Sleep and Obesity
Robin Lloyd, MD
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Disclosures

Relevant Financial Relationship(s)
None

Off Label Usage
None

Objectives

• Understand the prevalence of obesity and recent trends
• Identify hormonal changes associated with sleep disorders and obesity
• Describe appropriate ways of evaluating and managing sleep disorders in the context of obesity
Prevalence of Obesity

- Worldwide prevalence has doubled since 1980
- Over 1/3 of adults and 17% of children are obese in the United States
- Numbers double when considering overweight
- Two decades ago, no state had an obesity rate over 15%, now no state has an obesity rate less than 15%
- 38 states have obesity rate >25%
- Over 72 million adults are obese

Cost of obesity and overweight

- $270 billion/yr in the US
  - Increased need for medical care ($127B)
  - Loss of worker productivity
    - Due to death ($49B)
    - Due to short term disability ($43B)
    - Due to total disability ($72B)

Montana Statistics

- Bottom 10 most obese states, but...it’s a growing problem:
  - 15 years ago, obesity rate was 15%, now increased to ~26%
  - 15 years ago, obesity/overweight rate was 49%, now almost 62%
Medical Risks of Obesity

- Hypertension
- Heart disease
- Type 2 diabetes
- Stroke
- Cancer
- Dyslipidemia
- Respiratory problems

Health implications of sleep disturbance

- **Increased risk of:**
  - Obesity
  - Hypertension
  - Heart disease
  - Type 2 diabetes
  - Stroke
  - Mood disturbance
  - Substance abuse
  - All cause mortality

Multiple studies
- Troxel, Sleep 2010
Sleep duration and obesity risk

- Obesity epidemic has paralleled reduced sleep duration in modern society
- Poor sleep quality leading to sleep loss has become a frequent complaint
- Over 50 epidemiological studies show evidence of sleep disruption being an obesity risk factor
- Sleep disruption leads to metabolic and endocrine alterations

Why do we sleep?

- Memory consolidation and pruning
- Immune regulation
- Brain plasticity
- Restorative theory

Hormonal dysregulation with sleep disturbance

- **Leptin decreases**
  - Hormone contributing to satiety and energy expenditure
- **Ghrelin increases**
  - Hormone promoting hunger
- Net result is increased intake with decreased expenditure
- Preference for unhealthy food choices
Sleep disorders associated with obesity

- OBSTRUCTIVE SLEEP APNEA
  - Obesity hypoventilation syndrome
  - Narcolepsy
  - Night eating syndrome/Sleep related eating disorder
  - Excessive daytime sleepiness

Sleep disorder evaluation and treatment

- **Evaluation**
  - History
  - Physical
  - Screening overnight oximetry
  - Polysomnography

- **Treatment**
  - PAP therapy is gold standard for SDB
  - Alternative therapies
  - Weight loss
  - Treat any other primary sleep disorders
Conclusion

• Obesity is an epidemic with significant long-term health implications
• Sleep disturbance is associated with obesity in a bidirectional fashion
• Obese patients should be screened and treated for sleep disorders

Thank You

• Lloyd.robin@mayo.edu