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Challenges in sedation and analgesia management in the critically ill patients: A survey study

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ABSTRACT

Background and aims: Sedation and analgesia management in critically ill patients is vital to reduce incidents, ICU stay, costs, morbidity, and mortality. Achieving optimal sedation is challenging due to patient variability, dynamic clinical situations, and unknown barriers to protocol implementation. This study aims to identify the barriers in ICU sedation and analgesia management.

Methods: This prospective observational survey study included 94 nurses working in the Intensive Care Unit (ICU) of Tribhuvan University Teaching Hospital (TUTH) between December 30, 2022 and January 30, 2023. Data were collected using a semi-structured questionnaire.

Results: Major barriers to sedation management included fear of over-sedation, adverse events, hemodynamic instability, and increased staff workload. For analgesia, barriers included concerns about drug dependence and prescription delays. Setting Richmond Agitation Sedation Scale (RASS) targets helped sedation management, while ongoing education was least helpful for sedation and analgesia.

Conclusions: This study identifies key challenges in sedation and analgesia management for critically ill patients, including fears of over-sedation, lack of protocols, insufficient training, and heavy workloads. While RASS assessment was a helpful facilitator, ongoing education was less effective. Implementing structured protocols, continuous training, and better collaboration is essential to improve care.

Keywords: *analgesia, challenges, critically ill patients, sedation.*

INTRODUCTION

Sedatives and analgesics are used for patients in critical care units to manage pain and agitation arising as a result of invasive procedures including insertion of endotracheal intubation, lines and catheters. Inadequate sedation and analgesia can result in detrimental effects including unintentional device removal, increase in length of intensive care unit (ICU) stay, delay in discharge and financial loss.[1] Oversedation is related to prolonged mechanical ventilation whereas under sedation is associated with agitation and adverse events.[2] Achieving optimal sedation is challenging, and oversedation as well as undersedation are common in ICU patients as reported by Weinert et al.[3] Achieving light sedation is challenging due to patient variability and changing clinical situations, leading to the continued use of deep sedation in the ICU.[4] Inadequate pain control can harm organ systems in critically ill patients, making it essential to address barriers and educate ICU staff on sedation and analgesia.[5] Research studying the challenges in the field of analgo-sedation in the ICU is limited. Physicians and nurses face various challenges while following analgo-sedation strategies which leaves space to grow.[6] Therefore, this study aimed to identify and understand the challenges in the management of analgesia and sedation in the intensive care unit of Tribhuvan University Teaching Hospital (TUTH), Kathmandu, Nepal.

METHODS

This was a prospective, observational, descriptive survey conducted in level three intensive care units of TUTH, Kathmandu, Nepal. Ethical approval was obtained from the Institutional Review Committee (IRC) of Institute of Medicine, Tribhuvan University. Data collection was done from December 30, 2022 and January 30, 2023. TUTH is an 850-bed university hospital and tertiary referral center. Its ICU has 22 level III beds (ICU A and ICU B) providing care for medical and surgical patients under the care of an intensivist.

Data was collected using self-administered, semi-structured questionnaires through Google Forms. The questionnaires, Likert scales and checklists were developed by conducting a literature review and obtaining guidance from clinical nursing supervisors and intensivists with extensive experience in ICU settings. All ICU nurses directly involved in the patient care at the bedside were invited to participate using a total enumerative sampling method to mitigate selection bias. The informed consent at the start of the Google Form outlined the survey's purpose, voluntary participation, confidentiality, and data protection. Participants indicated consent via a checkbox, and the survey was anonymous, with no personal information collected. The Google Sheet was set up to allow only a single response per participant, minimizing the risk of multiple submissions from the same individual. The returned Google forms were reviewed and the data obtained were categorized, checked, coded, tabulated and analyzed using Statistical Package for Social Science (SPSS) version 16. Descriptive statistics were used.

RESULTS

Ninety-four nurses participated in the survey during the study period.

Table 1. Demographic characteristics of the participants

Parameters	No. (%)
Age (in years)	
Above 33	1(1.1)
28-32	28(29.8)
23-27	58(61.7)
18-22	7(7.4)
Work experience in critical care unit	
Less than 1 month	0
1 to 3 months	3(3.2)
3 to 6 months	15(16.0)
More than 6 months	76(80.9)
Training on sedation and analgesia management	
None	91(96.8)
Critical Care Nurse Training Program	2(2.1)
Session on sedation and analgesia in a conference	1(1.1)

Table 2. Commonly used pain assessment tools

Pain assessment tools	No. (%)
Critical-care Pain Observation Tool (CPOT)	31(33.0)
Numeric Rating Scale	44(47.0)
Behavioral Pain Scale	6(6.0)
Visual Analogue Scale	13(14.0)

Majority of the participants (95.7%) used non-pharmacological methods alongside pharmacological pain management. These included breathing exercises (34.6%), massage (28.7%), music therapy (21.1%), and distraction (1.3%). Four (4.3%) participants did not use non-pharmacological methods, citing lack of protocol (50%), lack of time (16%), unfamiliarity with non-pharmacological methods (17%) and belief that non-pharmacological methods are ineffective in ICU (17%). Richmond Agitation and Sedation Scale (RASS) was used by 93.6% of the participants for the assessment of level of sedation. 81.9% of the participants confirmed that there was a sedation protocol in their ICU.

