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The Sleep Gap: Advancing Healthy Sleep among Youth in Rural Communities

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Abstract. Sleep is essential to survival yet remains a public health concern affecting rural youth and adults (Chang et al., 2012; Kakkar, Bohra, Trivedi, Gupta, & Saini, 2016). Besides emotional and social problems, regular short sleep among youth contributes to neurodevelopmental and mental health concerns. Youth that reside in rural communities experience higher rates of short sleep (Daly et al., 2015); therefore, understanding and recognizing specific health risks and protective factors among this population is important to addressing sleep disparity. Future research should explore translating sleep knowledge into practical strategies to help reverse sleep insufficiency among rural youth. This practice note describes the contributing factors and interventions associated with adolescent sleep deprivation in rural settings.

Keywords: sleep deprivation, rural social work, rural social work practice, rural collaborative practice

Across the United States, more than half of high school students (68.8%) report obtaining less than 8 hours of sleep per school night (Centers for Disease Control and Prevention [CDC], 2017; Tarokh, Saletin, & Carskadon, 2016). Bartel, Gradisar, and Williamson (2015) reported that only 14% to 27% of youth attain healthy sleep and a quantity indicator of healthy sleep for youth is generally eight to nine hours per 24 hours. Prior research has shown that sufficient sleep contributes to adolescent cortical brain maturation and may positively relate to bilateral hippocampal gray matter volume that is important for increased attention, executive functioning, and academic achievement (Tarokh et al., 2016).

The major contributing factor of adolescent sleep deprivation is a delayed circadian rhythm and changes to the sleep-wake homeostatic sleep regulation system, including decreases in sleep-aiding hormones such as melatonin (Hershner & Chervin, 2014). That is, pubescent youth tend to be less sleepy at night irrelevant of circumstance. A few other common risk factors for short sleep are early school start times, sleep-aversive behaviors (e.g., all-night studying, self-selected bedtimes, technology use, and substance use), extracurricular activities, peer relationships, misperceptions about sleep need, health issues (stress, anxiety, obesity), and medical sleep problems (i.e., insomnia and restless leg syndrome) (Bartel et al., 2015; Dahl, 1999; Hershner & Chervin, 2014; Paruthi, 2016).

While increased scholarly attention has focused on sleep, few studies have considered the interaction between sleep insufficiency and rural contexts. There is an intersectional experience related to sleep attainment not sufficiently addressed in the literature. Recent studies have found that rural dwellers, in comparison to those in urban or suburban areas, have vastly different experiences with short sleep (Chang et al., 2012; Kakkar et al., 2016). This practice note reviews the contributing factors of sleep insufficiency and interventions that promote healthy sleep in order to better understand the intersectional experiences and potential interventions for sleep deprivation among youth in rural communities.

Contributing Factors of Sleep Insufficiency in the Rural Context

Sleep insufficiency in rural populations is linked to disparities in health and accessibility to health care services, co-occurring medical problems (obesity, diabetes, and traumatic injury), employment in agriculture, long commutes, poverty, physical inactivity, social isolation, and psychiatric disorders (CDC, 2017; Chang et al., 2012). In a study assessing correlates of sleep duration and mental health and substance use, Daly et al. (2015) found that 40% of rural American adolescents reported sleep insufficiency (i.e., 6 hours or less of sleep per night). In this study, middle schoolers with short sleep also indicated significantly higher levels of suicidal behavior compared to high schoolers with short sleep. Substance use and mental health were associated with sleep insufficiency among rural high schoolers.

Sleep disparity between urban and rural communities has been found but not yet fully explored in the literature. With the exception of Pereira, Louzada, and Moreno (2010), which found that rural Brazilian youth living without electricity acquired sufficient sleep compared to urban youth with electricity. Other studies on sleep insufficiency have typically reported that urban youth acquire more sleep than rural youth (e.g., Daly et al., 2015; Tang et al., 2017), approximately one hour more according to Kakkar et al. (2016). Two well-established trends in rural communities are poverty and limited access to health resources and services. These two factors alone largely contribute to health and wellness vulnerabilities. In two cross-sectional studies examining health correlates of sleep behavior, researchers found that short sleep and depression were common in 12 rural communities (Chang et al., 2012), and short sleep was linked to poor nutrition, regular physical inactivity, and weight gain in rural Missouri, Tennessee, and Arkansas (Stamatakis & Brownson, 2008). Rural communities have increased risk for depression and general poorer health; however, there is a causality dilemma between sleep and depression. Perhaps, family and community and public policy changes, as well as clinical intervention can begin to address the consequences of adolescent sleep deprivation.

Family and Community

Personal, parental, and environmental changes can contribute to healthy sleep among youth. Personal changes include reducing technology or media use before bed; involvement in physical activity; adhering to sleep hygiene practices like use of bedroom and bed exclusively for sleep; relaxation or limited arousal before initiating sleep; and avoidance of caffeinated substances particularly after noon (Hershner & Chervin, 2014; Owens et al., 2014). Two major parental factors that can alter sleep insufficiency among youth are noncombative or positive family environments and parent-set bedtime (Bartel et al., 2015). Environmental factors

associated with healthy sleep include later school start times, safe and quiet neighborhoods, and neighborhoods with amenities (e.g., parks, playgrounds, and libraries) (Bartel et al., 2015; Singh & Kenney, 2013; Watson et al., 2017).

