Preoperative Screening for Obstructive Sleep Apnea: Enhancing Perioperative Safety

Mary Frances Mullins, RN, CRNA, CPAN, CAPA, MSN, DNP
Sutter Memorial Medical Center, Modesto, California

Abstract

Nearly 25 million people in the United States suffer from obstructive sleep apnea (OSA). This serious, under-recognized, under-diagnosed medical disorder is associated with significant consequences as well as increased perioperative risks. Therefore, preoperative screening for OSA is an essential component to perioperative management. Utilizing a quantitative methodology with a comparative design, this author observed for statistically significant differences in the proportion of postoperative hypoxemia occurrences in the PACU. In support of this investigator’s theory, the proportion of patients who experienced hypoxemia in the PACU post implementation of the STOP-Bang screening program was not equal to the proportion of patients who experienced hypoxemia in the PACU post implementation of the STOP-Bang screening program. This study aimed to: (1) determine the impact of preoperative OSA screening on the incidence of postoperative hypoxemia in the PACU; (2) determine differences in the proportion of postoperative hypoxemia occurrences between sample groups; and (3) determine the impact of preoperative OSA screening on the incidence of postoperative hypoxemia in the PACU. This study aimed to determine the impact of preoperative OSA screening on the incidence of postoperative hypoxemia in the PACU.

Objectives

The purpose of this project was to introduce a preoperative OSA screening protocol to the community hospital where the author is affiliated. The program was initially executed on a trial basis. It involved the initiation of the STOP-Bang protocol to support the promotion of OSA screening to optimize the perioperative well-being of patients with OSA. A fundamental goal of this project was to improve the clinical expertise of the impacts of OSA on the perioperative patient with the intention of promoting patient safety.

Background

An estimated 25 million people in the U.S. suffer from OSA (American Academy of Sleep Medicine, 2011). Approximately 8% of moderate and severe sleep apnea cases are undiagnosed (American Sleep Apnea Association, 2015). There is a higher incidence of OSA among the surgical population compared to the general population (Chung, Yoon, & Chung, 2009). OSA is considered to be a major risk factor for the development of various perioperative adverse events (Fair & Dikalov, 2009). OSA may be asymptomatic, being under-recognized, under-diagnosed and under-treated. Difficulties encountered in assessing OSA severity vary among patients with OSA (Gagnon & Girard, 2002). Increased risk for cardiac arrhythmias, respiratory infections, and cardiopulmonary arrest (Keene, P.Lang, Watkins, Rameshwar, and Fethke-Schuler, 2011). OSA is associated with increased risk for perioperative adverse events (Fair & Dikalov, 2009). OSA may be asymptomatic, being under-recognized, under-diagnosed and under-treated. Difficulties encountered in assessing OSA severity vary among patients with OSA (Gagnon & Girard, 2002). Increased risk for cardiac arrhythmias, respiratory infections, and cardiopulmonary arrest (Keene, P.Lang, Watkins, Rameshwar, and Fethke-Schuler, 2011).

Materials and Methods

STOP-Bang Questionnaire

The STOP-Bang questionnaire is a validated screening tool for OSA. The STOP-Bang questionnaire was administered to adult (ages 18-75) general anesthesia elective surgery patients who were screened preoperatively for OSA on the STOP-Bang OSA screening instrument. Group A (n=100) was comprised of adult (ages 18-75) general anesthesia elective surgery patients who were screened preoperatively for OSA on the STOP-Bang OSA screening instrument. Group B (n=100) was comprised of adult (ages 18-75) general anesthesia elective surgery patients who were not screened preoperatively for OSA on the STOP-Bang OSA screening instrument. A Chi-square analysis was conducted comparing the proportion of positive perioperative hypoxemia occurrences in the PACU pre and post implementation of the STOP-Bang screening program. The proportion of patients who experienced hypoxemia in the PACU pre implementation of the STOP-Bang screening program was not equal to the proportion of patients who experienced hypoxemia in the PACU post implementation of the STOP-Bang screening program. There was no observed difference of 49 occurrences of perioperative hypoxemia occurrences in the PACU pre and post implementation of the STOP-Bang screening program. These results underscore the importance of preoperative OSA screening.

Results

A Chi-square analysis using SPSS version 20.0 software was conducted comparing the proportion of positive perioperative hypoxemia occurrences in the PACU. In support of this investigator’s theory, the proportion of patients who experienced hypoxemia in the PACU post implementation of the STOP-Bang screening program was not equal to the proportion of patients who experienced hypoxemia in the PACU post implementation of the STOP-Bang screening program. There was an observed difference of 49 occurrences of perioperative hypoxemia occurrences in the PACU pre and post implementation of the STOP-Bang screening program. These results underscore the importance of preoperative OSA screening.

Conclusions

It is well-documented that the prevalence of OSA is greater in the surgical population than in general populations (Monteiro et al., 2011). Patients with OSA are at greater risk for perioperative complications than patients who do not have OSA (Dremencov et al., 2012). Consequently, the significance of preoperative OSA screening cannot be overstated. Hypoxemia is the most frequently encountered perioperative complication in patients who have OSA (Patil et al., 2011). Hypoxemia, as well as other perioperative complications may be mitigated, or circumvented, when the perioperative care plan is aimed to meet the distinct needs of the patient with OSA. Preoperative screening for OSA by means of the STOP-Bang questionnaire intends to enhance clinician awareness and patient education. Preoperative screening for OSA is designed to enhance patient safety and identify patients for whom modifications to the perioperative care plan may be necessary. This study underscores the importance of preoperative OSA screening in the perioperative care setting.

References


Contact Information:

Mary Frances Mullins
mullinm@sutterhealth.org