Obstructive Sleep Apnea (OSA) Diagnosis: A life-altering experience for women

Kathleen J. Menard, PhD, RN, CPAN, CAPA
University of Massachusetts Worcester, Graduate School of Nursing
UMass Memorial Medical Center, Worcester, Massachusetts

ICPAN ~ Copenhagen, Denmark
September 11, 2015

Research study funded by ASPAN and Sigma Theta Tau Iota Phi Chapter-at-Large
Objectives

• Identify at least two unusual aspects of OSA symptomatology in women
• Identify at least two ways in which women respond to diagnosis and initiation of treatment of OSA
• Identify how this research study can impact perianesthesia nurses
Dissertation

• **Dissertation Defense:**
  • *Obstructive Sleep Apnea Diagnosis: A life-altering experience*
• **Dissertation defended on April 21, 2015**
• **Dissertation Committee**
  • Dr. Jean Boucher (Chair)
  • Dr. Carol Bova (Committee member)
  • Dr. Lichuan Ye (Committee member/Sleep Expert)
Background and Significance

• SDB/OSA affects 22 million Americans
• About 80% of Americans with moderate to severe OSA are undiagnosed
• Overall prevalence for OSA is 26% for all individuals aged 30-70
  • Largest increase in younger men & women
• Incidence will rise with population aging and obesity epidemic

*Finucane, et al., 2011*
*Lam, Mak, & Ip, 2012*
*American Sleep Apnea Association (ASAA), 2012*
*Peppard, et al., 2013*
Significance to women

• Viewed as male disorder
• OSA undiagnosed/underreported
• Delays in diagnosis and treatment
  • Selection bias among health care providers
  • Women’s presenting symptoms
  • Sociocultural factors
• Lower ability to function with effects of OSA
• Equally at risk for side effects, including death
• Respond well to treatment, including adherence to treatment

Young, 1993
Young, Hutton, Finn, Badr, Palta, 1996
Resta, et al., 2003
Shepertycky, Banno & Kryger, 2005
Yeobah, et al., 2007
Ye, Pien, Weaver, 2009
Kapsimalis & Kryger, 2009
The Gap

- To date, little is known about the diagnosis of OSA from the perspective of women
- Exploration of women’s experience of diagnosis & treatment
  - Illness representation
  - Threat appraisal
  - Use of self-regulation in coping strategies
- Assist in earlier diagnosis & successful treatment
Purpose & Specific Aims

• **Purpose** is to explore women’s experiences with the diagnosis of OSA using Leventhal’s Self-Regulatory Theory

• **The specific aims:**
  • Explore the illness representation of women with a recent diagnosis (within one year) of OSA
  • Explore the cognitive perceptions and emotional response to diagnosis and treatment of OSA in this sample of women
  • Explore the meaning of OSA and the coping strategies used by this sample of women
Conceptual Processing of Health Threat Information

The Self-Regulatory Model of Health Behavior

Concrete Processing of Health Threat Information

Cameron & Leventhal, 1995
Methods

• Design
  • Qualitative descriptive design

• Sample
  • Purposive recruitment of adult female subjects newly diagnosed (within one year) with OSA
  • Recruitment

Sandelowski, 2010
Methods

• Sample
  • Inclusion:
    • Newly diagnosed with OSA (within one year)
    • Prescribed treatment
    • Able to provide informed consent
    • Able to understand, read, write English
    • Physically and mentally able to answer questions and verbally interact during the interview process
  • Exclusion:
    • Male gender
    • Not able to communicate well in English
    • OSA diagnosis > one year
    • Severe psychiatric disorders
Methods

Measures

- Semi-structured, digitally recorded interviews (30-60 minutes) using a self-regulatory theory based interview guide
- Field notes
- Permission for follow-up contact
- Collection of demographic data to collect descriptive information on:
  - Age, gender, ethnicity, education level, income, marital status, occupation, etc.
  - Information regarding diagnosis of OSA (time, method, etc), associated health issues
Methods

• Data Management & Analysis
  • Audio digitally recorded interviews
  • Field notes
  • Professional transcription
  • NVivo 9 & hand-coding
  • Demographic data double-entered using IBM PASW 21®
• Content analysis techniques
• Themes derived
• Trustworthiness – Lincoln & Guba
• Reflexivity

