Introduction

Sleep is a vital component of health, no matter what a person’s age. During sleep, our brain processes, organizes, and solidifies the learning and emotional experiences we encountered the previous day, making it possible for us to learn and retain information both in the short and long term.¹ Some studies have found that a sleep deficit as small as an hour a day can compromise that function causing decreased concentration and diminished performance.² Interestingly, the physiological and pubertal changes that occur during adolescence cause a temporary shift in circadian rhythms triggering a change in sleeping patterns just at the time when an adolescent’s environment is putting extra demands on his or her time and energy. These competing forces during adolescence can create a cycle of sleep deprivation; decreased concentration; difficulties in academic performance; longer hours needed to complete tasks; and thus more sleep deprivation and an increased risk of disordered sleep.³ With chronic sleep deprivation becoming the norm in adolescence, there has been a surge of research that has found both associations and direct correlations with sleep deprivation and a variety of medical and cognitive issues including poor attention and difficulties with problem solving; behavioral issues, increased symptoms of depression, anxiety and irritability; an increase in sports injuries; motor vehicle accidents; rates of obesity; insulin resistance; and risk-taking behaviors.²⁻¹³ The US Department of Health and Human Services has emphasized this critical need for healthy sleep by developing specific goals in the Healthy People 2020 plan targeting improvements in sleep quality; the proportion of high school students that get sufficient sleep; and decreased drowsy driving by teens.¹⁴
During puberty, adolescents experience two important physiological changes that contribute to the change in their sleep cycle. First, as measured by peak melatonin levels, they undergo a shift in their sleep-wake cycle “phase delay” causing them to have later sleep onset as well as later wake times of up to two hours compared to middle childhood. In addition, their “sleep drive” mechanism slows compared to middle childhood making them better able to stay awake even when fatigue develops. However, despite these shifts in their sleep cycle, the total hours of sleep needed does not change compared to early childhood – with most adolescents and young adults requiring 8.5 to 9.5 hours per night for optimal functioning. Nationally, teens average 6.75 hours of sleep on school nights.

In practice, achieving the recommended number of hours of sleep corresponds to a developmentally-appropriate bedtime of 11 pm and a wake time of approximately 8 am. In contrast, a great number of middle and high schools in Ohio start in the 7 o’clock hour with first bus pick-ups in the 6 o’clock hour. In addition, although there is no state data collection at this time monitoring average school start times, schools also frequently offer ‘zero period’ courses or hold extracurricular practices before the official school day. It is therefore not uncommon for Ohio adolescents to rise in the 5 o’clock hour to prepare for their school day. Given these statistics, we have created a scenario in Ohio, and across our nation, that is counter to the physiological requirements and developmental needs of adolescents — putting a strain both on our students and our schools to reach their full academic potential. In states where later school start times have been implemented such as Minnesota, Rhode Island and Kentucky, numerous benefits have been seen including increased sleep at night by adolescents; improved school attendance; decreased tardiness; improved behavior in school; decreased sleeping in class; improved grades and test performance; and a decrease in teen auto accidents. In addition, the later high school start time did not appear to affect enrollment in after-school sports and activities or increase transportation costs. In fact, coaches and teachers reported students were more mentally alert at the end of the day.

Changes in middle and high school start times, though a key modifiable factor in improving adolescent sleep needs, should be coupled with improvements in “sleep hygiene” as well – that is the practices and pre-sleep environment people engage in to maximize sleep quality. Important components of good sleep hygiene include having a consistent sleep schedule throughout the week; limiting or eliminating “screen time” prior to sleep; avoiding stimulants such as caffeine close to bedtime; avoiding daytime naps; engaging in relaxing activities prior to bed such as reading or meditation; and integrating exercise into one’s daily routine early in the day. By promoting and helping adolescents practice good sleep hygiene, we maximize the chances that the sleep that they do engage in is as efficient and restorative as possible.

When sleep deprivation and sleep disorders do arise, it is important that health care providers have the knowledge, skills, time, and resources available to diagnose and treat those conditions. In particular, adolescents can be at risk for a number of sleep disorders including Delayed Sleep Phase Syndrome (DSPS), Restless Leg Syndrome (RLS), Obstructive Sleep Apnea (OSA), narcolepsy, and inadequate sleep hygiene – all of which can compound the issue of chronic sleep deprivation in adolescence. It is estimated that up to 40% of adolescents have some degree of sleep difficulty, as measured both in primary research studies and parent-based surveys. Though Ohio-specific data is not known, the prevalence of pediatric insomnia is estimated at about 1 – 6 percent among general pediatric populations with a much higher prevalence in children with neurodevelopmental, chronic medical, and psychiatric conditions. Though time can be limited in the primary care setting, screening for and addressing disordered sleep can be an important step in understanding the underlying cause of many chronic medical issues and in the management of those conditions.

In summary, sleep is one of the more easily influenced and influential variables in health and well-being. There is strong and persistent evidence across the field supporting the association of appropriate sleep amounts with improvements in medical, behavioral, mental health, injury and academic outcomes. By recognizing the unique developmental shifts in the sleep cycles that occur during adolescence and the need for approximately 9 hours of sleep per night for optimal functioning, we have the opportunity to create home, school and medical environments throughout the state of Ohio that supports both the academic success and the health of our teens and young adults.
The following examples highlight some of the state and local level efforts addressing Sleep issues for adolescents and young adults:

The Ohio chapter of the Start School Later coalition — as a collection of parents, adolescents, medical professionals, school officials and concerned citizens — has already begun work at a grass roots and regional level to bring awareness and a voice to the need for later middle and high school day start times to meet the sleep and health needs of adolescents.

Schools in Dublin, Hudson, Kenston, Perrysburg, Parma and Westlake have already taken the initiative to shift their school day start times and have begun to monitor for the outcomes. These schools are positioned to help guide other Ohio school districts as to how to successfully make a transition to a later school day start time.

SNAPSHOT

- 70.9% of 9th graders and 81.6% of 12th graders in Ohio get less than 8 hours of sleep per night.23
- Currently, Ohio does not have a statewide registry monitoring school day start times. The decisions regarding school start times is made at each individual school or school district level leading to a wide variation in practice across the state.

Goals and Objectives

Goal 12: Adolescents will obtain a minimum of 8.5-9.5 hours of sleep per night.

Objective 12.1: Increase the percentage of adolescents who engage in good sleep hygiene habits.

Objective 12.2: Increase the percentage of health care providers who are screening, diagnosing and providing interventions for adolescents with insufficient and disordered sleep.

Objective 12.3: Increase the percentage of middle and high schools participating in later school day start times.
References


