Original Article

Deficiencies in Assessment of Postoperative Pain using Visual Analogue Scale among Healthcare Professionals in the General Surgery Department

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ABSTRACT

Background: Postoperative pain management is essential for optimal patient recovery, and accurate evaluation of pain levels significantly influences clinical decision-making. The Visual Analogue Scale (VAS) is a commonly used tool for measuring pain intensity; however, its implementation can vary across clinical settings. The objective was to assess the deficiencies in the assessment of postoperative pain using VAS among healthcare professionals in the General Surgery Department at Pakistan Institute of Medical Sciences, Islamabad.

Methodology: A cross-sectional observational study was conducted from 1st February to 14th February 2025 at the General Surgery Department, PIMS, Islamabad. All healthcare professionals involved in postoperative care, including house officers, postgraduate trainees, and other clinical staff were included. A self-made questionnaire was distributed in both printed and online formats to assess their knowledge and practices in postoperative pain assessment, including the frequency of VAS usage, reasons for non-compliance, training received, and alternative tools used. Descriptive data analysis was done. Frequencies and percentages were used to summarize the data using SPSS version 26.

Results: A total of 49 of 50 eligible healthcare professionals completed the questionnaire (98% response rate). Most respondents 32 (65.3%) were house officers, and rest were postgraduate students 17 (34.7%). Among them 25 (51%) participants had less than 1 year of experience in postoperative care. VAS was used "sometimes" by 28/49 (57.1%) of respondents, and majority 15/39 (38.5%) used it due to departmental protocol. Despite its potential utility, only 8 (16.3%) received formal training, and 18 (36.7%) had no training in VAS usage. The most significant barrier to VAS use was time constraints 29 (59.2%), followed by patient's lack of understanding 13 (26.5%). Alternative pain assessment tools, such as the Verbal Rating Scale (VRS), were frequently used by 23 (46.9%) participants.

Conclusion: The study revealed significant gaps in the consistent use of VAS for postoperative pain management, particularly due to a lack of formal training, patient-related challenges, and time constraints. Improving training for healthcare professionals, reinforcing patient education, and integrating institutional protocols for pain assessment could enhance VAS compliance.

Keywords: Postoperative Pain; Clinical Audit; Visual Analog Scale; Compliance; Healthcare Professionals

INTRODUCTION

Effective postoperative pain management is a critical component of patient care, directly influencing recovery time, postoperative complications, and overall patient satisfaction. Inadequate pain control can result in delayed mobilization increased morbidity and even the development of chronic pain syndromes.[1] To manage postoperative pain effectively, a timely and accurate assessment is essential.[2] Among the tools available, the Visual Analogue Scale (VAS) has gained wide recognition due to its simplicity, speed, and reliability in quantifying pain intensity.[3] The VAS consists of a 10 cm horizontal line where patients mark their perceived pain between "no pain" and "worst pain imaginable," allowing clinicians to convert subjective pain into quantifiable data. Current international consensus is moving away from simply using pain as a "fifth vital sign" to a multidimensional biopsychosocial approach that prioritizes patient function and quality of life over simple numerical measures. While basic numerical or visual scales are still helpful for monitoring acute pain, major organizations like the International Association for the Study of Pain (IASP) stress that routine assessments must be customized for each individual.[4]

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Post-operative pain needs to be effectively conveyed and appropriately managed, and it should be regularly assessed and recorded as a vital sign.[5] Sufficient pain treatment following surgery requires regular pain assessments and adequate documentation of pain management. Improving patient satisfaction, reducing complications, and enhancing recovery all depend on effective postoperative pain management.[6] Despite its clinical utility, compliance with standardized pain assessment tools such as VAS remains inconsistent in many healthcare settings, particularly in low-resource or high-turnover environments. Barriers such as lack of training, time constraints, patient misunderstanding, and institutional practices often hinder the routine use of VAS.[7] Evidence suggests that while the VAS is considered both valid and responsive, its use as a routine outcome measure is far from universal.[8] Factors that hinder its use as a routine outcome measure include its inherent subjectivity and potential for misinterpretation, practical limitations regarding its administration format and required resources, and challenges related to its applicability across diverse patient populations.[9]

