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"Sedation is tricky" : A qualitative content analysis of nurses' perceptions of sedation administration in mechanically ventilated intensive care unit patients

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"Sedation is tricky": A qualitative content analysis of nurses' perceptions of sedation administration in mechanically ventilated intensive care unit patients

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Abstract

Introduction

Critical care nurses are responsible for administering sedative medications to mechanically ventilated patients. With significant advancements in the understanding of the impact of sedative exposure on physiological and psychological outcomes of ventilated patients, updated practice guidelines for assessment and management of pain, agitation, and delirium in the intensive care unit were released in 2013. The primary aim of this qualitative study was to identify and describe themes derived from critical care nurses' comments regarding sedation administration practices with mechanically ventilated patients.

Methods

This is a qualitative content analysis of secondary text data captured through a national electronic survey of members of the American Association of Critical-Care Nurses. A subsample (n = 67) of nurses responded to a single, open-ended item at the end of a survey that evaluated nurses' perceptions of current sedation administration practices.

Findings

Multiple factors guided sedation administration practices, including individual patient needs, nurses' synthesis of clinical evidence, application of best practices, and various personal and professional practice perspectives. Our results also indicated nurses desire additional resources to improve their sedation administration practices including more training, better communication tools, and adequate staffing.

Conclusions

Critical care nurses endorse recommendations to minimise sedation administration when possible, but a variety of factors, including personal perspectives, impact sedation administration in the intensive care unit and need to be considered. Critical care nurses continue to encounter numerous challenges when assessing and managing sedation of mechanically ventilated patients.

Keywords

Critical care; Critical care nursing; Practice guideline; Respiration; Artificial; Sedatives

1. Introduction

Mechanical ventilation is frequently used to support critically ill patients suffering from respiratory insufficiency or failure.[1] It is a distressing intervention that causes a multitude of physical and psychological symptoms for patients, including pain, dyspnoea, anxiety, and agitation.[1], [2] To alleviate symptom burden, it is common practice for critical care nurses to administer sedative and opioid

medications to help reduce ventilated patients' symptom burden.[2], [3] Sedative medications may be necessary to improve patient comfort, promote ventilator synchrony, and ensure safety. Yet, the overuse of sedative medications can lead to psychological disturbances, delirium, higher mortality, and increased time on the ventilator.[1], [2], [4], [5] The most recent Pain, Agitation, and Delirium (PAD) guidelines contain comprehensive evidence of the adverse outcomes associated with sedative medications. These guidelines call for intensive care unit (ICU) providers to limit the amount of sedative medications administered to ventilated patients to maintain "light levels" of sedation when clinically appropriate.[6], [7] In addition, they encourage the routine use of sedation protocols and bedside assessment tools to frequently evaluate PAD-related symptoms during critical illness.[6], [7]

Because nurses are primarily responsible for assessing symptoms and administering sedative medications, they are essential for ensuring the successful implementation of the PAD guidelines. However, varying adherence to practice guidelines remains an issue for critical care nurses because of barriers such as lack of awareness, familiarity, agreement, perceived usefulness, and the influence of previously learned practices.[8], [9] A survey published before the PAD guidelines reported that nurses' attitudes impact sedation administration practices. The authors concluded that modifying nurses' attitudes towards sedation and the experience of mechanical ventilation may be necessary to change sedation practices to reflect clinical practice guidelines.[10] Another study of ICU healthcare professionals found that the majority of respondents worked in units that adopted specific sedation protocols and had policies in place that reflected the most current sedation practice guidelines, but few reported acceptable compliance with those policies.[11] In addition, Gill et al. compared perceived and actual sedation practices for adults receiving mechanical ventilation in the ICU. They found a general under-utilisation of evidence-based guidelines as well as a higher perceived use of recommended practices such as sedation protocols and daily sedation interruption versus what was actually observed.[12]

In light of significant advancements in the understanding of the impact of sedative exposure on physiological and psychological outcomes of ventilated ICU patients[2], [13], [14], [15], [16], [17], [18] and the 2013 publication of the PAD guidelines,[7] it is important to reexamine critical care nurses' perceptions of sedation administration practices. Doing so will inform the development of interventions that may facilitate nurse adherence to the PAD practice guidelines.[7] The primary aim of this content analysis of secondary data was to identify and describe themes derived from nurses' responses to a single, open-ended item contained in a larger survey that evaluated sedation administration practices in a national sample of critical care nurses in the United States.

