

The Dangers of Obstructive Sleep Apnea and Post-Surgical Care

According to the American Sleep Apnea Association (2011),

“Sleep apnea is an involuntary cessation of breathing that occurs while the patient is asleep...people with untreated sleep apnea stop breathing repeatedly during their sleep, sometimes hundreds of times during the night and often for a minute or longer. In most cases the sleeper is unaware of these breath stoppages because they don't trigger a full awakening... left untreated, sleep apnea can have serious and life-shortening consequences: high blood pressure, heart disease, stroke, automobile accidents caused by falling asleep at the wheel, diabetes, depression, and other ailments.”

“Obstructive sleep apnea is a prevalent condition in patients presenting for surgery. It is estimated that up to 24% of middle-aged males and 9% of middle-aged females may have OSA, over 80% of whom are undiagnosed. Few patients undergo preoperative polysomnography or have OSA treatment plans such as continuous positive airway pressure (CPAP), bi-level positive airway pressure (BiPAP), surgery for OSA, or tracheotomy” (Ramachandran et. al, 2010).

In 2005 reports of complications relating to lack of treatment for undiagnosed obstructive sleep apnea (OSA) began to rise at hospitals throughout the nation. It was found that these patients who had OSA and were not properly treated after forms of surgery that required anesthesia were dying due to respiratory failure. The medication was too strong for the respiratory system to handle in addition to the strains being placed upon it because of the undiagnosed OSA. More specifically, the larger amounts of anesthesia that was being given to patients during the recovery period, did not allow enough signals to the brain in order to wake the patients up for them to be able to start breathing again. (W. Cale, personal communication, February 28th, 2012)

Experts in the field of sleep medicine, specifically Dr. William Cale at the RMH Center for Sleep Medicine, began to take notice of this rapidly increasing problem. Patient death is a concern for any hospital system and it is natural that a needs analysis be conducted to try and find the root cause of the problem. Steps have been taken by doctors across the country in order to create a system to identify patients who pose a high risk of sleep apnea. If these patients are successfully identified, then proper treatment and monitoring post-surgery can occur to prevent unnecessary deaths. In particular, Dr. William Cale and our team aim to educate the necessary members of the surgical staff on the dangers of undiagnosed OSA, the use of a “stop-bang” form to identify high risk patients, and the proper treatment and monitoring of OSA patients before and after surgery. We believe that the surgical teams are not aware of this potentially deadly problem and are therefore unable to take necessary precautions. Our ultimate goal is to begin the process of creating awareness throughout the hospital staff so that no further deaths occur due to undiagnosed OSA.

Our team would be presented an informational session about OSA and proper screening and treatment to an audience of 20 at RMH on Thursday, March 22nd. We originally believed that the audience would consist of Monitor Technicians who are responsible for monitoring vital information about patients during their recovery period. This includes such things as heart rate and breathing, among other crucial information. This is an entry-level job at RMH and requires an associate degree and very little experience in the field. We estimated that the ages of these technicians would range from 18 to 65. Because this position requires very little experience, it is hard to say whether participants will have prior knowledge of OSA at all. However, we felt that the technicians would have little to no prior knowledge of OSA. Therefore, we were very surprised to find out that our entire audience consisted of 18 nurses, 1 specialty clinic practice

manager, and 1 orthopedic surgeon. 18 were women and 2 were men. Their ages ranged from early 20s up to about 60 years of age. These audience members were actually very knowledgeable about OSA prior to our presentation. Our team created an evaluation tool that was given to all audience members after the presentation. The tool was based on a Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) and asked various questions pertaining to knowledge about the material and how it was presented. The audience had a mean score of 4.4 (Agree) to the question of “Before this presentation, I was aware of OSA and some of its dangers.” After the presentation, the audience members had a mean score of 4.8 (Strongly Agree) to the question of, “This presentation added to my knowledge of OSA and its dangers.” Our team used an unpaired t-test to determine that the difference between these means was significantly different; meaning that audience members did learn some information about our material, even though they came into the presentation with a lot of prior knowledge.

