HHS Public Access

Author manuscript

JAMA Pediatr. Author manuscript; available in PMC 2021 February 01.

Published in final edited form as:

JAMA Pediatr. 2020 February 01; 174(2): 115–116. doi:10.1001/jamapediatrics.2019.4806.

A Stimulus Package to Address the Pediatric Sleep Debt Crisis in the United States

Ariel A. Williamson, PhD,

Sleep Center, Division of Pulmonary Medicine, Department of Child and Adolescent Psychiatry and Behavioral Sciences, Children's Hospital of Philadelphia, Philadelphia, Pennsylvania; and Department of Psychiatry, Perelman School of Medicine, University of Pennsylvania, Philadelphia

Lisa J. Meltzer, PhD,

Department of Pediatrics, National Jewish Health, Denver, Colorado

Alexander G. Fiks, MD

Department of Pediatrics, Children's Hospital of Philadelphia, Philadelphia, Pennsylvania; and Department of Pediatrics, Perelman School of Medicine, University of Pennsylvania, Philadelphia

More than 50% of US children are crushed with debt–sleep debt. The 2014 National Sleep in America poll[1] found that half of youth obtain less sleep than recommended on school nights, meaning approximately 29 million children in the United States are deprived of one of the most important basic needs for optimal health and well-being. This debt is especially salient because insufficient, irregular, and poor-quality sleep is a risk factor for common concerns that dominate pediatric practice, including obesity, mental health problems, and learning difficulties.[2,3] However, sleep is rarely effectively addressed in primary care.

Recognition of this sleep debt crisis is not new. The Institute of Medicine, Healthy People 2020 and 2030, and the sleep community[4] have emphasized the critical need for healthy pediatric sleep. Recently, the recognition that early school start times contribute to chronic adolescent sleep curtailment resulted in the 2014 American Academy of Pediatrics (AAP) recommendation that middle and high schools begin no earlier than 8:30 AM. Although school start times can benefit adolescent sleep duration and health, the vast majority of schools still begin before 8 AM.[5]

While changing school start times is critical for sleep and health outcomes, waiting until adolescence to implement policies that increase sleep duration ignores the necessity of sleep for early child development and misses the opportunity for earlier intervention in primary care. Pediatricians and other primary care professionals (PCPs; physicians, nurse practitioners, and physician assistants) have the unique opportunity to support sleep health throughout development. By age 18 years, children should spend 40% of their lives sleeping; however, PCPs receive little education about pediatric sleep in medical school or residency, with even less education available posttraining. Resources to guide PCPs in addressing sleep

Corresponding Author: Ariel A. Williamson, PhD, Sleep Center, Division of Pulmonary Medicine, Department of Child and Adolescent Psychiatry and Behavioral Sciences, Children's Hospital of Philadelphia, 3401 Civic Center Blvd, Philadelphia, PA 19104 (williamsoa@email.chop.edu).

are limited to AAP recommendations on preventing sudden infant death (SIDS), regular screening for snoring, and basic sleep information in Bright Futures. This results in very low primary care rates of screening, identification, and treatment for sleep health problems (eg, sleep duration, regularity, electronics use) and disorders (eg, insomnia, obstructive sleep apnea).[6]

Sleep must be better integrated in primary care to address this gap and minimize insufficient, irregular, and poor-quality sleep. Given the burden on PCPs to address an array of important physical and mental health topics in brief visits, innovative methods to address sleep efficiently without disrupting routine practice are needed. We offer 3 suggestions.

First, sleep should be assessed as a vital sign, monitored at each preventive visit and tracked longitudinally to support anticipatory guidance, prevention, and intervention. Much like a growth chart provides a snapshot of physical development, a sleep-specific chart tracking duration, regularity, and any problematic symptoms across visits would provide equally actionable information. Although sleep lacks a comparable metric to body mass index, guidelines for healthy sleep could be applied to help PCPs identify problematic patterns while also providing normative child sleep data. Questions from the Sleep in America poll[1] on nighttime sleep duration, regularity, and electronics usage could be used to guide sleep assessments, while the 2014 data could generate initial normative information. Triggered by an abnormal vital sign, PCPs could use the recently validated and freely available Patient-Reported Outcomes Measurement Information System (PROMIS) sleep measures to assess any reported sleep disturbances. Building these tools into the electronic health record (EHR) would facilitate implementation.