2. Methods

2.1. Overview of main survey

The findings reported in this article were part of a descriptive, correlational study of critical care nurses' perceptions surrounding sedation administration practices.[19] All members of the American Association of Critical-Care Nurses (AACN) (approximately 106,000 members) were invited to participate via electronic communications and social media sites of the AACN from September 30 to October 28, 2016. Nurses who agreed to participate were asked to complete an electronic survey, the Nurse Sedation Practices Scale.[10], [19] The Nurse Sedation Practices Scale is a 28-item measure with

five subscales: subjective norm, perceived behavioural control, attitudes towards sedation administration, sedation orders and goals, and sedation practices. At the end of the main survey, participants were presented with the following open-ended item: “Please use the space below if there is anything else you would like to tell us about sedation of mechanically ventilated patients.” All quantitative and qualitative data were captured using the Qualtrics electronic data system. Responses were de-identified and deposited directly into the Qualtrics program upon survey completion. Institutional review board approval was obtained before survey distribution. Participation was voluntary, and study completion implied consent. Those who completed the survey were offered an opportunity to enter a raffle to win an Apple iPad®. Findings from the main survey are available elsewhere.[19]

2.2. Data analysis

Qualitative content analytic methods[20], [21] were employed to identify themes and subthemes among participants' responses. No formal preexisting theory was used to guide data analysis. Researchers used conventional qualitative analysis procedures, in which all researchers repeatedly read the text, word by word, to obtain a sense of the whole. A single researcher completed the analytic process of theme development guided by the following framework: (i) initialisation—highlighting meaning units, coding, and looking for abstractions in participants' accounts and writing reflective notes; (ii) construction—classifying, comparing, labelling, defining, and describing; (iii) rectification—immersion and distancing, relating themes to established knowledge; and (iv) finalisation—developing the story line.[22] To enhance rigour and trustworthiness, all researchers met to discuss the single researcher's interpretation of the findings. Consensus of this discussion of data was reached by all researchers as measured by verbal agreement.

3. Findings

3.1. Respondent characteristics

Respondents (N = 67) were primarily staff nurses (61.8%) with a bachelor's degree in nursing (55.9%). They had an average of 14.7 years of critical care experience, and 57.6% were certified as a critical care nurse (CCRN). Nurses who completed the survey worked in a variety of critical care settings; however, most (97.1%) used a sedation assessment tool on their unit and had written sedation protocols (82.4%) that included spontaneous breathing trials (SBTs) (89.7%) and awakening trials (72.1%). The shortest response was five words, and the longest was 311 words. The mean number of words used in the responses was 56.

The content analysis of 67 open-ended nurse comments revealed two main themes regarding the sedation administration practices of critical care nurses. The first main theme, “Guiding factors of nurses' sedation administration practices,” contained three subthemes: (i) individual patient needs; (ii) synthesis of clinical evidence and best practices; and (iii) personal and cultural perspectives. The second main theme was “Resources to improve nurse sedation administration factors.”

3.2. Theme #1: guiding factors

Individual patient needs: Many nurses in the survey commented on the unique and individual sedative needs of each patient, reinforcing how patient needs must be carefully considered and frequently monitored. They also communicated that sedation management should be goal-oriented and administration methods should be tailored according to the care plan. Many expressed the importance of limiting the amount of sedative to what the patient requires to achieve a designated clinical goal, such as "maintain safety," "follow commands," "not buck the vent," "not pull at lines or tubes," "not show signs of distress," and "still open eyes to verbal stimuli". One nurse commented,

The ideal level of sedation allows the patient to interact with others and express their needs. However, some patients need sedation/higher level of sedation in order to maintain ventilator tolerance, pain, or lessen anxiety. Sedation needs to be patient-specific and goal-oriented. [Respondent #53]

Nurses also identified some clinical circumstances when heavier sedation may be deemed necessary, including invasive medical procedures such as line placements or sheath removals, or when ventilator dyssynchrony is compromising a patient's physiological stability.

In particular, nurses commented that patients admitted to the ICU with a neurological diagnosis and those with fluctuating levels of consciousness or acute intermittent delirium are likely to require frequent neurological assessments. Thus, sedation may be minimised or suspended in order for healthcare staff to detect a sudden change in neurological status. In some cases, nurses felt this could lead to an inappropriate under-utilisation of sedative medication, as supported by one nurse's comment:

In a neurological intensive care unit, sedative measures are often underutilized due to the potential of masking an exam and underestimating the patient's neurological status. I believe this alone sets a neuro ICU apart from other intensive care units in regards to sedative measures. Sedation can often be a point of contention between physicians and nurses on my unit. Often, patients will be admitted with a primary medical diagnosis with a stable neurological status (such as ARDS) that requires the patient to be sedated and paralyzed. Providers tend to want these measures weaned as quickly as possible due to concern for neurologic status. This can quickly become an issue for nursing, *patient outcome*, and patient safety. [Respondent #28]

