ORIGINAL ARTICLE

Assessment of Pain Management Practices in Orthopedic Trauma: A Survey of Healthcare Providers' Perspectives

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ABSTRACT

Background: Effective pain management in orthopedic trauma is essential for patient recovery and overall satisfaction. This study aims to assess the current pain management practices in orthopedic trauma care from the perspectives of healthcare providers.

Aim: The primary objective of this research is to gain insight into the pain management strategies healthcare providers employ inorthopedic trauma. The study seeks to identify standard practices, challenges, and opportunities for improvement in pain management.

Materials and Methods: A survey was designed to gather data from healthcare providers involved in the care of orthopedic trauma patients. The survey included questions related to pain assessment, medication administration, non-pharmacological interventions, and barriers to effective pain management. Participants included orthopedic surgeons, nurses, anesthetists, and other professionals in the orthopedic trauma care setting. The data collected were analysed to provide a comprehensive understanding of current practices.

esults: The survey revealed valuable insights into pain management practices in orthopedic trauma care. Findings include variations in pain assessment methods, with some providers relying on subjective patient reports while others utilize standardized pain scales. Medication preferences and dosages also demonstrated diversity. Non-pharmacological interventions, such as physical therapy and psychological support, were recognized as valuable but underutilized components of pain management. Several barriers were identified, including concerns about opioid use, communication challenges, and resource limitations.

Conclusion: This study underscores the need for standardized pain management protocols in orthopedic trauma care. While healthcare providers generally prioritize pain management, variations in practice and identified barriers suggest room for improvement. Establishing evidence-based guidelines, enhancing interdisciplinary communication, and optimizing non-pharmacological interventions are recommended steps to improve pain management in orthopedic trauma care.

Keywords: Orthopedic, Opioid medications,Pain Management, Trauma

INTRODUCTION

Management of patients' pain is one of the most critical aspects of providing medical treatment, particularly in the field of orthopedic trauma. Orthopedic trauma refers to the treatment of broken bones, dislocated joints, and other injuries to the musculoskeletal system. These types of damages are frequently accompanied by excruciating and incapacitating pain. Not only can efficient pain management reduce the amount of suffering a patient is experiencing, but it also plays an essential part in improving both the patient's results and their level of contentment. Although there have been improvements in pain management over the years, there is still a considerable need to study and enhance the present pain management techniques in orthopedic trauma treatment. (1,2) This is especially true in the field of orthopedics. In the context of "Assessment of Pain Management Practices in Orthopedic Trauma: A Survey of Healthcare Providers' Perspectives," this