Even though structured pain assessment has been shown to have advantages, there is still a significant information gap about how it is really used in settings with limited resources. In Pakistan and other developing healthcare settings, there is currently a conspicuous absence of local evidence or clinical audits assessing healthcare providers' adherence to standardized postoperative pain evaluation using the VAS. Although theoretical obstacles to VAS implementation, such as excessive workloads, cultural communication gaps, and institutional limitations, are regularly highlighted, it is still unclear how much of these obstacles result in non-compliance. Without empirical data, it is impossible to determine whether postoperative pain is being systematically under-assessed, poorly documented, or inadequately managed in local surgical wards. This study addresses this gap by conducting a study to evaluate baseline compliance rates with the VAS protocol. The objective of this study is to evaluate the current compliance and identify deficiencies in the application of the Visual Analogue Scale for postoperative pain assessment in the General Surgery Department at Pakistan Institute of Medical Sciences (PIMS), Islamabad.

METHODOLOGY

This is a cross-sectional observational study, conducted in the General Surgery Department of the Pakistan Institute of Medical Sciences (PIMS), Islamabad, from 1st February 2025 to 14th February 2025. Ethical approval for this audit was obtained from the Ethical Research Review Committee (ERRC), PIMS, Islamabad (F-5-2-2024(ERRC)/PIMS, dated 1st January 2025). Participation was voluntary, and responses were collected anonymously to maintain confidentiality.

The target population included all healthcare professionals involved in postoperative care within the General Surgery Department. This encompassed house officers, postgraduate trainees, and other clinical staff responsible for pain assessment and management during the postoperative period. A total of 50 healthcare professionals were approached, out of which 49 completed the questionnaire, yielding a response rate of 98%. Data was collected using a self-administered, questionnaire distributed in both printed and online formats (i.e., Google Forms) to ensure ease of access for all participants. Eligibility criteria comprised inclusion of all house officers and postgraduate residents working in the General Surgery Department during the audit period, clinical staff directly involved in the postoperative monitoring and management of patients, and individuals willing to participate and provide informed responses. Consultants and staff not involved in direct postoperative care, administrative or non-clinical personnel, and participants providing incomplete or duplicate questionnaire responses were excluded. Participants were briefed on the purpose of the study, and informed consent was implied through voluntary participation. Completed responses were collected anonymously to maintain confidentiality and minimize response bias. A questionnaire was designed using some items of a validated tool from "The Knowledge and Attitudes Survey Regarding Pain (KASRP)," developed by Ferrel and McCaffery, revised in 2014.[10] The tool's content was based on the standards of pain management such as the American Pain Society and the World Health Organization (WHO) guidelines.[11,12] Internal consistency reliability for this tool was established (alpha r > 0.7). The questionnaire was used to explore the key areas: frequency of VAS usage, training and education on VAS, perceived challenges and barriers, alternative tools used for pain assessment, patient compliance and understanding, methods used to ensure score accuracy, clinicians' interpretation and reliance on VAS scores. The collected data were entered and analyzed using IBM SPSS Statistics Version 26. Descriptive statistics, including frequencies and percentages, were used to summarize the responses.

RESULTS

A total of 49 responses were collected out of 50 participants, with a response rate of 98%. 32 (65.3%) participants were house officers and 17 (34.7%) were postgraduate trainees. Regarding postoperative care experience, 25 (51.0%) respondents had 1 year of involvement, while 9 (18.3%) each had either less than 1

year or 2 years of experience, and 6 (12.2%) reported more than 2 years of experience. When asked about the frequency of Visual Analogue Scale (VAS) use, only 7 (14.3%) reported using it always, 4 (8.2%) often, 28 (57.1%) sometimes, and 10 (20.4%) never. **Figure 1** shows the main reasons for using VAS in postoperative pain management by doctors. A total of 30 (61.2%) respondents found VAS effective for assessing postoperative pain, 3 (6.1%) found it ineffective, and 16 (32.6%) were neutral. However, the primary barriers shown in **Figure 2** to not using VAS were time constraints, 29 (59.2%), followed by patient difficulty in understanding information, 13 (26.5%).

Most respondents agreed on the importance of patient education in ensuring VAS compliance; 7 (55.1%) rated it as important and 11 (22.4%) as crucial, while 11 (22.4%) did not respond. Specifically, 19 (38.7%) participants reported being self-taught in VAS usage, 18 (36.7%) had received no training at all, 8 (16.3%) had undergone formal structured training, and 4 (8.2%) had informal training via social platforms. Alternative pain assessment tools used besides VAS are shown in Table 1. As for the perceived reliability of VAS, 12 (24.5%) participants believed it to be more reliable than other tools, 19 (38.8%) viewed it as equally reliable, and 18 (36.7%) had no opinion. Table 2 summarizes the key factors influencing VAS use.