Lincoln & Guba, 1985
The Study

• IRB approval from UMMS 12/13
  • (IRB ID: H00002995)
• Study Timeline 12/2013 – 7/2014
• 36 women expressed interest in study
  • 15 excluded for lack of participant response to requests for interviews
  • 21 women interviewed
• Final sample: 20 women
The Sample Demographics

<table>
<thead>
<tr>
<th>Category</th>
<th>Mean (SD)</th>
<th>Median (Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>53.20 years (12.992)</td>
<td>57 years (19-71)</td>
</tr>
<tr>
<td>Menopause age</td>
<td>46.86 years (6.538)</td>
<td>49 years (29-54)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal (18.5-24.9)</td>
<td>3</td>
<td>15%</td>
</tr>
<tr>
<td>Overweight (25-29.9)</td>
<td>5</td>
<td>25%</td>
</tr>
<tr>
<td>Obese (30-40)</td>
<td>9</td>
<td>45%</td>
</tr>
<tr>
<td>Morbidly obese (&gt;40)</td>
<td>3</td>
<td>15%</td>
</tr>
<tr>
<td>Married/Living w/partner</td>
<td>13</td>
<td>65%</td>
</tr>
<tr>
<td>Postmenopausal</td>
<td>14</td>
<td>70%</td>
</tr>
</tbody>
</table>
## Sample Co-morbidities

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>13</td>
<td>65%</td>
</tr>
<tr>
<td>Hypertension</td>
<td>12</td>
<td>60%</td>
</tr>
<tr>
<td>Insomnia</td>
<td>6</td>
<td>30%</td>
</tr>
<tr>
<td>Diabetes Borderline/under obs.</td>
<td>6</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>25%</td>
</tr>
<tr>
<td>Asthma</td>
<td>5</td>
<td>25%</td>
</tr>
<tr>
<td>Thyroid disease</td>
<td>4</td>
<td>20%</td>
</tr>
<tr>
<td>Cancer</td>
<td>2</td>
<td>10%</td>
</tr>
</tbody>
</table>
# Sample OSA Characteristics

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Degree of OSA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild</td>
<td>2</td>
<td>10%</td>
</tr>
<tr>
<td>Moderate</td>
<td>6</td>
<td>30%</td>
</tr>
<tr>
<td>Severe</td>
<td>8</td>
<td>40%</td>
</tr>
<tr>
<td>Don’t Know/Not Told</td>
<td>4</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Snoring</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aware of loud snoring</td>
<td>10</td>
<td>50%</td>
</tr>
<tr>
<td>Aware of mild snoring</td>
<td>6</td>
<td>30%</td>
</tr>
<tr>
<td>Unaware of mild snoring</td>
<td>2</td>
<td>10%</td>
</tr>
<tr>
<td>No snoring</td>
<td>2</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Sleep characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good sleeper</td>
<td>9</td>
<td>45%</td>
</tr>
<tr>
<td>Poor sleep, frequent arousals</td>
<td>11</td>
<td>55%</td>
</tr>
</tbody>
</table>
# Sample ~ Other Symptoms

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cognitive</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulty concentrating</td>
<td>15</td>
<td>75%</td>
</tr>
<tr>
<td>Short-term memory loss</td>
<td>14</td>
<td>70%</td>
</tr>
<tr>
<td>Forgetful/absent-minded</td>
<td>5</td>
<td>25%</td>
</tr>
<tr>
<td>Lack of focus</td>
<td>3</td>
<td>15%</td>
</tr>
<tr>
<td><strong>Depression</strong></td>
<td>13</td>
<td>65%</td>
</tr>
<tr>
<td><strong>Morning headaches</strong></td>
<td>10</td>
<td>50%</td>
</tr>
<tr>
<td><strong>Teeth grinding/Sleep Bruxism</strong></td>
<td>9</td>
<td>45%</td>
</tr>
<tr>
<td><strong>Restless legs</strong></td>
<td>8</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Anxiety</strong></td>
<td>8</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Irritability</strong></td>
<td>6</td>
<td>30%</td>
</tr>
<tr>
<td><strong>Libido/sexual dysfunction</strong></td>
<td>6</td>
<td>30%</td>
</tr>
</tbody>
</table>
Sample Treatment

