

SPN DEPARTMENT

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Child and Adolescent Sleep Patterns and Early School Start Times: Recognizing the Role of the Pediatric Nurse



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THE NEUROPHYSIOLOGICAL PROCESS of sleep produces developmental variations in infants, children, and adolescents, which affect sleep times and rhythms (Czeisler, Winkelman, & Richardson, 2012; Dijk, Duffy, & Czeisler, 2000; Ferber, 2006; Ohayon, Carskadon, Guilleminault, & Vitiello, 2004; Ropper, Samuels, & Klein, 2014). For example, in adolescents, sleep requirements do not change but their biologic clock and related sleep patterns shift (Carskadon, Acebo, & Jenni, 2004). EEG markers show common changes in sleep timing manifested in their preferred later bedtimes and difficulty waking up in the morning during and after puberty (Carskadon, Acebo, & Jenni). These physiological markers are in sharp contrast to findings of typical adolescent sleep, showing a deficiency in hours of sleep, particularly on school nights (National Sleep Foundation, 2014).

There are multiple factors in addition to quantity of time that contribute to optimal sleep in children and adolescents. Some of these factors include use of personal electronic devices at bedtime, parental supervision, and school schedules (Boergers, Gable, & Owens, 2014; National Sleep Foundation, 2014; Short et al., 2011). Evidence from parent/guardian-enforced bedtimes and delayed school start times has demonstrated longer sleep duration and improved daytime function (Boergers et al., 2014; Short et al., 2011). Another consideration is the quality of sleep. Irregular sleep/wake patterns in adolescents have been correlated with adverse academic, psychophysiological, and safety

conditions (American Academy of Pediatrics [AAP], Adolescent Sleep Working Group, 2014).

The focus of the Society of Pediatric Nurses (SPN) on advocating for adolescent sleep mirrors that of other health organizations. For example, the American Academy of Pediatrics (AAP) Adolescent Sleep Working Group (2014) recently published a review of evidence related to the effects of short sleep duration on adolescent health, highlighting evidence for metabolic dysregulation, obesity, anxiety, and depressive symptoms associated with short sleep duration (Alfano, Zakem, Costa, Taylor, & Weems, 2009; Verhulst et al., 2008). Based on this body of evidence, the AAP developed a policy statement supporting the role of health professionals in education of parents, teachers, and students related to improving sleep and urging schools to adopt delayed school start times (AAP, 2014).

In addition, other organizations invested in the health and well being of society have made sleep-related research findings available to healthcare providers, civic and school leaders, and those engaged in the development of public policy. The National Sleep Foundation (2014) has investigated teen sleep habits and public awareness of the unique requirement for sleep that exists in adolescents. It has been active in supporting legislation related to delayed school start times (National Sleep

The mission of the Society of Pediatric Nurses is to support its members in their practice. One means of accomplishing this mission is to keep membership informed of innovative initiatives involving the board, committees, and members that promote research, clinical practice, education, and advocacy within the larger pediatric healthcare community. This department serves that purpose.

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Foundation, 2014). Start School Later, Inc. is a national, non-profit organization with local chapters dedicated to the promotion of healthy, safe, and equitable school hours (Start School Later, Inc., 2014). Their Website provides updates pertaining to current legislation and public policy related to school start times and hours, in addition to providing factual information on the role of sleep in child health to disabuse many of the circulating myths related to pediatric sleep needs.

The current interest in the plight of sleep deprivation in the nation's youth population coincides with the vision of SPN to be a resource for nurses caring for children and families. Therefore, in 2013 SPN began work on developing a resource related to the promotion of adequate sleep in middle school and high school students. At the same time representatives from Start School Later, Inc. were looking to partner with national pediatric nursing-led organizations to support an initiative to promote adequate sleep for adolescents. The two organizations agreed to support each other's plan to promote later start times for middle and high school students. The SPN's Child Advocacy Committee was asked to consider publishing a position statement in support of the later start time. During the next year, the Child Advocacy Committee researched potential resources including reaching out to the American Academy of Pediatrics (AAP) with which to collaborate on initiatives related to school start times currently in progress.

The Child Advocacy Committee made initial contact with the National Association of School Nurses (NASN) in early 2014 regarding the formation of a partnership to research and develop a position statement related to pediatric sleep and the current early start times for most schools. Following this, NASN's Position Document Review Committee determined a full review of school start times was needed. By mid-2014, NASN completed a literature review related to school start times and determined that NASN was ready to move forward and collaborate with SPN to create a joint position document. A collaborative task force was organized composed of members from SPN's Child Advocacy Committee, and NASN's Executive and Research Advisory Committees. As there were many factors that promote or impede sleep in children of all ages, it was determined that the group should concentrate on how growth and development in adolescence is impacted specifically by sleep behaviors and how early start school times can have a negative effect on the adolescent's overall well-being. For the remainder of the year, the task force worked on drafting a joint consensus statement. Final approval for the Early School Start Times Joint Consensus Statement was received by both SPN and NASN in early 2015.

