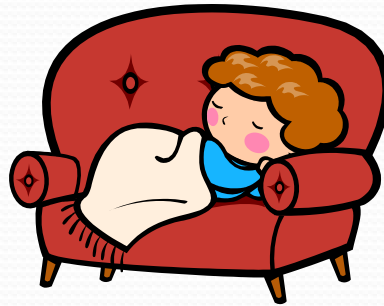


# Sleep and Health Outcomes

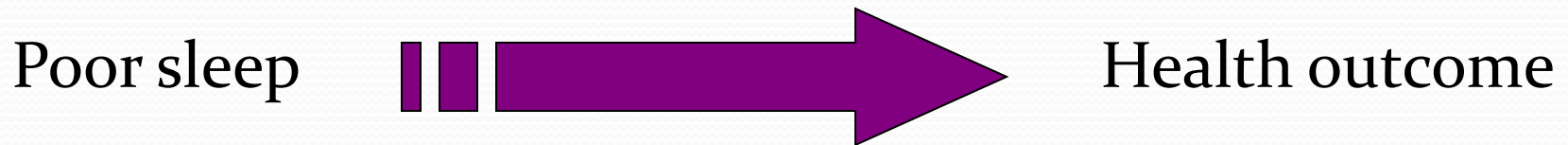


Kelly L. Johnston, BS  
MPH Candidate in BCHS Program

With special thanks to:  
Angela Stover, MA, Paul Pilkonis, PhD, and Daniel Buysse, MD  
for their insight and help throughout this project

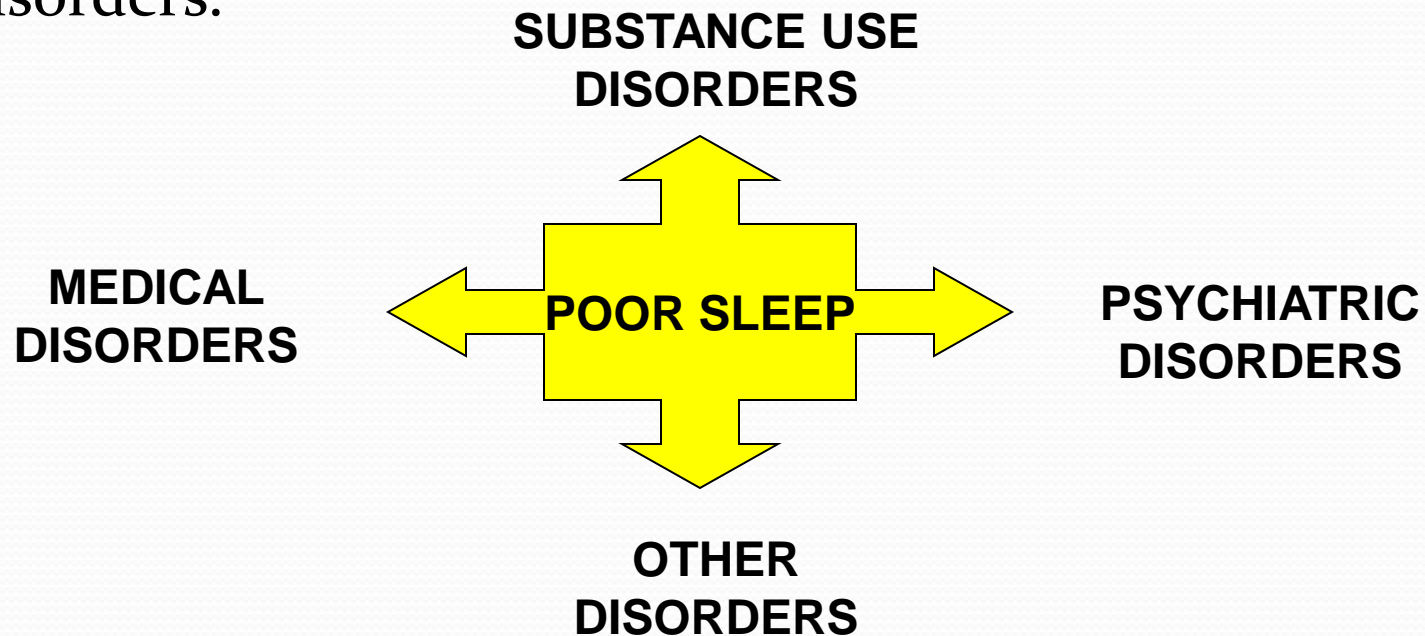
# Starting note...