Some nurses expressed the importance of tailoring sedation administration practices based on patients' history of excessive or illicit drug use, alcohol abuse, or their baseline need for psychiatric medications. They also described varying approaches to sedation administration depending on the type of airway present, indicating a patient with a tracheostomy has different sedation needs than a patient recently orally intubated. For example, one nurse commented, "*Sedation needs of mechanically ventilated patients vary greatly depending on whether they have a tracheostomy or have an endotracheal tube…In my practice, we have very different sedation practices for those two different patient populations (tracheostomy versus endotracheal tube)."[Respondent #15]*

Responses highlighted that pain assessment and treatment play an integral role in considering patients' sedative needs. Nurses who provided survey comments discussed the importance of differentiating between the need for analgesic medications versus sedative medications, indicating that pain level should be taken into consideration first and foremost, and sedative medications should only be used adjunctively when needed. One nurse wrote, *"I think at times too much sedation is used, when the patient may actually need pain meds, personal hygiene, more frequent position changes, back rub and such."* [*Respondent #*21]

Synthesis of clinical evidence and best practices: Nurses commented on their use of a variety of assessment measures to inform their clinical picture and approach to sedative administration. They combine information from instruments such as the Bispectral Index (BIS) Monitoring System and scales such as the Richmond Agitation–Sedation Scale (RASS) or State Behavioural Scale with physiologic indicators of distress including tachycardia, tachypnoea, restlessness, and ventilator dyssynchrony when assessing sedation needs. This was evidenced by the following explanation, *"[You] have to look at multiple parameters [like] BIS and RASS and balance [those results] with [patient] needs"* [*Respondent #*7]. In addition, the nurses mentioned their use of clinical practice recommendations such as *"sedation vacations*", as well as those found in the ABCDEF[23] bundle and PAD guidelines,[7] to guide their assessment and administration of sedative medications.

Personal and cultural perspectives: The nurses had their own personal perspectives about sedation administration. Their varying opinions, exemplified by the following five individual responses, ranged from believing that all ventilated patients need some amount of sedative medication(s), to expressing concern about oversedation and using little or no sedation if possible:

I believe that for patient comfort, intubated patients should have some form of sedation. [*Respondent #*3]

Sedation is important for intubated patients to allow the ventilator to effectively work. [*Respondent #*44]

I believe most patients benefit from a little sedation so they remain calm and cooperative. [*Respondent #*56]

Sedation should be minimal as much as possible. Sedation is often overused. We are using more fentanyl for both pain and sedation as a continuous infusion. [*Respondent #*12]

I have seen many patients that have been comfortable with just good pain management, intubated and geriatric patients seem to do so well with very little sedation or none at all. [*Respondent #*17]

Nurses described differences that arise in regard to goals of care not only between nursing staff and physician staff but also among physicians from different specialties. One nurse stated, *"There is a huge difference in style and mindset between attending [physicians], which inevitably influences what I do*" [*Respondent #*55]. Respondents in our survey also noted variances in sedation administration practices between nursing shifts. They provided examples of night shift nurses using sedation more liberally to

promote comfort and sleep during night-time hours. In contrast, day shift nurses target lighter sedation to facilitate weaning and extubation. In addition, nurses described a difference in sedation administration practices between paediatric and adult ICUs, specifying that sedation is used more liberally in the paediatric ICU because of a greater emphasis on keeping children more comfortable and children's limited developmental capacity to comprehend their situation.

3.3. Theme #2: resources

Nurses highlighted key resources needed to help further their knowledge and implementation of best practices in sedation administration. They requested additional information and training in areas such as sedation needs assessment and sedation management in relation to pain and delirium, implementation of early mobilisation, and effectively using sedation scales. One nurse highlighted the usefulness of additional training as follows:

I am currently in graduate school and a project from last semester on delirium and post-intensive care syndrome has significantly affected my current sedation practices. I now assess patients more carefully and interact with them before determining sedation that should or should not be administered. [*Respondent #*8]

Nurses also requested better communication tools for ventilated patients to express their needs. One nurse gave an example of a patient who appeared to be agitated and reaching for his endotracheal tube, but in fact just wanted to scratch his nose. Lastly, some of the nurses expressed frustration about insufficient nurse staffing. They indicated that minimally sedated patients can require more individual attention and redirection from the nurse. Adequate staffing is necessary to reduce the bedside ICU nurses' perceived burden of providing safe and effective, evidence-based sedation management. This theme was highlighted by one nurse's comments:

I think staffing ratios (whether mandated or just a general attempt) in ICUs are from the times where we kept patients zonked on ventilators. Dealing with 2 or 3 patients minimally sedated and/or on SBTs while participating in rounds, having concurrent charge duties and possibly needing to respond to codes, rapid responses, and other hospital-wide emergencies [are] putting the ICU nurse in a terrible position and the patients into unsafe conditions. Until staffing ratios and better acuity systems are in place, many of these worthy goals are purely academic. [*Respondent #*22]

Our staffing is often good enough that we don't have to sedate a patient because they are paired with another sick patient, but there are times when you just can't be in that room redirecting someone all day, and then I might sometimes give more sedation so I can leave the room to take care of another patient. [*Respondent #*55]

4. Discussion

The findings from this content analysis of nurses' comments pertaining to sedation of mechanically ventilated patients provide insights into the various factors that impact sedation administration in the

ICU. In this sample of critical care nurses, multiple factors guided sedation administration practices, including individual patient needs, nurses' synthesis of clinical evidence, application of best practices, and various personal and professional practice perspectives. Our results also indicated nurses desire additional resources to improve their sedation administration practices.

Many nurses described the challenge of addressing the individual sedation needs and goals of each patient. Thus, innovative symptom management strategies are necessary to assist critical care nurses in their pursuit of practicing patient-centred care. A relatively new body of research examining patient self-administration of sedative medication shows promise as a viable option for symptom self-management during mechanical ventilation.[24], [25] Chlan et al.[26] found that patient self-administration of dexmedetomidine was a safe and acceptable alternative to clinician-administered sedation during ventilatory support during critical illness. Both patients and nurses expressed satisfaction with the intervention.[24], [26] This research suggests that having patients more actively involved in administering their own sedation may reduce barriers for nurses in trying to determine and interpret individual patient sedative needs. Furthermore, non-pharmacological options such as music intervention, imagery, aromatherapy, massage, family presence, and animal-assisted therapy may help reduce anxiety thereby decreasing dependence on sedative medications alone to manage distressful symptoms during mechanical ventilation.[27], [28], [29], [30], [31], [32], [33], [34]

As highlighted in our findings, communication with mechanically ventilated patients can be challenging, making it difficult to assess and treat their distressing symptoms. While self-report is the ideal method for accurate symptom assessment, ICU patients' altered levels of consciousness and fluctuating severity of illness, in conjunction with liberal use of sedation, limit the use of self-report measures during mechanical ventilation.[35] Nurse respondent comments are consistent with a study examining nurse–patient communication with ventilated patients by Happ et al.[36] who found that nurse-initiated exchanges to patients regarding pain were unsuccessful 37.7% of the time and concluded that communication breakdowns occur when patients become confused or inattentive to nurses' questions on symptoms of pain. The AACN suggests nurses use simple questions or validated self-report assessment tools, implement validated behavioural scales for ventilated patients who cannot communicate, avoid overreliance on vital signs for symptom assessment, and consider using a proxy, such as a family caregiver, who can identify behaviour that may indicate distressing symptoms. As the nurses in our study expressed, additional research, training, and resources regarding communication and assessment about pain and other distressing symptoms are needed.[35]

In agreement with current PAD guidelines,[7] nurses in our study expressed the importance of considering the need for pain medication before administering sedatives. ICU patients can experience significant pain, which, if left untreated, can lead to psychophysiological complications and the development of chronic pain postICU discharge.[35] According to a recent study, ventilated patients with adequate pain control may not even require sedative medications. Strøm et al.[16], [17], [18] found that mechanically ventilated patients who only received pain medication had significantly more days without mechanical ventilation, shorter stays in the ICU and hospital, increased urine output, decreased incidences of renal impairment, and no additional long-term psychological issues after ICU discharge compared with patients who received sedation with propofol and midazolam.

While appropriate assessment and treatment of pain are important precursors to the consideration of further symptom management with sedative medications, nurses who responded to the survey also frequently mentioned the need to administer sedative medications specifically to manage anxiety. Unfortunately, anxiety is not formally assessed and documented in the ICU[37] but to be properly treated requires ongoing management and reassessment.[38]

The results of our study indicate a difference in sedative administration based on personal and cultural factors. Specifically, nurses who responded to the survey highlighted the variation in sedative management approaches between day shift and night shift staff. There is a paucity of evidence explaining the diurnal variation in patients' sedation patterns, but previous studies indicate a general practice trend of higher doses of sedative medications during evening and night shifts. In a recent study by Mehta et al.,[39] mean sedation agitation scale scores and self-reported nurse workload were similar between night and day shift, but night-time benzodiazepine and opioid doses were significantly higher than daytime doses. This is consistent with the comments provided by respondents in this survey. Mehta et al.,[39] also found that higher night-time doses of sedatives were associated with failure of SBTs and delayed extubation. There is a need to further explore the clinical reasoning for increases in night-time sedation to reduce this common clinical trend.[39]