Table 3. Perceived barriers related to pain management

Barriers		Responses	Percentage
Experienced by nursing staffs	Reluctance to prescribe opioids	24	4.1%
	Insufficient communication with patient	39	6.7%
	Worry about drug dependency	62	10.6%
	Inadequate pain assessment	31	5.3%
	Inadequate experience with pain control	22	3.8%
	Insufficient knowledge about pain control	33	5.6%
	Time constraints	20	3.4%
	Workload	29	5.0%
	Sedation interfering with pain assessment	52	8.9%
	Patient has alcoholism history, thus I cannot judge if pain medication is enough	45	7.7%
	Patient instability (e.g. unstable hemodynamics)	60	10.3%
	Worry about the side effects of pain medication.	32	5.5%
	Patient complains too frequently of pain, thus I cannot judge if pain is real	47	8.0%
	Worry that pain medication will depress respiration	56	9.6%
	Low priority of pain management by ICU team	9	1.5%
	Poor communication of pain management priorities within the ICU team	24	4.1%
Patients Factors	Reluctance to report pain	44	23.4%
	Insufficient communication with medical personnel	50	26.6%
	Financial constraints	24	12.8%
	Insufficient knowledge of pain control	44	23.4%
	Refuse to take pain medication	26	13.8%
Health care system and policies	Strict regulation of opioids	39	15.2%
	Inadequate staffing	31	12.1%
	Limited stock of opioids	20	7.8%
	Pain management is not considered important	5	2.0%
	Medication and intervention costs	24	9.4%
	Proper pain medication needs doctors' approval	51	19.9%
	Lack of protocols for pain management	50	19.5%
	Insufficient analgesia dosage prescribed	36	14.1%

Table 4. Perceived barriers related to sedation management

Barriers		Responses	Percentage
In terms of initiation	Lack of physicians' order	47	18.2%
	Confusion in RASS score assessment	33	12.8%
	Sedation goal not discussed in daily rounds	41	15.9%
	Absence of sedation protocol	46	17.8%
	Fear of oversedation	60	23.3%
	Lack of assessment tools for the source of agitation	31	12.0%
In terms of titration	Lack of acceptance by nurses	6	2.5%
	Potential for respiratory compromise	49	20.7%
	Not being able to leave the patient	21	8.9%
	Concern about critical incidents	56	23.6%
	Confusion in in-between sedation assessment	26	11.0%
	Reluctance to titrate the dose	23	9.7%
	Potential for hemodynamic instability	56	23.6%
In terms of practice	Lack of recent knowledge in drug practice	42	14.0%
	"Just sedate less" approach not applicable to all the patient	53	17.6%
	Shifts in sedation practice	11	3.7%
	Clinical condition of the patient	58	19.3%
	Lack of definite plan of care for sedation	36	12.0%
	Financial issues of the patient	32	10.6%
	Potential benefits vs risks ratio	45	15.0%
	Perception that ICU patients must be sedated at all times to minimize discomfort and agitation	24	8.0%
In terms of ICU environment	Fear of lack of peaceful environment	25	16.1%
	Inadequate nurse: patient ratio	46	29.7%
	Increased workload of the staff	48	31.0%
	Blaming culture	36	23.2%

Table 5. Perceived facilitators of pain and sedation management

S.N.	Facilitators	Not helpful at all No. (%)	Somewhat helpful No.(%)	Neutral No.(%)	Quite helpful No.(%)	Extremely helpful No.(%)
1.	Ongoing education	0	21(22.3)	5(5.3)	33(35.1)	35(37.2)
2.	Professional training	0	9(9.6)	11(11.7)	21(22.3)	53(56.4)
3.	Pain assessment tools	2(2.1)	13(13.8)	4(4.3)	30(31.9)	45(47.9)
4.	Collaboration between physicians and nurses	0	7(7.4)	9(9.6)	25(26.6)	53(56.4)
5.	Discussion of pain scores during rounds	0	7(7.4)	5(5.3)	30(31.9)	52(55.3)
6.	Discussion of pain scores during nurse-to-nurse handover	1(1.1)	7(7.4)	6(6.4)	28(29.8)	52(55.3)
7.	RASS assessment	0	11(11.7)	1(1.1)	18(19.1)	64(68.1)
8.	Discussion about RASS target during rounds	1(1.1)	8(8.5)	4(4.3)	22(23.4)	59(62.8)
9.	ICU Protocol	0	11(11.7)	3(3.2)	23(24.5)	57(60.6)
10.	Vital signs	0	8(8.5)	7(7.4)	21(22.3)	58(61.7)

DISCUSSION

We found that the key challenges in sedation management included fear of over-sedation, hemodynamic instability, and adverse events like unintentional device removal, leading to hesitation in titrating sedatives and attaining suboptimal sedation. The lack of regular sedation goal discussions during rounds delayed the initiation of appropriate sedation strategies. The absence of sedation guidelines and protocols also contributed to inconsistent practices, making it difficult to ensure the best outcomes for patients.