- In an attempt to focus the search, the articles used demonstrated a health outcome as a result of poor sleep, as opposed to sleep being the health outcome:



# However....

- It is important to note the difficulty in labeling poor sleep as the initial health problem. Poor sleep can be comorbid with medical, psychiatric, substance use, and other disorders.



# Abstract/Methods

- Purpose: Perform a comprehensive literature review to create a bibliography of reviews, studies, and analyses regarding health outcomes of poor sleep.
- References were also collected to illustrate the epidemiology of poor sleep.
- Methods: Online searches were performed via PubMed and Ovid, and articles were obtained via Pittcat mainly, and other resources as needed.
- The original search was trimmed for relevance and then grouped by themes of health outcome or epidemiological data.



# Healthy People 2010

## Sleep-Related Goals

- 24-11. (Developmental) Increase the proportion of persons with symptoms of obstructive sleep apnea whose condition is medically managed.

**Potential data source:** National Health Interview Survey (NHIS), CDC, NCHS.

- 24-12. (Developmental) Reduce the proportion of vehicular crashes caused by persons with excessive sleepiness.
- Potential data sources: National Health Interview Survey (NHIS), CDC, NCHS; Fatal Accident Reporting System (FARS), U.S. Department of Transportation, National Highway Traffic Safety Administration.

# Sleep Across the Lifespan

- Studies have examined sleep from how it affects pregnant mothers and their unborn child to changing sleep patterns among the elderly



Womb → Infants → Adolescents → Middle Age → Elderly

# General Themes/ Results of Literature Review

- As a result of this literature review, several themes of health outcomes emerged as a result of poor sleep:
  - Associations with chronic diseases such as cardiovascular disease, diabetes, obesity (CDC, 2008)
  - Cancer
  - Mental Health Problems (depression)
  - General Fatigue
  - General Health Status

....among many others

# Cardiovascular Disease, Diabetes, and Sleep

- Obstructive Sleep apnea (OSA) and Sleep-disordered Breathing are associated with heart failure and stroke
- OSA is found in 50% of stroke patients and is associated with poorer outcomes following stroke (Brown, 2006)
- Treatment of OSA is associated with decreased cardiac death after percutaneous coronary intervention (Cassar, et. al)
- Lindberg et al. found snoring and excessive daytime sleepiness to be a risk factor for hypertension and diabetes among women

# Cancer and Sleep

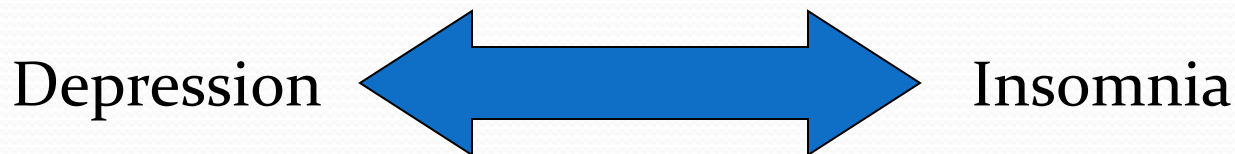
- Sleep/Wake disturbances are prevalent among persons with cancer and their caregivers. (Berger et al; Cho et al.)
- Berger et al. recommends more research on treatment and assessment of sleep/wake difficulties among cancer patients
- Bower et al. identified a subgroup of breast cancer survivors with increased fatigue and made intervention recommendations
- Literature review by Pinheiro et al. found no convincing evidence of a link between sleep duration and incidence of breast cancer

# Sleep and Health-Related Quality of Life (HRQOL)

- Some association exists between sleepiness and self-reported general health
- Generally: Reports of excessive sleepiness = Lower self-reported general health
- Most notable when sleep problems are accompanied by other health problems (i.e. chronic illness)

# Sleep and Mental Health

- Associations between depression , anxiety, and insomnia
- Schwartz et al. found that depressive symptoms may decrease once an individual received treatment for sleep apnea and restores sufficient sleep
- Buysse (2004) showed recent evidence in a bi-directional model: Not only is depression a risk factor for insomnia, but the reverse is also witnessed, especially among older adults



# Brief Epidemiology of Sleep Problems

- Poor sleep has the potential to affect everyone at some point in their lives due to varying environmental, psychological, somatic factors
- 10% - 15% of adult population with chronic insomnia
- However, sleep problems tend to be reported most often among the following populations in particular:
  1. Elderly (nightly awakenings and napping increase with age: Bliwise, et al. 2005)
  2. Women (Mainly middle-aged and elderly): Insomnia (difficulty falling asleep, night wakening, and waking too early)
  3. Shift workers
  4. Commercial Drivers (Sleep-Disordered Breathing and Sleepiness): One study found over 1/2 of commercial drivers surveyed had sleep-disordered breathing and 24% reported excessive sleepiness (Howard et. al, 2004)