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>All were prescribed CPAP</td>
<td>20</td>
<td>100%</td>
</tr>
<tr>
<td>Used every night</td>
<td>13</td>
<td>65%</td>
</tr>
<tr>
<td>Hours/night usage (6-8.5)</td>
<td>16</td>
<td>80%</td>
</tr>
</tbody>
</table>
Themes

- **A life-altering diagnosis**
  - Both positive and negative outcomes

- **Subthemes:**
  - *Making sense of it*
    - Coming to terms with symptoms (illness representation) and seeking diagnosis
  - *Making it work*
    - Coming to terms with treatment
  - *Paying it forward*
    - Advocating for others with OSA
    - Improving lifestyle, advocating for herself & family
Figure 2. A Life-altering Diagnosis

Conceptual Processing of OSA Information

- Making Sense of It
  - Symptoms
  - Family
  - Friends
  - Health-care Providers
  - Media
  - Stigma

- Making It Work
  - Delay
  - Stigma

- Appraisal
  - Delay

A Life-altering Diagnosis

Concrete Processing of OSA Information

- Paying It Forward
  - Delay

Stigma

Delay
A Life-altering Diagnosis

• Positives
  • Many of them reported initial thoughts of being “happy to have a diagnosis”, “OK” with the diagnosis, “hoping to have a magic pill to feel better, like I did before.”

• Negatives
  • “A bunch of hogwash. . . That it wasn’t a real problem, that something else must be going on, and how could so many millions of people be suffering from sleep apnea. I kind of looked it at as the new medical trend.”
  • “I was somewhat depressed and sad because I felt very old — I was in denial and I didn't want to believe I had it and I — it makes you feel old.”
Making Sense of It

• Delay in diagnosis

“I actually pushed for this. . . my brother-in-law is a big guy and he has none of these symptoms either and he has the worst form, and I drive a school bus. That was it. She put me in for the test.”

“I didn’t know it until I was seventy years old. Excuse me, seventy years old. So I don’t know how you, I think you have to have doctors to ask questions, ‘how are your sleep habits?’ I just never knew it. Again, I don’t think doctors pick up on this.”
Making Sense of It

• Family influence/Sleep partner awareness:

“Sometimes you go so quiet that I have to actually look to see whether you’re still breathing or not, you get too quiet.”

“I’m very concerned about your breathing in the middle of the night. I'm really scared. It worries me. I lay awake listening to you.”
Making Sense of It

• Symptoms – identifying & recognition of association to OSA

“I just didn’t put that much stock into it. And then when they told me, I was scared at first because all of the new information. Like knowing that it is dangerous, it was very like, it was very shocking, I guess, to just hear that this is happening inside my own body and it took me thirty-three years to figure it out.”
Making Sense of It

• Stigma of OSA

“I actually, I chased a date out of the house, he says, ‘I can’t do this. I need sleep’” she was “embarrassed and horrified.” She was looking to the future and concerned about “how is a relationship ever going to work?”

“It's embarrassing just because it's a girl. Guys snore. That's a typical thing. Girls to be like that—no.”
Making Sense of It

• Conceptual and concrete processing of OSA information (Leventhal’s Theory)
  “I mean it was, you know, it was surprising to me I guess because I just felt, you know, atypical, you know. I would say ninety-nine, maybe not that high, we’ll go with eighty-five percent of the people that had sleep apnea that I’ve worked with were men with fat necks, you know. So I’m thinking, you know, well obviously I’m not a man and, secondly, I don’t have a fat neck. . . . but I just didn’t feel like I fit that stereotype, you know?”
Making It Work

• Adjusting to using CPAP was often difficult:
  “So the CPAP machine was the automatic choice. So a machine if you’re a guy that just crawls into bed, closes his eyes, falls asleep and the machine just takes you through the night, it’s great. But when you’re a woman that does not sleep well to start with, to just throw a machine that makes noise and is more inconvenient may not be the right first step in the process.”
  “It was so noticeable that it was like, oh my God, like I don’t care how hard this is, I have to stick with it.”
Making It Work

• Delay in treatment
  
  One woman then experienced significant delays (months) in obtaining her CPAP, resolving issues with CPAP problems including taking away her CPAP and leaving her without treatment because of miscommunication between her providers

• Lifestyle changes
  
  Considered leaving her CPAP behind on a trip to Europe because she didn’t “want to have to deal with it.”
  Concern about a woodland camping trip where she could not take her CPAP
  Business woman was annoyed with the added burden of transporting her CPAP
Making It Work

- Family influences:

  “Women with partners often referred to working as a team with their spouses, “We set our team up and we help each other”, and their biggest source of support, “Mostly is like my husband.”