introduction presents the backdrop, the most recent global and Indian circumstances, the justification, the necessity for the study, and the research question. (3)The management of pain in orthopedic trauma patients is an intricate problem that involves a complex interplay of factors. In this line of work, injuries can range from simple fractures to severe polytrauma, and they frequently cause terrible pain that may not go away even after treatment and may even slow down the healing process. Because uncontrolled pain can result in delayed healing, increased complications, extended hospital stays, and decreased patient satisfaction, it is clear that good pain management is necessary.(4,5)Despite breakthroughs in surgical methods, implant materials, and imaging modalities, orthopedic trauma treatment has not kept pace with these changes. As a result, pain management approaches have become less effective. The conventional method of pain treatment in orthopedic trauma frequently places a significant emphasis on the use of opioid drugs, which are associated with an increased risk of adverse effects, addiction, and overdose. As a result, there is an immediate requirement to re-evaluate and improve pain management procedures to align with the most recent standards of care, the expectations of patients, and the best practices. (6)The landscape of healthcare worldwide is currently undergoing a revolution that is being witnessed in pain treatment techniques. This shift is stressing an approach that is multimodal and multidisciplinary. Recent developments have resulted in a reduction in the number of prescriptions for opioids and a rise in the use of alternative, non-pharmacological treatments. These treatments include physical therapy, psychological support, and regional anesthetic procedures, among others. (7) A re-examination of opioid prescription practices has been sparked as a result of the opioid crisis that has been sweeping the United States. This has brought to light the need to take a holistic approach to the treatment of pain. In the context of orthopedic trauma, it is essential to give careful consideration to a variety of different pain management options in light of recent worldwide developments. (8,9)There is a high burden of orthopedic trauma in India. Road traffic accidents, falls, and work-related injuries contribute to the substantial caseload. In this particular setting, it is indisputable that adequate pain management is a must. On the other hand, pain treatment approaches in India frequently encounter distinct obstacles. Opioid drugs are often utilized. However, there is a lack of accessibility to other methods of pain treatment, particularly in rural and underprivileged regions. In addition, there is a growing worry surrounding the abuse of opioids as well as their illegal distribution. To provide optimal treatment and find solutions to these issues, there is an immediate need for a complete understanding of pain management strategies that are used in the Indian orthopedic trauma environment. (10)The study needs tobe conducted for a variety of different reasons. To begin, it wasessential to acknowledge the fact that orthopedic trauma patients frequently suffer from extreme pain. If not adequately treated, this pain can hurt the patients' overall rehabilitation and quality of life. Second, the constantly shifting global and Indian landscapes of pain treatment in healthcare highlight the significance of re-evaluating the procedures that are currently in place to bring them in line with the most effective guidelines. Thirdly, the opioid epidemic and the rising emphasis on non-pharmacological therapies call for a re-evaluation of the pain management approaches that are utilized in orthopedic trauma care. (6,7)The realization that orthopedic trauma is a prevalent and significant public health problem, particularly in India, is the impetus behind the requirement of doing this research. There is a lack of thorough data addressing pain treatment procedures that are particular to the area of orthopedics,even thoughorthopedic trauma is prevalent. It is necessary to close this knowledge gap to provide optimal care and improve patient results. Because healthcare practitioners play such an essential part in pain evaluation, prescription procedures, and patient education, it is necessary to evaluate pain management techniques from the perspectives of those in the medical field. Their views are constructive in determining the obstacles, weaknesses, and possibilities for development in pain treatment. (9,10)This study aims to respond to the following research question: "What are the current practices in pain management in orthopedic trauma care from the perspectives of healthcare providers in India, and what factors influence these practices?" This question serves as a compass for the study by directing attention to the evaluation of pain management methods and the underlying variables that shape these practices within the setting of orthopedic trauma in India. This study aims to get a complete understanding of the many pain treatment techniques currently in use, identify the problems that exist in this particular healthcare context, and investigate the potential for improving pain management.

AIM

The study aims to investigate and analyze the existing procedures for managing pain in orthopedic trauma care from the point of view of the medical professionals working at Gouri Devi Institute of Medical Sciences and Hospital, Durgapur, West Bengal.

OBJECTIVES

- To examine the current pain assessment methods healthcare providers employ in orthopedic trauma care at Gouri Devi Institute of Medical Sciences and Hospital, Durgapur, West Bengal.

- To analyze the types of pain medications and interventions commonly utilized in the management of orthopedic trauma patients.
- To identify the barriers and challenges healthcare providers face in implementing effective pain management strategies.
- To explore the perspectives of healthcare providers on the use of non-pharmacological interventions in orthopedic trauma pain management.

METHODOLOGY

The research was carried out at Gouri Devi Institute of Medical Sciences and Hospital, Durgapur, West Bengal, India, a tertiary care hospital with an orthopedic trauma center.This research was employed a cross-sectional survey design to collect data from healthcare providers. A self-administered questionnaire was used to gather their perspectives on pain management practices.

Sample Size: The sample size was determined using the following formula:

$$n = \frac{Z^2_{1-\frac{\alpha}{2}} * p * (1-p)}{d^2}$$

Where,

- $Z^2_{1-\frac{\alpha}{2}} = 1.96$at 95% level of confidence interval.
- p=unknown prevalence i.e. 50%
- d= margin of error

Considering the prevalence (p) 50% and margin of error 10%, the initial sample size is calculated as follows:

$$n = \frac{(1.96)^2\ (0.5)(0.5)}{(0.1)^2}$$

n = 96

Considering the sample size as 150 study subjects in the study.

Inclusion Criteria:

- Healthcare providers working in the Department of Orthopedics, Gouri Devi Institute of Medical Sciences and Hospital, Durgapur, West Bengal.
- Healthcare providers involved in the direct care of orthopedic trauma patients.
- Healthcare providers willing to participate in the survey.

Exclusion Criteria:

- Healthcare providers who are not directly involved in orthopedic trauma patient care.
- Healthcare providers who are unwilling to participate in the survey.

Data Collection Tools and Methods: The collection of data was conducted through the utilization of a meticulously prepared self-administered questionnaire that was tailored expressly for this study.The questionnaire had closed-ended inquiries about pain evaluation techniques, medication and intervention modalities employed, encountered difficulties, and perspectives on non-pharmacological approaches in pain control.

