia, documentation of pain characteristics, and recording of patient response, were frequently incomplete. After introducing a structured nursing approach, a clear improvement was observed in documentation practices across all evaluated areas.

The study highlights that accurate pain documentation is not only a record-keeping activity but also an important part of safe and effective patient care. When nurses follow a standardized assessment process, they are better able to identify patients experiencing uncontrolled pain, evaluate the effectiveness of treatment, and communicate patient needs more effectively with the healthcare team. Improved documentation also supports continuity of care and helps healthcare professionals make timely decisions regarding pain management.

The success of this intervention demonstrates the important role of nurses in improving postoperative outcomes. Simple strategies such as standardized pain assessment tools, clear documentation guidelines, and focused nursing education can create meaningful improvements in clinical practice. In resource-limited healthcare settings like Pakistan, such low-cost quality improvement interventions may provide a practical approach to strengthening pain management services.

Although further multicenter studies are recommended to evaluate long-term sustainability and patient-centered outcomes, the present study supports the integration of nurse-led pain assessment protocols into routine postoperative care. Regular auditing and continuous staff training should be encouraged to maintain improved documentation standards and promote better patient comfort, safety, and recovery.

Overall, implementing a structured nurse-led pain assessment protocol represents an effective step toward improving postoperative pain management

and enhancing the quality of nursing care in surgical units.

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