  “You know—I’m raising my daughters. My husband left when my daughters were two and seven. My job was—I’m going to raise my children . . . . My kids are still young. They're still little. I want to be around here for them. That's why I would never not use my machine. Ever.”
Making It Work

• Stigma of OSA treatment (CPAP)
  “Look at this stupid machine I’ve got to use. So I can use this so I don't snore and keep you awake or something.”
  “I’d be more embarrassed you hearing me snore than seeing me wear a machine.”
  “I dated a gentleman, and he had one too. So we both looked like idiots.”
Making It Work

• Conceptual and concrete processing of OSA treatment (Leventhal’s Theory)
  “And then once I got the machine, the first night I used it, I remember waking up and feeling like a completely different person. Oh, yeah, in a good way.”

“I wish I didn’t have to use it, I wish there was an easier way to help with it, but it’s just, you know, a little bit of an aggravation, you know, so oh I’ve got to clean this today and I have to you know. But, I mean, I know I need it to help me, so I do use it. Yeah, just decided why fight it, you know? That’s my attitude is why fight it. Yeah. I think it helped definitely.”
Paying It Forward

• Offering information & support to others

  “I’m just one of those people who like wants to tell the world about the wonderfulness that I have found.”

  “I have my ex-husband, my daughter’s father, I have been on him all the time. Go and ask for a sleep test, go fast and push for a sleep test. Because I know he has it, because I have heard him stop breathing. And my little brother went through this when we were little, and so I keep pushing him to like, and that’s why my sister got it done. And one of my best friends pushed to get it done, and what do you know, they all have it.”
Paying It Forward

• Advocating for OSA education for women
  “I also kind of wish that more PCPs talked about it with their patients . . . I wish that it had been suggested to me earlier in my life. . . there was more awareness about it.”

• Concern over others
  One younger participant had to fight her children’s PCP as well as insurance companies for coverage for sleep studies and treatment for her teenage sons.

Another woman was concerned about her husband and her son, “No, he should be, and my son (tested for OSA). Definitely. Maybe after I get a good handle on it (CPAP), I’ll stick it on his nose. He does stop breathing.”
Paying It Forward

• Health Promotion

“I go walking. When I walk every day . . . . I felt great. We were doing two to four miles a day. . . Great blood oxygen flowing, a lot of feeling good, and I think that’s also a very big part, is exercise.”

“I absolutely plan on walking. Now I have the energy to walk.”
Treatment Success

- Successful treatment was achieved by 55% \((n = 11)\) women in the study
  - Improved QOL
  - Improved health
  - More rested, less fatigued
  - Improved sleep
  - Fewer apneic episodes
- “I mean it’s my sleep apnea, so I own it.”
- “Okay yeah, it’s a pain, but deal with it.”
Discussion

• Delay in diagnosis and treatment
• Women in this study did not present with the classic symptoms of OSA
• Sleep partners were very aware of breathing difficulties
• 55% of women in this study were unaware they might have OSA
Discussion

• Women were often unaware of OSA’s co-morbidities or association with depression, cardiovascular disease, cognitive dysfunction, sexual dysfunction, diabetes, etc

• These women often had difficulty adjusting to OSA treatment with CPAP
Implications for Practice

- Increased knowledge by HCPs and insurance companies of women’s OSA presentation
- More accessibility to testing for women
- Use of professional standards and guidelines to assist with diagnosis & treatment
- Inclusion of sleep partners in the evaluation of sleep disorders in women
- Awareness of other treatment options more suitable for women
Implications for Research

• Women-specific research on OSA screening tools, risk factors & treatments
• Interventional studies that test gender-based strategies to manage OSA treatment
• Inclusion of sleep partners in future studies for valuable input on women’s symptomatology for earlier diagnosis
Implications for Health Policy

• Universal coverage for diagnosis and treatment by insurance companies
• More public awareness of the consequences of OSA, especially for women
  • Public service announcements (PSA) during prime time programs of interest to women
  • Use of other social media to disseminate OSA information
Limitations

• Lack of racial/ethnic diversity
  • One Hispanic, all others were Caucasian
• Majority of phone interviews versus in-person interviews
Impact on Perianesthesia Nursing