Regarding the accuracy with which patients complete the VAS, only 4 (8.2%) of respondents reported that patients always completed it accurately; 16 (32.7%) indicated that patients often completed it accurately; 18 (36.7%) said patients sometimes completed it accurately; and 11 (22.4%) stated that patients never completed it.

In terms of interpreting VAS scores, 16 (32.6%) of respondents used them in combination with other assessments, 14 (28.5%) relied on predefined thresholds, 11 (22.4%) interpreted them relative to patient history, and another 8 (16.3%) did not assess their clinical significance at all. Patient age was also found to have an impact on VAS compliance. 23 (46.9%) respondents reported that age has a moderate impact on VAS completion, while 15 (30.6%) indicated it has a significant impact. Only a small percentage of participants (8; 16.3%) were unsure about the impact, while the rest (3; 6.1%) noted either minimal or no impact.

DISCUSSION

This study revealed notable deficiencies in the use of the Visual Analogue Scale (VAS) for postoperative pain assessment by healthcare professionals. Although VAS is considered a validated and widely recommended tool for quantifying pain intensity, a significant proportion of respondents reported either occasional or no use of it.[10]

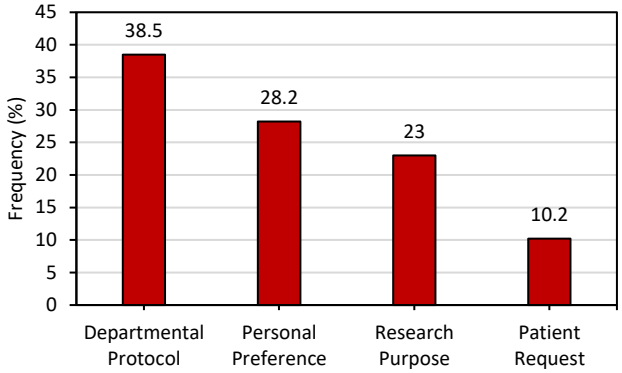


Figure 1: Primary reasons for using VAS in postoperative pain management

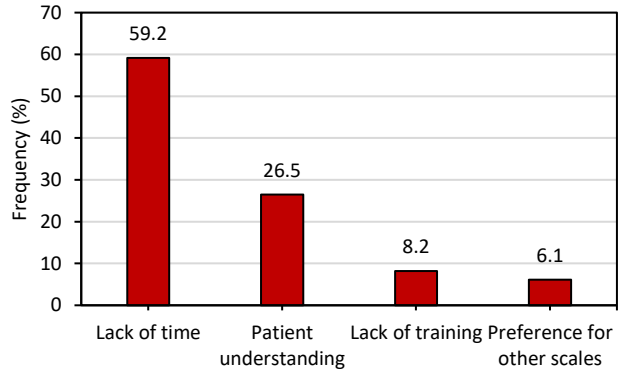


Figure 2: Primary barriers to VAS use

Table 1: Alternative pain assessment tools used besides visual analog scale (VAS)

Pain Assessment Tool	Frequency n (%)
Verbal Rating Scale (VRS)	23 (46.9%)
Numerical Rating Scale (NRS)	7 (14.3%)
Faces Pain Scale	10 (20.4%)
None	9 (18.4%)

Table 2: Key factors influencing visual analog scale (VAS) use

Factor	Frequency, n (%)
Clinical guidelines	18 (36.7)
Personal experience	14 (28.6)
Patient preference	8 (16.3)
Institutional policy	5 (10.2)
Other	4 (8.2)

Specifically, only 7 (14.3%) respondents reported always using VAS, while a majority (n = 28, 57.1%) admitted using it only sometimes. This finding aligns with global trends showing inconsistent adherence to standardized pain assessment protocols in surgical wards. [13,14]

This study also highlighted that a considerable number of professionals relied on alternative scales, such as the Verbal Rating Scale (VRS) and the Numerical Rating Scale (NRS), with 23 (46.9%) favoring the VRS. While these tools are also validated, the inconsistency in tool usage reflects a lack of unified institutional policy and may

compromise the comparability of pain assessments across patients and practitioners.[3,15]

