ORIGINAL ARTICLE

Correlational Study of Sleep Apnea Patient Characteristics With Discharge Locations

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Purpose: *To determine if a correlation exists between OSA patient characteristics and the PACU discharge location; and the characteristics of the patients at-risk for low saturation levels, increased number of desaturations, and longer length of stay in the PACU.*
Design: *Retrospective, correlational study design.*
Method: *Chart review of OSA patients ≥ 18 years old. Correlational analysis was performed between 15 high risk patient variables and the PACU discharge disposition: home or monitored bed. Complications resulting in monitored bed admission were reviewed.*
Findings: *153 patients' charts were reviewed. The results showed that age>60, ASA classification, anesthesia type and narcotics use in the PACU were significantly correlated (p≤.05) with a patient's discharge disposition.*
Discussion: *The findings are consistent with other OSA research except BMI was not significant in this study.*
Conclusion: *The results highlighted areas for future research and implications for clinical practice that would enable the perioperative care team to deliver safe care based on evidence.*

Keywords: *obstructive sleep apnea, perioperative risk, patient discharge.*

OBSTRUCTIVE SLEEP APNEA (OSA) is a burgeoning health problem that can lead to poorer perioperative outcomes. Martinez and Faber[1] state that as the prevalence of obesity increases, so will OSA. The prevalence of undiagnosed OSA in the general population in the United States is estimated at 18 million[2]; the figure published by the American Society of PeriAnesthesia Nurses OSA Strategic Work Team showed a range between 2% and 26% of the US general population[3] which is consistent with other studies.[4,5] Noble[2] estimates 93% of women and 80% of men with moderate-to-severe OSA remain undiagnosed. However, Vasu et al[5] cautions that how OSA is characterized will alter estimates, and issues concerning characterization include missed diagnosis of OSA.

OSA is defined as the occurrence of at least five apnea and hypopnea episodes in 1 hour accompanied by a decrease of oxygen saturation exceeding 4%.[6,7] It is a common chronic sleep

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disorder during which respiration pauses are caused by partial or complete upper airway obstruction at intervals during sleep because of "inadequate motor tone of the tongue and/or airway dilator muscles."[8, p549] The upper airway is the principal air passage to the lungs, and its behavior is influenced by anatomic, mechanical, and neural factors that maintain its patency and collapsibility.[6,9-13] Generally, OSA patients have a "narrower collapsible pharyngeal airway" compared with a person without OSA.[6]

The spectrum of obstructive events ranges from limited air flow to full apnea and may result in "oxygen desaturation, central nervous system arousal, and sleep fragmentation."[14, p4] However, OSA may increase perioperative risk in patients requiring general anesthesia, sedation, or intravenous analgesia as these agents may dampen the arousal mechanism.[15]

Sampling biases, variability in research methods, and criteria used to define apnea are some of the criticisms directed at the studies of OSA prevalence.[16,17] Despite the divergence of study approach, several trans-border population-based studies on OSA prevalence shared many similarities in their findings.[18] Generally, researchers postulate that OSA is associated with several risk factors that include demographic characteristics, namely, gender, age, and race[17,19]; comorbidities such as obesity, hypertension, and diabetes[16]; genetics, anatomy, and physiological factors[14]; and social and economic conditions.[1,20]

Researchers differ in their opinions on the pathogenesis of OSA. Some studies link the causes with the disruption of the anatomic, physiological, and mechanical functions of the upper airway. Other studies point to patient characteristics such as demographic features and comorbidities.[1,9,12,13,21] However, Cillo et al[22] argue that OSA is a complex heterogenic disorder with multiple contributing factors. They recommend that researchers should investigate the pathogenesis of OSA structurally and physiologically as a clinical syndrome through multiple pathways, incorporating subjective and objective measures to understand presenting symptoms that may benefit from assessment and treatment.

Several questionnaire screening tools are available for rapid identification of OSA which includes Epworth Sleepiness Questionnaire, Berlin questionnaire, STOP questionnaire, STOP-BANG questionnaire (Figure 1), and the American Society of Anesthesiologists (ASA) checklists and Physical Status Classifications. These screening tools were designed for different clinical settings, and their strengths and weaknesses vary depending on their clinical applications. Some clinicians criticize these tools for being complex and lacking validation.[1,23] Despite their imperfections, these tools remain beneficial for identifying OSA patients preoperatively to limit potential postoperative adverse events.[24]

A pilot retrospective descriptive design was chosen to study OSA patients either discharged to home or to a monitored bed from the postanesthesia care unit (PACU). The research questions examined in this study were as follows:

1. Is there a correlation between OSA characteristics and the post-anesthesia care unit (PACU) discharge location in an academic medical center?
2. What are the characteristics of the patients "at-risk" for lowest oxygen saturation levels, number of oxygen desaturations, and longer length of stay in the PACU?

Materials and Methods

This correlational study was a retrospective review of OSA patient records to examine 15 variables of interest as determined by a literature review (Table 1). This study examined the correlations between these variables and patients' discharge location. The two discharge areas of interest were the intermediate care unit (IMU) and patient's home. This study was conducted at an urban, academic medical center in Southern California. The PACUs of this academic medical center practice according to the American Society of PeriAnesthesia Nurses standards and guidelines. Institutional review board approval was obtained for review of medical records.

Variables

Practice Recommendation 10 of the 2012-2014 manual of PeriAnesthesia Nursing Standards,