• 80% of Americans with moderate to severe OSA undiagnosed
• Americans with diagnosed OSA ~ 26%

Prevalence of Mod/Severe OSA in Adults - 2013

Prevalence of OSA in Adults - 2014

American Sleep Apnea Association (ASAA), 2012
Peppard et al., 2013
Pan, Wang, & Wang, 2014
Impact on Perianesthesia Nursing

- More awareness
  - 80/93
- Undiagnosed OSA
  - Difficult intubation
  - Anesthetic management challenges
  - Postoperative complications
  - Increased LOS
- Increased rate of ICU admissions (or overnight stays after minor surgery)

*ASPN Perianesthesia Nursing Standards, Practice Recommendations & Interpretive Statements, 2014*
Impact on Perianesthesia Nursing

• What do you need to be aware of?
  • Anyone with known or suspected OSA
    • Receiving opioids
    • Undergoing procedural sedation
    • General anesthesia
    • Regional anesthesia with sedation
  • Treat them like they have OSA!

*ASPAN Perianesthesia Nursing Standards, Practice Recommendations & Interpretive Statements, 2014*
ASPAN Screening Recommendations

- BMI > 30
- Increased abdominal fat
- Cardiovascular disease
  - Hypertension (resistant)
  - Ischemic Heart Disease
  - Heart Failure
  - Arrhythmias
  - Stroke
- Age
- Male gender
ASPN Screening Recommendations

- Barrett’s esophagus
- Endocrine dysfunction
  - Type II diabetes
  - Metabolic syndrome
- Hypercapnia
  - Increased BMI
  - Restrictive chest wall
  - Decreased overnight saturation
- Upper airway enlargement

ASPN Perianesthesia Nursing Standards, Practice Recommendations & Interpretive Statements, 2014
Pre-operative Screening Tools

• Preoperative screening imperative
• Most are based on the male model
  • Classic symptoms:
    • Loud snoring
    • Frequent awakening, choking, snorting
    • Witnessed apneas
    • EDS
• Male gender is usually a scoring criteria
ASA OSA Checklist

- Snoring
- Tired
- Witnessed apnea
- BMI > 25
- Age > 50
- Neck circumference >40 cm
- Male gender

American Society of Anesthesiologists (ASA), 2014
STOP-BANG

1. Do you _SNORE loudly (louder than talking or loud enough to be heard through closed doors)?
2. Do you often feel _TIRED, fatigued, or sleepy during daytime?
3. Has anyone _OBSERVED you stop breathing during your sleep?
4. Do you have or are you being treated for high blood _PRESSURE?
5. _BMI more than 35?
6. _AGE over 50 years old?
7. _NECK circumference > 40 cms (15.75 inches)?
8. Male _GENDER?

≥3 yes answers: High-risk for OSA
<3 yes answers: Low-risk for OSA

Chung, Subramanyam, Liao, Sasaki, Shapiro & Sun, 2012
Signs & Symptoms to be Aware

- EDS
- Observed snoring
- Snoring under sedation
- Dry mouth or sore throat
- Morning headache
- Fatigue or malaise
- Witnessed apneas
- Restlessness
- Drowsy driving
- Awakening unrefreshed after sleep
- Nocturia
What I would Add

- Cognitive dysfunction
- Depression
- Sleep bruxism
- Restless leg syndrome (RLS)
- Insomnia
- Anxiety
- Irritability
- Sexual dysfunction
- Cancer diagnosis

Quintana-Gallego et al., 2004
Shepertycky et al., 2005
Ye et al., 2008
Ye et al., 2009
Resta et al., 2003
Valipour et al., 2007
Wheaton et al., 2012
Petersen et al., 2011
Petersen et al., 2013
Stavaras et al., 2012
Steinke, 2013
Castillo et al., 2014
Cronlein et al., 2011
Kapsimalis & Kryger, 2009
M. H. Lee et al., 2014
Phillips et al., 2008
Subramanian et al., 2011
A Cautionary Tale

- 66 year old with OSA, non-adherent with CPAP use
- Remote history of breast cancer in the early 90s
- Co-morbidities included HTN, depression, atrial fibrillation
- Admitted with recurrent breast cancer
- Bronchoscopy for evaluation of lesions consistent with lung metastasis
References


Questions???

kjmenardrn@hotmail.com

Thank You!