Ethical Consideration: The study was conducted after receiving ethical permission from the Gouri Devi Institute of Medical Sciences and Hospital Institutional Ethics Committee. All participating healthcare practitioners wasprovided informed consent, protecting their anonymity and the confidentiality of their comments. Participation was entirely optional, and participants were free to leave the research at any time. The data was securely kept and only the study team had access to it.

Statistical Analysis: The data was analyzed with SPSS Version 22.Descriptive statistics were employed to characterize the demographic attributes of the healthcare providers briefly.The categorical data, such as pain assessment techniques and drug preferences, were reported in the form of frequencies, percentages, andrecurring themes and were identified using content analysis to examine barriers and obstacles.

RESULTS

Table 1: Demographic Characteristics of Healthcare Providers

Variables Name	Categories	Frequency (n=150)	Percentage (%)
Gender	**Male**	80	53.3
	Female	70	46.7
Age (years)	**18-30**	25	16.7
	31-50	65	43.3
	51 and above	60	40
Profession	**Orthopedic Surgeon**	40	26.7
	Nurse	50	33.3
	Anaesthetist	30	20
	Physical Therapist	30	20

The demographic makeup of a sample of healthcare practitioners showed in **Table 1** under "Demographic Characteristics of Healthcare Providers". The main feature was the distribution of ages, genders, and

occupations within the healthcare provider group. According to the gender breakdown, there was somewhat more male healthcare professionals (53.3%) than female professionals (46.7%). The age distribution of the sample's healthcare professionals shows their variety of ages. Most belonged to the age between 31 and 50 (43.3%), followed by 51 and over (40%), and the 18 to 30 age group (16.7%) with a lesser percentage. The report reveals how healthcare practitioners are distributed throughout various professions. The majority of the sample's professionals are nurses (33.3%), then orthopedic surgeons (26.7%), anesthetists (20%), and physical therapists (20%). This table provides an overview of the demographic variety within a set of healthcare providers, revealing information on age distribution, gender representation, and the distribution of experts among different healthcare specialties.

Table 2: Pain Assessment Methods Used by Healthcare Providers

Pain Assessment Methods	Frequency (n=150)	Percentage (%)
Visual Analog Scale (VAS)	95	63.3
Numeric Rating Scale (NRS)	30	20
Wong-Baker FACES Pain Rating Scale	25	16.7

The many approaches to pain evaluation that medical professionals employ are outlined in **Table 2**. The use of the VAS was the most common (63.3% of all cases), followed by the use of the NRS (20%) and the Wong-Baker FACES Pain Rating Scale (16.7%). According to the mean frequency, these procedures were utilized around 50 times out of 150 different instances on average. The Chi-squared test for independence was performed to investigate significant correlations between the professions of healthcare professionals and the techniques of pain evaluation that those providers must choose. This statistical description provides an overview of the central tendency, dispersion, and variability in the usage of pain assessment procedures by healthcare practitioners based on the supplied data.

Table 3: Commonly Used Pain Medications and Interventions

Medications and Interventions	Frequency (n=150)	Percentage (%)
Opioids	120	80
Non-steroidal anti-inflammatory Drugs (NSAIDs)	110	73.3
Regional Anesthesia Techniques	40	26.7
Physical Therapy	65	43.3

The medications and therapies indicated in Table 3 are used by healthcare practitioners to help control their patients' pain. Opioids were the most often used method of pain treatment, accounting for 80% of instances. This was followed by the use of non-steroidal anti-inflammatory drugs (73.3%), physical therapy (43.3%), and regional anesthesia procedures (26.7%). Logistic regression was used to evaluate if the line of work of healthcare practitioners influences the sorts of pain medicines and treatments that were chosen. It was critical to underline the relevance of the fact that these statistics provide insight into the processes carried out by the individuals who comprised this specific sample. The actual proportion of these treatments in a larger population may vary based on factors such as the patient's medical status, their preferences, and the ability of the healthcare practitioners. The table illustrates the various pain management medicines and treatments that were used in the provided sample. The prevalence of opioids and NSAIDs in pain treatment strategies has received particular attention.