# Discussion/Conclusions

- Sleep difficulties are associated with many health problems
- Some studies have found evidence that sleep problems increase the risk for development of health problems
- However, the literature suggest bi-directional models, especially given lack of assessment of sleep problems and differential diagnoses
- Sleep problems can affect everyone, but are mainly reported among older adults and women

# Recommendations

- In general, more clinical and public health attention should be paid to the health effects of poor sleep
- Effects of poor sleep should be included in nursing and health care providers' ongoing education (including providing understandable and appropriate information to patients)
- Better assessments of sleep and ongoing sleep research are needed to improve knowledge of associations and enhance treatment recommendations, especially for chronic disease patients
- Healthy People 2010 goals only address sleep apnea manageability and vehicular crashes due to sleepiness. More emphasis should be paid to other sleep problems such as insomnia (i.e. quality of life, work days missed)

# Why perform this literature review?

- As stated earlier, the general purpose of this literature review was to pull together articles which discuss health outcomes of poor sleep as well as the epidemiology behind poor sleep.
- This search will be used to enhance an MPH thesis scheduled for the summer of 2009. The goal of the thesis will be to present a more detailed look at what the literature says about the health outcomes of more sleep.
- Most importantly, however, the thesis will present the need and appropriateness of sleep assessment.
- Data from a particular sleep assessment effort will be analyzed: Patient Reported Outcomes Measurement Information System (PROMIS) (PI: Paul Pilkonis, PhD)

# References

**\*\*Full Endnote reference list also available \*\***

- Berger, A. M., Parker, K. P., Young-McCaughan, S., Mallory, G. A., Barsevick, A. M., Beck, S. L., et al. (2005). Sleep wake disturbances in people with cancer and their caregivers: state of the science. *Oncol Nurs Forum*, 32(6), E98-126.
- Bliwise, D. L., Ansari, F. P., Straight, L. B., & Parker, K. P. (2005). Age changes in timing and 24-hour distribution of self-reported sleep. *Am J Geriatr Psychiatry*, 13(12), 1077-1082.
- Bower, J. E., Ganz, P. A., Desmond, K. A., Rowland, J. H., Meyerowitz, B. E., & Belin, T. R. (2000). Fatigue in breast cancer survivors: occurrence, correlates, and impact on quality of life. *J Clin Oncol*, 18(4), 743-753.
- Brown, D. L. (2006). Sleep disorders and stroke. *Semin Neurol*, 26(1), 117-122.
- Buysse, D. J. (2004). Insomnia, depression and aging. Assessing sleep and mood interactions in older adults. *Geriatrics*, 59(2), 47-51; quiz 52.
- Cassar, A., Morgenthaler, T. I., Lennon, R. J., Rihal, C. S., & Lerman, A. (2007). Treatment of obstructive sleep apnea is associated with decreased cardiac death after percutaneous coronary intervention. *J Am Coll Cardiol*, 50(14), 1310-1314
- Centers for Disease Control and Prevention. (2008). Sleep and Sleep Disorders: A Public Health Challenge. <http://www.cdc.gov/sleep/>. Accessed online December 7, 2008.
- Cho, M. H., Dodd, M. J., Lee, K. A., Padilla, G., & Slaughter, R. (2006). Self-reported sleep quality in family caregivers of gastric cancer patients who are receiving chemotherapy in Korea. *J Cancer Educ*, 21(1 Suppl), S37-41.
- Healthy People 2010
- Howard, M. E., Desai, A. V., Grunstein, R. R., Hukins, C., Armstrong, J. G., Joffe, D., et al. (2004). Sleepiness, sleep-disordered breathing, and accident risk factors in commercial vehicle drivers. *Am J Respir Crit Care Med*, 170(9), 1014-1021.
- Lindberg, E., Berne, C., Franklin, K. A., Svensson, M., & Janson, C. (2007). Snoring and daytime sleepiness as risk factors for hypertension and diabetes in women--a population-based study. *Respir Med*, 101(6), 1283-1290.
- Pinheiro, S. P., Schernhammer, E. S., Tworoger, S. S., & Michels, K. B. (2006). A prospective study on habitual duration of sleep and incidence of breast cancer in a large cohort of women. *Cancer Res*, 66(10), 5521-5525.
- Schwartz, D.J., Kohler, W.C., & Karatinos, G. (2005). Symptoms of depression in individuals with obstructive sleep apnea may be amenable to treatment with continuous positive airway pressure. *Chest*, 128, 1304-1306