The SPN/NASN joint consensus statement is published on the respective Websites. It serves as a first-line resource for nurses seeking data for evidence-based practice. In addition the AAP policy, published on the AAP Website, provides teaching points for caregivers and professionals in the community, school, and health care environment, with a focus on the primary care provider role (AAP, 2014). The following SPN/NASN consensus statement fills an information gap concerning process of growth and development and recommendations

related to adolescent sleep and school start times for pediatric nursing professionals.

Early School Start Times Joint Consensus Statement

Summary Statement

Optimal sleep during growth and development is critical for the health, safety and academic success of our nation's youth. Over half of high school youth and near one third in middle school report 7 hours or less sleep on school nights (National Sleep Foundation, 2014). These reports are in sharp contrast to recommended adolescent (age 12–17) sleep requirements of approximately 9 to 10 hours (Carskadon, 2011). The registered professional school nurse (hereinafter referred to as school nurse) is in a pivotal position to collaborate with students, families, teachers, pediatric nurses, school administration officials, and other health care professionals to address factors contributing to insufficient sleep. A significant modifiable factor contributing to insufficient sleep during adolescence is early school start times during middle school and high school. The National Association of School Nurses (NASN) and the Society of Pediatric Nurses (SPN) support delaying school start times for middle school and high school students as proposed in the policy statement on School Start Times for Adolescents by the American Academy of Pediatrics (Adolescent Sleep Working Group, 2014). This recommendation is based upon the following key factors in adolescent sleep:

- Adolescents require approximately 9–10 hours of sleep nightly (Carskadon, 2011).
- Developmental and physiological changes in adolescent sleep contribute to shifts in nighttime sleep times and later bedtimes, but not necessarily a decrease in sleep requirement (Carskadon, 2011).
- Home electronic media use by adolescents before bedtime affect sleep quality (National Sleep Foundation, 2014).
- Parents/Guardians are unaware of adolescent sleep needs and/or the sleep duration of their adolescents (American Academy of Pediatrics [AAP] Adolescent Sleep Working Group, 2014).
- Parent/Guardian-enforced bedtimes throughout adolescence are associated with longer sleep duration (Short et al., 2011).
- Delaying school start times for adolescents to no earlier than 8:25 am is associated with longer sleep duration on school nights (Boergers et al., 2014).
- Delay of school start times is associated with improved mood and reduced daytime sleepiness (Boergers et al., 2014).
- Insufficient sleep and irregular sleep/wake patterns are associated with an increased risk for daytime sleepiness, academic and emotional difficulties, safety hazards, and cardio-metabolic disease (AAP, Adolescent Sleep Working Group, 2014).

Rationale

The need for sleep is a biological necessity for all mammals, and studies have shown that the absence of sleep results in impairment of functional ability (Iber, 2013). During the four stages of sleep—REM, N1, N2, and N3—task learning is refined through the enhancement and pruning of synaptic connections. Each sleep stage has a responsibility for temporarily storing, evaluating, discarding “nonsense” information and preserving new and valued knowledge (Iber, 2013).

During adolescence, the secretion of the melatonin hormone begins later in the day resulting in a corresponding delay in the desire to sleep (Carskadon, 2013). The postponement of this biological event is further delayed if the adolescent is not in a dimly lit environment—often the case if there is homework to finish. However, although staying awake longer is easier for the adolescent, the desire to sleep longer is unavoidable. This becomes problematic when the total amount of sleep is reduced, as is often the case during the school year. In addition, studies have shown that children and adolescents from low income or racial and ethnic minorities are at a greater risk for sleep disorders due to overcrowding, excessive noise, and concerns for their own or their family safety (Owens, 2014).

In *Healthy People 2020* (2014), a new core indicator has been developed entitled Sleep Health which calls for a reduction in

- Adolescent sleep loss;
- Unhealthy sleep behaviors (irregular sleep/wake patterns, overuse of electronic media in the bedroom, and the consumption of excessive caffeine); and
- The potential consequences of inadequate sleep (depression and suicidal ideation, obesity, auto accidents attributed to drowsiness, and poor academic performance) (Owens, 2014).

NASN and SPN highlight contributing—and modifiable—factor to promoting an increase in sleep obtained by teenagers is to delay the start of school day for middle and high school students. NASN and SPN acknowledge the challenges of alterations in after-school sports and activities, along with adjustments to parental/guardian schedules and other modifiable factors such as the need for families to:

- Self-regulate sleep habits;
- Set bedtime limits;
- Set limits on social networking; and
- Discuss the use of electronic media in the bedroom.

SPN and NASN stand ready to collaborate with administrators, teachers, parents, school boards and communities to address this public health issue by:

- Working with parents to understand developmental changes in sleep/wake patterns during adolescence.
- Educating parents on the importance of setting bedtime limits.
- Identifying adolescents at risk.
- Working with teachers and parents to monitor academic course loads and extracurricular activities.
- Identifying strategies to promote optimal sleep.
- Limiting the use of caffeine and other stimulants.
- Limiting the use of electronic media and social networking.

Adolescence is a time when sleep patterns change and biological clocks alter, often leading to poor quality and insufficient sleep. Their ability to concentrate, problem-solve and assimilate new information is impaired. SPN and NASN encourage all parties involved to consider implementing later school start times for teens.

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All consensus statements from the National Association of School Nurses will automatically expire 1 year after publication unless renewed and recommended for position statement development.

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