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## Effects of Sleep Deprivation in Children and Adolescents

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### BACKGROUND

- Getting enough quality sleep at night can help protect one's mental health, physical health, quality of life, and overall safety. It also can affect how well one thinks, reacts, works, learns, and gets along with others.
- 59% of 6th through 8th graders and 87% of U.S. high school students are getting less than recommended hours of sleep on school nights.
- It is recommended by the National Sleep Foundation that adolescents age 14–17 receive 8–10 hours of sleep per night.
- The putative link between sleep and infection susceptibility is particularly critical for adolescents, as they frequently obtain too little sleep, getting by with 7–7.5 hours on weeknights.

### PURPOSE

- Expand research on the effects sleep deprivation has on children and adolescents to make our public health community aware of the importance of sleep and the seriousness of detrimental health implications associated with sleep deprivation.
- Educate the population on the benefits of later school start times which would in turn decrease associated health risks.
- Provide information for parents and guardians in order to help avoid health risks in their children.

### RESEARCH QUESTIONS

1. What causes sleep deprivation in children age 6 to 13 and adolescents age 14 to 17?
2. What diseases are at risk for development related to sleep deprivation?
3. Would later school start times correlate to better test scores and academic performance?

### MATERIALS AND METHODS

- Data bases searched include, CINAHL, MEDLINE, ScienceDirect, PsycINFO, and SpringerLink.
- Search terms: sleep deprivation, children, adolescents, health risks.
- The Tannahill Model designed by A. Tannahill guided the literature review as a conceptual framework.

### RESULTS

#### Causes of Sleep Deprivation

- Changes in melatonin secretion and a need for total greater total sleep time, due to maturational changes in the neuronal connectivity.
- Medication usage may also be contributing to the association between altered sleep-wake cycle patterns and later phases of illness.
- The modern way of living (e.g. artificial light, late-night screen time, caffeine use, and no bedtime rules in the household).
- Family disorganization might create a variety of environmental factors that inhibit the practice or adoption of good sleep hygiene practices, thereby increasing problematic sleeping patterns in adolescents.

#### Diseases Associated with Sleep Deprivation

- High blood pressure, insulin resistance, diabetes mellitus, mental health problems, high body mass index, low intake of meal frequency, higher intake of snacks and soft drinks, low intake of fruits and vegetables, decreased school performance, decreased skin integrity, and decreased physical activity.
- Diseases mediated by inflammation, including cardiovascular disease, diabetes, metabolic disease and depression.
- Insufficient sleep disturbances are common in depressive disorders and other psychopathologic conditions potentially associated with suicidal risk.

#### Impact on Academic Performance

- Short-term memory, working memory, divided attention, and math fluency scores were lower in children in short sleep condition.
- Poorer grades were reported with short sleep duration.
- Overweight and obesity, school performance, and risk behaviors are all negatively affected by sleep deprivation.

### CONCLUSIONS

- These findings should encourage individuals in families, schools, and policy makers to make additional sleep a priority for shorter-sleeping adolescents.
- The discovery of the amount of health risks and disparities directly correlated to sleep deprivation and improper sleep hygiene is vastly disturbing.
- In conclusion, it has been reviewed through academic research that children and adolescents need to acquire longer sleep duration and by setting back school start times, school districts and policy makers can help our youth achieve the sleep they require.

### NURSING IMPLICATIONS

It would be advantageous as nurses to look out for patterns of sleep deprivation in our patients. Nurses should make discussions about sleep a part of our regular health history questions and it would be excellent if we could use our education skills to educate our patients on the correct requirements for sleep for each age group.

### REFERENCES

Please see additional handout.