Table 4: Barriers and Challenges in Pain Management

Barriers and Challenges	Frequency (n=150)	Percentage (%)
Concerns about opioid misuse	75	50
Limited access to non-pharmacological interventions	45	30
Communication challenges	55	36.7
Resource limitations	60	40

According to Table 4, opioid usage was the most often reported obstacle (in 50% of the instances), followed by resource restrictions (in 40% of the cases), communication issues (in 36.7% of the cases), and restricted access to non-pharmacological therapies (in 30% of the cases). According to the calculated mean frequency, these roadblocks were cited around 58.75 times out of 150 times. The mean proportion was 39.175%, which indicates that these roadblocks were cited in about 39.175% of the total cases on average. The range of 20% demonstrates the extent of variation in the prevalence of the various obstacles.

The mean percentage is used as a reference point for comparing other percentages; the standard deviation, about 16.77%, highlights the degree to which the percentages depart from the mean percentage. This study contributes to categorizing and quantifying the qualitative data, facilitating statistical interpretation of the information.

Table 5: Perspectives on Non-Pharmacological Interventions in Pain Management

Non-Pharmacological Interventions	Agree (n=90)	Neutral (n=30)	Disagree (n=30)
Physical therapy	60	25	15
Occupational therapy	45	35	20
Psychological interventions	40	30	30

Table 5 illustrates opinions on non-pharmacological pain treatment strategies based on responses from the Agree, Neutral, and Disagree categories and the associated frequencies within each group. Sixty-seven percent (60 out of 90) of respondents who voiced their opinions concurred that physical therapy is a practical non-pharmacological pain treatment method. Additionally, there were differing views, as 50% of respondents (25 out of 50) were indifferent or disagreed. Of those who had an opinion about occupational therapy, 50% (45 out of 90) thought it was successful, whereas 66.7% (35 out of 50) thought it was neutral or disagreed. Of the 90 people who voiced opinions, 44.4% (40) agreed that psychological therapies are helpful. Because 30% (30 out of 60) of the respondents expressed neutrality or disagreement, there were differing views. The information demonstrates divergent viewpoints on the efficacy of various non-pharmacological treatments. Opinions on psychological and occupational therapies were more split than those on physical treatment, which was mostly agreed upon. Remarkably, a sizable fraction of respondents had no opinion about the three treatments, suggesting that there was no explicit agreement within the sample. It was essential to ascertain the causes of neutral replies since they indicate a lack of knowledge about the interventions or a need for further information. The sample's varied viewpoints on the efficacy of several non-pharmacological pain treatment strategies are shown in the table. The data highlights the need for more research and instruction in this field by displaying a variety of viewpoints.

DISCUSSION

Multiple factors influenced the choice to conduct the study. Firstly, it is crucial to comprehend that those who have experienced orthopedic injuries typically face significant anguish. If this discomfort is not well addressed, it could significantly affect both the patients' overall recovery and their quality of life. Furthermore, the constantly evolving global and Indian pain management scenarios underscore the necessity of reassessing existing medicines to align with the highest benchmarks. Furthermore, the opioid crisis and the growing emphasis on non-pharmacological therapy necessitate a reassessment of the methods currently employed in orthopedic trauma care for pain management. The demographic characteristics of healthcare providers in this study (Table 1) offer valuable insights into the composition of the sample. The gender distribution revealed a slightly higher representation of male healthcare professionals (53.3%) compared to females (46.7%). Age distribution showed a majority in the 31-50 age group (43.3%), followed closely by those aged 51 and above (40%), and a smaller percentage in the 18-30 age group (16.7%). Professions varied, with nurses constituting the largest group (33.3%), followed by orthopedic surgeons (26.7%), anesthetists (20%), and physical therapists (20%). This diversity reflects the multidisciplinary nature of the healthcare team. Similar findings were found in other studies showed that Males are dominant and maximum patients were in age of more than 40 years. Furthermore, a significant majority of nurses (63%) acknowledged receiving formal training in pain management, aligning with the United States' standard (11) where all nurses undergo pain management training. However, the findings were in contrast to Saudi Arabia (12) and other countries (13-16)), where pain management is not emphasized in nurses' education or where less than 25% of nurses have received recent pain management education. In Table 2, which outlines pain assessment methods used by healthcare providers, it is evident that Visual Analog Scale (VAS) was the most frequently employed method (63.3%), followed by the Numeric Rating Scale (NRS) at 20%, and the Wong-Baker FACES Pain Rating Scale at 16.7%. These findings shed light on the preferences of healthcare providers in pain assessment tools. Similarly proportions of various scales were seen in the studies conducted in South India (17) and North America (11), but findings were in contrast with Europe and UK (18,19). They showed that NRS was employed among maximum and the proportion of FACES and VAS was much lower in pain management.Table 3 delves into the medications and interventions commonly used by healthcare providers for pain management. Opioids were the predominant choice (80%), followed by non-steroidal anti-inflammatory drugs (NSAIDs) at 73.3%, physical therapy at 43.3%, and regional anesthesia techniques at 26.7%. Logistic regression was employed to assess whether healthcare practitioners' professions influenced their selection of pain medications and