Regarding the common barriers to using the VAS in our clinical practice, the study reported that the primary reason was a lack of time (n = 29, 59.2%). This suggests that, despite the simplicity and utility of the VAS, its implementation may be perceived as time-consuming in fast-paced, busy clinical settings. This is consistent with a study whose data directly identifies "lack of time" as one of the top reported operational barriers (alongside knowledge and access) for clinicians trying to implement standard continuous scales like the VAS in active, high-volume practices.[16] The second most cited reason was patient difficulty in understanding or completing the scale (n = 13, 26.5%). This highlights a significant practical challenge, especially among populations with cognitive impairment, language barriers, low health literacy, or severe pain or sedation that may hinder their ability to engage with the tool. A study reported that 56% of patients were unable to understand how to complete the VAS. The difference may be due to a larger sample size.[17] As a study noted, non-verbal patients or those with cognitive limitations face substantial barriers in using pain assessment tools, emphasizing the need for more accessible alternatives.[18] One key factor limiting VAS use is the lack of formal training. In this study, only 8 (16.3%) of participants reported receiving formal training, while the majority were either self-taught or had received no training. This lack of structured education contributes to reduced confidence and inconsistent implementation; a pattern also identified in international studies.[13,19] Furthermore, Earlier evidence similarly noted that inadequate training and unfamiliarity with pain assessment tools hinder effective pain management.[14] Moreover, 8.2% of respondents cited a lack of resources as the main reason for not using VAS, underlining the need for better logistical and administrative support in implementing standardized pain tools. This echoes findings from multiple studies that emphasize the importance of healthcare infrastructure in ensuring effective pain management practices.[13,20,21]

Another noteworthy finding is that patient education was considered crucial by over 50% of participants in ensuring VAS compliance. This emphasizes the bi-directional nature of effective pain assessment, which requires both healthcare provider competence and patient understanding.[7] Yet, despite this awareness, strategies such as regular audits or staff training were minimally reported, suggesting an implementation gap that needs institutional attention.[5] Other studies have highlighted the role of patient education in ensuring that pain management tools like VAS are accurately completed and lead to better clinical outcomes.[1, 22,23]

Most healthcare professionals (45.8%) in this study indicated that patient age has a moderate impact on VAS compliance, with 31.3% perceiving a significant impact. This finding is consistent with existing literature, which highlights that age-related factors, such as cognitive impairments in older patients and comprehension difficulties in younger patients, can affect their ability to accurately complete the VAS form.[24,25] Older patients, especially those with cognitive or sensory issues, may struggle with the scale, leading to inaccurate pain reporting. Similarly, younger patients, particularly children or those with limited understanding, may also face challenges with VAS. These factors emphasize the need for age-appropriate pain assessment tools and additional patient education to improve VAS compliance.

Based on the findings of this study and supported by established guidelines, healthcare staff training, patient education, development of institutional policies, and routine monitoring/documentation are justified by the observed deficiencies in formal training, inconsistent VAS use, and perceived barriers to implementation

While this study provides valuable insights into the use of VAS for postoperative pain management, it is important to note some limitations. First, the sample size of 49 is small and may not fully capture the diversity of healthcare professionals involved in postoperative care, such as nurses and consultants. Additionally, since the data were self-reported, there may be bias in response accuracy, particularly regarding the frequency of VAS use or personal preferences. Further exclusion of other key healthcare professionals involved in postoperative pain assessment, actual clinical practice and patient outcomes were not directly audited. Finally, since this study was conducted in a single institution, the findings may not be directly applicable to other hospitals or settings, especially those with different organizational structures and patient populations.

CONCLUSION

This study reveals a significant gap in the proper utilization of the Visual Analogue Scale in the General Surgery Department at PIMS, Islamabad. Inadequate training, patient difficulties, and a lack of standardized practice are the key barriers to the implementation of proper VAS assessment. Standardizing training, reinforcing clinical guidelines, and promoting patient education are recommended for effective use of VAS for postoperative pain assessment.

Authors Contributions

ZK: Conception and design, analysis and interpretation of data, drafting the article, critical revision for important intellectual content, final approval.

SHW: Conception and design, analysis and interpretation of data.

Proofreading, final approval
AS: Analysis and interpretation of data, drafting the article.
MB: Acquisition of data, conception and design, analysis and interpretation.
SS: Analysis and interpretation of data.
AK: Conception and design, analysis.
ZJ: Conception and design, analysis.

AI Disclosure

The authors declared that no generative AI or AI-assisted technologies were used in the preparation of this manuscript

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