Policy Interventions

Several studies have cited early school start times as a constant interference with healthy sleep attainment during the school year (Bartel et al., 2015; Owens et al., 2014). Therefore, later school start times may offer opportunities to increase sleep duration, academic performance, alertness, as well as decrease tardiness and absences, and teen car crash rates (Paruthi, 2016; Tarokh et al., 2016; Watson et al., 2017). The need for later start times is further supported by evidence that while youth experience sleep regression during school days, there is minimal to no change in sleep attainment during non-school days, such as the weekend or school closures (Tarokh et al., 2016).

Another policy consideration is to offer timed early morning naps to improve attention and reduce sleepiness and fatigue. Parents and educators often report concern over youth's tardiness, falling asleep in class, and mental lapses, thus a nap during first or second class periods may contribute to restoration and better daytime functioning (Dahl, 1999; Tarokh et al., 2016). Whether the intervention is later school start times or a nap, there is the potential to reverse the adverse effects of sleep deprivation.

Clinical Interventions

The prevalence of sleep deprivation among youth due to both biological and environmental factors motivate the necessity for clinical sleep intervention. Clinical guidelines and interventions are helpful ways to improve sleep deprivation; however, sleep hygiene awareness or knowledge alone is ineffective for sleep sufficiency (Schutte-Rodin, Broch, Buysse, Dorsey, & Sateia, 2008). For example, cognitive and behavioral interventions are complementary to sleep hygiene education (Table 1).

Evidence-based interventions, such as cognitive behavioral therapy for insomnia (CBT-I), relaxation therapy, and stimulus control therapy, are medication-free, cost-effective, reliable means to manage sleep insufficiency (Sharma & Andrade, 2012). More specifically, cognitive behavioral therapies (CBT) are effective across social demographics and can manage a number of clinical issues including sleep insufficiency, CBT pair well with other therapies, and are comparable if not better than medication (Mitchell, Gehrman, Perlis, & Umscheid, 2012; Schutte-Rodin et al., 2008).

Pharmacotherapy

Pharmacological treatment for chronic sleep insufficiency is another potential intervention. According to Owens (2017), there are no medications approved by the U.S. Food and Drug Administration (FDA) for pediatric sleep problems and pharmacotherapy is not a first-

line treatment for pediatric insomnia; however, common pharmacotherapy for chronic sleep problems include melatonin for sleep initiation and antihistamines (diphenhydramine) for acute sleep issues. A best practice for pediatric insomnia is evidence-based behavior therapy and sleep hygiene education in combination with pharmacotherapy (Owens, 2017; Owens et al., 2005). A few indicators for pharmacological treatment include (a) inadequacy or failure of sleep hygiene education and behavioral interventions; (b) comorbidity of insomnia and medical conditions

Table 1

Good Practices for Sleep Hygiene

Schedule

Nap or break time in the AM

Physical activity

Relaxation period before bed

Consistent sleep-wake schedule

Time management for study and homework time, no all-nighters

Technology

Dark, quiet, and comfortable temperature

Avoid cell phone, computer, television prior to bed

Avoid light, blue wave lengths, and noise

Substances

Avoid caffeine, alcohol use, or energy drinks after noon

Avoid simulants (e.g., Adderall) prior to bed

Avoid cannabis

Health

Manage and maintain healthy weight

Follow-up with health providers as needed

Note: Recommendations from Hershner & Chervin, 2014; Schutte-Rodin et al., 2008; Watson et al., 2017

(psychiatric, neurodevelopmental, or developmental); (c) safety issues; and (d) sleep-related breathing disorders (Owens, 2017). Sleep disorders, including insomnia, obstructive sleep apnea, and circadian rhythm disorders, require consultation with an appropriate licensed medical provider and medication management.

Recommendations for Multidisciplinary Collaboration

Social/human service providers, health care providers, and educators can work collaboratively to improve sleep among youth. Teachers can initiate the assessment process by alerting social/human service and health providers about warning signs of sleep deprivation. Social/human service providers can utilize biopsychosocial assessments, which include using sleep quantity and quality instruments to measure subjective sleep. Appropriate medical providers can use actigraphy, polysomnography (PSG), and electroencephalography (EEG) to study sleep (Tarokh et al., 2016). The information gathered from the assessments will help providers to understand the risk and protective factors related to sleep. Particularly in rural

communities, providers should ensure youth and families have access to needed health services and resources.

Together, social/human service, health care, and educator groups can use their collective knowledge and power to reason and advocate for delayed school start times, behavior interventions, or other methods to promote sleep health. Effective communication is most critical to multidisciplinary collaboration among providers. Regularity in sharing information is crucial for youth with co-occurring medical or behavior problems and sleep insufficiency.

Summary and Future Research

For many adolescents, achieving recommended sleep is difficult because of a delayed circadian rhythm and an irregular or absent sleep hygiene regimen. In rural communities, there are increased risks for sleep deprivation that relate to overall poorer health, less access to health providers, and higher rates of poverty. However, there are potential interventions to manage or reverse the impact of sleep insufficiency among youth that include family, community, policy, and clinical interventions.

Future research should determine best ways to disseminate sleep hygiene education to youth and families in order to improve sleep practices. In rural communities, the consequences for sleep deprivation can be more deleterious because there are greater risks for health issues and less access to health care treatment. Future research should further identify the protective factors and interventions specifically targeting youth and family in rural communities to promote sleep health. To address sleep deprivation, future research is also needed to determine how to facilitate multidisciplinary collaboration to improve sleep.

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