Similar to previous studies, nurses queried in our study also emphasised the differing opinions among healthcare providers regarding sedation administration. In a study evaluating barriers to daily interruption of sedation for nurses, physicians, and respiratory therapists, understanding of the rationale for and operationalisation of a daily sedation interruption differed among providers, despite a general consensus that it is an overwhelmingly positive intervention.[15] In a Belgian study about providers' opinions of sedation scales, nurses were more likely than physicians to disagree that using a sedation scale may increase nurses' autonomy, enhance their role, or influence management beyond simple assessment, but more physicians agreed with statements reporting potential benefits of sedation scales.[40] Variation in sedation administration practices among providers may lead to inappropriate practice patterns and failure to implement and follow standardised, evidence-based practice guidelines.[15] Further, physicians may write medication orders to a specific RASS score or range based on motor movement and responsiveness of a patient. While a RASS of 0 (alert and calm; spontaneously pays attention to caregiver) may be the ideal level of consciousness for mechanically ventilated patients, many nurses commented that several factors need to be considered when negotiating sedation goals that go beyond the components of a sedation scale including comfort, safety, and the need to care for other patients.

Last, this study provides a foundation for future examination of the barriers to adoption of PAD guidelines by critical care nurses. Similar to other studies,[9], [41] barriers identified by our respondents included lack of training, information, workload, and staffing. To minimise these barriers and promote adoption of clinical guidelines, nursing leadership should focus efforts on improving the evidence-based knowledge base of their nursing staff, provide adequate training and mentoring by nurses with evidence-based practice experience, and offer ample nursing support staff to allow time for nurses to effectively implement guidelines.[9], [41] Also, with a recent focus on patient and family engagement in patient care in the ICU,[42] it is not yet known if family caregivers can be successfully utilised to assist in

aspects of sedation administration such as symptom assessment and integrative management of patient symptoms to reduce the overall workload burden on nursing staff.[42], [43], [44], [45], [46]

4.1. Limitations

Limitations to this study include the use of qualitative content analytic methods to examine secondary data. While discussion of data occurred and general consensus was reached between all researchers, only one researcher completed the theme abstraction process. Nurses provided open-ended responses to a single open-ended item; limiting capacity to draw conclusions. Also, the convenience sampling technique employed in the main survey to recruit ICU nurses from the membership of the AACN allowed for nurses to self-select their participation resulting in a possible response bias. Owing to the required method of survey distribution utilising the AACN electronic newsletter, it is not possible to determine how many members read the information advertising the main survey. The main survey used a small sample of nurses from the United States which further limits the generalisability of our results. In addition, not all nurses in the main survey sample provided responses to the open-ended item analysed in this subset.

5. Implications for nursing and future research

This study highlights a number of challenges nurses encounter when managing sedation of mechanically ventilated patients. Nurses who provided open-ended comments in this study seemed aware of the latest PAD guidelines and were dedicated to using the least amount of sedative necessary but desired to have individual patient needs incorporated into evidence-based sedation management. Their responses indicated a commitment to providing optimal patient care in the ICU environment and recognition of the impact of their care on patient outcomes post critical illness. Respondents identified resources that would facilitate their capacity to use only the minimal amount of sedation needed, such as additional education and training, better staffing, and more time to fully assess patients' needs. They also acknowledged professional and cultural differences that could be opportunities to strengthen healthcare team goals related to sedation practices. Future research should focus on improving communication with ventilated patients to better tailor sedation administration to patient needs; leveraging novel integrative symptom management interventions to further reduce reliance on sedative medications; creating, validating, and employing reliable assessment measures for distressing symptoms such as pain and anxiety; and further exploring the variation in sedation administration practices among patients to improve the uptake of evidence-based practice guidelines. Ultimately, these study findings can be used to support the development of interventions that positively influence nurses' perceptions of sedation administration to promote patient-centred care.

Ethical approval

Appropriate ethical review by expedited review procedures determined the study to be EXEMPT from the requirement of Institutional Review Board (IRB) approval (45 CFR 46.101b, item 2) Board (IRB) at

the Mayo Clinic in Rochester, MN, USA on 9/13/2016. The Mayo Clinic IRB Protocol Number is #16-006991.

Appendix A. Supplementary data

The following is the supplementary data related to this article:

Download XML file (264B)Help with xml files

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