Regarding analgesia management, concerns about drug dependency were a significant barrier, with nursing staff reluctant to administer sufficient pain relief due to fears of opioid misuse. Although communication within the ICU team was recognized as a barrier, it was not as prominent as in studies conducted by Shakya et al.[7] The lack of standardized pain management protocols left nurses and physicians uncertain about appropriate pain management strategies. Nurses' heavy workloads, fatigue, and multiple responsibilities limited their time and energy, making it difficult to provide consistent pain management. These barriers further emphasized the need for structured pain management protocols and better resource allocation in critical care settings.

Quality management in critical care requires appropriate pharmacological training for all clinical staff involved in the practice of sedation.[8] A previous study found that ICU nurses' pain assessment practices are sub-optimal, highlighting the need for ongoing training and monitoring.[9] Our study shows that almost all the participants have not received training on sedation and analgesia unlike a previous study conducted among nurses of different wards in TUTH in 2016, where over a quarter of participants had training on pain management.[10] Over half of the participants used pain assessment tools whereas studies conducted in Jordan[9] and Nepal[7] reported lower usage rates of pain assessment tools.

Consistent with the clinical practice guideline, CPOT and NRS were the common tools reported in this study whereas VAS was preferred in Belgium[6] and India.[11] Although pain re-evaluation after management has not been studied, this study reveals that the majority of the participants used previously used assessment tools while some consulted with the physicians and some received feedback from the patients.

The usage of sedation tools for monitoring sedation in TUTH ICU was higher than that of Indian ICUs.[11] RASS and Ramsay scale were the most popular scales for sedation as mentioned in the study conducted in India[11] and China.[12] The Ramsay

scale was not evaluated in the present study. RASS remains the most commonly used scale.

The rate of utilization of non-pharmacological methods of pain management were higher than the studies in Nigeria,[13] Iran[14] and Turkey.[15] Massage and breathing exercise were commonly used which was similar to the study conducted in Australia.[16] Major obstacles to the use of non-pharmacological methods reported in this study were lack of protocol and lack of time whereas nurses' fatigue, multiple responsibilities, heavy workload and inadequate staff were also reported in some studies.[14]

In this study, barriers related to pain management are divided into 3 groups; barriers experienced by nursing staff, patient factors and health care system and policies. Among the nursing staff, worrying about drug dependency was the most reported obstacle whereas poor communication regarding pain management within the ICU team was not rated high as compared to similar studies conducted by Shakya et al[7] and Kizza et al.[17] Regarding patient factors, patients' reluctance to report pain and insufficient communication with medical personnel were given significant scores in this study which is quite similar to other studies.[7,18]

The barriers related to sedation management were categorized into four groups; in terms of initiation, titration, practice and ICU environment. Fear of over sedation, hemodynamic instability of the patient and risk of adverse events such as patient initiated unintentional device removal remains the major challenge in initiation and titration of sedative agents. Furthermore, a minority of respondents answered that sedation goals were not discussed in daily rounds which may lead to delayed initiation of sedation management.

In this study, few respondents believed ongoing education would improve analgesia and sedation management, unlike study of Rababa et al,[18] where more than half strongly recognized the need for continuous on-the-job training. This finding is quite unusual, as ongoing education is generally considered a key factor in improving clinical practice. Several factors may explain this unexpected result. Firstly, the high turnover rate of nurses in the ICU setting may limit the continuity and cumulative benefits of educational programs. Secondly, theoretical education sessions may not effectively translate into clinical practice, reducing their perceived usefulness among staff.

This study has some limitations, as its findings are based on a single ICU in one hospital in Nepal and may not reflect other hospitals or ICUs due to differing standards and protocols. Another limitation is that it included only nurses, which may limit the generalizability of the findings to other healthcare professionals. This study may be subject to response bias which could affect reliability of findings. This survey provides a foundation for future research on sedation and analgesia issues and solutions.

CONCLUSIONS

This study highlights challenges in sedation and analgesia management in critically ill patients, including fears of over-sedation and drug dependency, lack of protocols, inadequate training, and heavy workloads. RASS assessment and ongoing education were the most helpful and least helpful facilitators respectively. Addressing these issues through structured protocols, ongoing education, and enhanced collaboration is crucial for improving patient care. Future studies should focus on developing strategies to overcome these barriers, ensuring better outcomes for critically ill patients using a multifaceted approach to enhance sedation and analgesia practices effectively.

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