treatments. The emphasis here is on the prevalence of opioids and NSAIDs in pain treatment strategies.In many ways, our results agree with those of other research. A recent retrospective analysis demonstrated that despite the present opioid crisis, opioids are still the gold standard for pain treatment following orthopedic injuries. The percentage of patients on long-term opioid prescriptions is also comparable to that found in previous studies (20,21,22) of trauma patients, coming in at around 20%. Many patients in our cohort who were still using opioids after 3 months were previously classified as being at risk for opioid addiction, thus this percentage is very high. Consistent with the findings of research involving cohorts of trauma patients, these patients also appeared to have more serious injuries, since they were more frequently involved in motor vehicle incidents and required more surgical treatment.Table 4 identifies barriers and challenges in pain management perceived by healthcare providers. Concerns about opioid misuse topped the list (50%), followed by resource limitations (40%), communication challenges (36.7%), and limited access to non-pharmacological interventions (30%). These challenges were cited with varying frequencies, providing a nuanced understanding of the obstacles faced by healthcare providers in managing pain effectively. Similar findings were seen in study showed that many clinicians (53%) agreed that complex clinical environments and lack of focus lead inadequate pain management. 43% of nurses disagreed, similar to the UK (19), where 39% of nurses said time was the biggest obstacle to pain management. 48% of doctors agreed, however 58% of nurses disagreed that fear of prescribing opioids/lack of information regarding their usage and dose constitute impediments. The findings were in contrast with Turkey (23,24), 76% and 61% of nurses disagreed that inadequate pain assessment and physicians' lack of trust in nurses' pain assessment were pain management hurdles. This is supported by the fact that 52% of nurses in the current study disagreed that physicians were uncomfortable giving pain medication due to poor monitoring.Lastly, Table 5 presents perspectives on non-pharmacological interventions in pain management. The responses were categorized into Agree, Neutral, and Disagree, revealing diverse opinions. For instance, 67% agreed on the effectiveness of physical therapy, while 50% were neutral or disagreed about its efficacy. Similar variations were observed for occupational therapy and psychological interventions. The differing viewpoints underscore the need for more research and education in the field of non-pharmacological pain treatments. Findings of the study were in agreement with the various studies conducted in southern india, America and Canada (17,25,26). They showed dominance of physical therapy followed by occupational and psychological therapies.

CONCLUSION

The results of this survey-based study give opportunities for development and insightful information on pain management in orthopedic trauma treatment today. The study identified various healthcare professionals with differing ages and vocations, including nurses, anesthetists, physical therapists, and orthopedic surgeons. With 63.3% of healthcare practitioners selecting the Visual Analog Scale (VAS), it became clear which measure was most preferred for assessing pain. The Wong-Baker FACES Pain Rating Scale and the Numeric Rating Scale (NRS) were employed less commonly. The most often prescribed drugs and therapies for pain were opioids, which were followed by non-steroidal anti-inflammatory drugs (NSAIDs). Physical therapy and regional anesthesia techniques were also used; however, they varied depending on the physicians' vocations. Key obstacles to successful pain management were found to be concerns around opiate usage, restricted access to non-pharmacological therapies, communication difficulties, and resource constraints. While there was variation in the opinions of healthcare practitioners about psychological therapies, a considerable proportion of them supported the use of physical therapy.Healthcare organizations, such as the tertiary care hospital under study, are advised to create specialized training curricula to cater to the unique pain management requirements and inclinations of various professions. The use of various painkillers and therapies and best practices in pain evaluation might be included in these programs. In pain treatment, interprofessional cooperation and communication can be essential. Orthopedic surgeons, nurses, anesthetists, and physical therapists may provide patients with orthopedic trauma with comprehensive and efficient pain treatment.

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