The instructional module that we created for Dr. Cale was a 51-slide Powerpoint presentation that followed Keller’s ARCS model of motivation. Keller’s model suggests that presentations begin with attention grabbing information, move to relevant information for the audience members, allow participants the chance to be confident in that they are learning the material, and gain satisfaction from being able to walk away with new knowledge or skills that can be used in a workplace setting. Our presentation begins material that is meant to gain the attention of the audience. We include alarming health facts about OSA, real-life costs of OSA, and case studies that demonstrate actual complications resulting from undiagnosed OSA. We evaluated this aspect of Keller’s model by using, “I was fully engaged throughout the entire presentation” which received a mean score of 4.8 (Strongly Agree). We then have several slides entitled, “Why you need to care...” that were meant to offer relevant information to the nurses

who were the majority of our audience. We evaluated this aspect by using the question, “I found the examples and information relevant to my position” which received a mean score of 4.7 (Strongly Agree). We then show the audience members the STOP-BANG screening tool for potential OSA patients in order for the nurses to feel confident that they are able to use this information about OSA to make positive changes in their workplace. We measured this aspect using the question, “I believe that I am capable of using the information that was presented” which received a mean score of 4.8 (Strongly Agree). Finally, we gave the nurses exact instructions and a step-by-step process to follow throughout all stages of perioperative care so that they would be satisfied with their new knowledge and skills. We measured this last aspect of Keller’s model by using the question, “I feel as though I have gained a useful skill that can be used in my workplace setting” which received a mean score of 4.6 (Strongly Agree).

Overall, Justin and I felt that the presentation went extremely well. Dr. Cale was an excellent presenter and was very engaging and humorous throughout the entire presentation. We received comments on our evaluations that included, “Dr. Cale presented material well” and, “He clearly wants to work with the nurses to improve patient outcomes.” Based on our evaluation scores, it was apparent that we did an excellent job following Keller’s model and keeping the audience motivated. We included plenty of graphics on the slides and made sure that there was not an overwhelming amount of information on any one slide. We cited all of the studies and outside research that Dr. Cale used and made sure that the vocabulary was in terms that could be easily understood to those outside of the medical field. However, we did find a few things that needed to be changed. There were a few spelling mistakes that were overlooked throughout the revision process. We also made the assumption that audience members understood all of the acronyms and specific terminology related to Sleep Medicine. Unfortunately, audience members

did have to ask for clarification several times throughout the presentation. We plan to make a few revisions to the presentation and offer a fully finalized version back to Dr. Cale so that he may use it to spread awareness about OSA throughout the medical community. Dr. Cale would eventually like to educate the entire RMH system and then move to outlying hospital systems in Virginia. The main challenges that we faced involved the short time frame that we were allotted in order to put this presentation together. Also, much of the material that Dr. Cale presented to us was very complex and hard for us to understand without first doing our own outside research. We wanted to ensure that other audience members would be able to make sense of the information without having to do the same research.

Appendix A

RMH Screening for OSA: Is Your Patient at Risk for Sleep Apnea

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Mean Scores
Before this presentation, I was aware of OSA and some of its dangers	8	9	1			4.4
This presentation added to my knowledge of OSA and its dangers	14	4				4.8
I knew how to properly manage OSA patients before this presentation	2	4	8	4		3.2
I understand the correct process for the management of OSA patients	3	10	4			3.9
This presentation was a valuable use of my time	13	5				4.7
The information was presented in a clear manner	15	3				4.8
The information was presented in a way that enhanced my learning	15	2	1			4.8
I was fully engaged throughout the entire presentation	14	4				4.8

1 did not answer

I found the examples and information relevant to my position	13	4	1			4.7
I believe that I am capable of using the information that was presented	15	2	1			4.8
I feel as though I have gained a useful skill that can be used in my workplace setting	11	7				4.6

Comments:

*Dr. Cale is a good speaker/ teacher.

Presented material well

He clearly wants to work with the nurses to improve patient outcomes.

*Dr. Cale gave an excellent seminar on OSA.

*Very Good. Thank You!

References

American sleep apnea association: Sleep apnea. (2011).

Retrieved from <http://sleepapnea.org/learn/sleep-apnea.html>

Ramachandran et. al, *Resp Care* 2010; 55(4) 414-418