Second, the ubiquity of wearable devices, mobile applications to track sleep, and internet-based resources should be leveraged for sleep health promotion and education in primary care. Available sleep apps should be used to support prevention, problem identification, and initial behavioral treatment. For example, the Customized Sleep Profile, which is part of the free Johnson & Johnson Bedtime App, provides evidence-based[7] sleep recommendations for young children. Primary care professionals can recommend empirically supported apps as a first-line treatment for childhood sleep concerns and to promote healthy childhood sleep strategies for all families, even if sleep is not identified as being problematic. However, while there are a number of commercial apps for young children and older youth, few are evidence-based and most are not tailored for different populations, which neglects racial/ethnic and socioeconomic sleep disparities.[8] While wearable devices may have measurement limitations, data from children and families using these devices to monitor sleep and other health behaviors, such as physical activity, nonetheless could support clinicians in providing anticipatory guidance.

Finally, similar to the Back to Sleep Campaign (now the Safe to Sleep Campaign), pediatricians and sleep specialists could partner to lead a campaign to support sleep health and to stimulate community partnerships.[3] Based on the 1992 AAP safe sleep recommendations, the National Institute of Child Health and Human Development provided widespread support to launch this messaging. Despite continued barriers to SIDS prevention across demographic groups, the Safe to Sleep Campaign has been one of the most successful

public health campaigns and continues to draw national attention. Primary care professionals are front-line clinicians in supporting SIDS prevention and reinforcing safe sleep messaging to families. A campaign with consistent messaging, sleep health education toolkits, and other materials that builds on or complements the Safe to Sleep Campaign could be systematically disseminated in primary care and other relevant contexts (eg, early intervention, schools, dental and specialty care, community centers, religious settings). As most adults obtain insufficient sleep, this campaign could target all family members, addressing known sleep-related morbidities, including mental health concerns, obesity, and related cardiometabolic risks that begin in childhood.

Several challenges will need to be overcome to achieve these goals. Time and resource constraints may limit additional sleep measurement in pediatric practices and affect clinician uptake.[9] However, the benefits accrued to well-being by effectively managing sleep would motivate the effort needed, and electronic systems, including the EHR, could help streamline this approach. In introducing apps to monitor sleep, we must also ensure that these apps are based on evidence and that devices do not contribute to the growing problem of electronics interfering with healthy sleep. Benefits from the Safe to Sleep Campaign took years to accrue and involved partnerships with many groups. Building a similar campaign to address sleep more broadly would require concerted effort and resources. Partnerships between the AAP, National Institute of Child Health and Human Development, the Centers for Disease Control, American Academy of Sleep Medicine, National Sleep Foundation, Sleep Research Society, and other organizations promoting healthy pediatric sleep and free public education, such as the Pediatric Sleep Council (http://www.babysleep.com), could also support this effort. Given global concerns about pediatric sleep,[10] partnerships with the World Health Organization and other international entities may be another avenue to support widespread sleep health messaging. Finally, some may continue to question the health benefits of improved sleep. A growing body of literature demonstrating the effects on some of the most salient challenges for families and in practice–school success, peer relationships, behavior, and others–will need to motivate continued action.

Healthy sleep is essential for child health. Conceptualizing sleep as a vital sign, implementing EHR-based screening and tracking of sleep, and encouraging families to adopt healthy sleep habits are behaviors that PCPs can implement with their patients now. Creating a sleep health campaign is an important future direction. Despite the many competing demands challenging PCPs, pediatric practice must change to more aggressively promote sleep health and, in turn, child and family well-being. Otherwise, our children will continue to accrue a sleep debt that rivals the national debt but may be even harder to pay down over time.

Acknowledgments

Conflict of Interest Disclosures: Dr Williamson has received grants from the Eunice Kennedy Shriver National Institute of Child Health and Human Development and Sleep Research Society Foundation and is an unpaid member of the Pediatric Sleep Council. Dr Meltzer has received personal fees for consulting from Johnson & Johnson and is an unpaid member of the Pediatric Sleep Council. Dr Fiks has received an independent grant from Pfizer and has developed decision and workflow support software for the electronic health record through the Care Assistant software, for which no licensing agreement exists and from which he has earned no income.

REFERENCES

1. Buxton OM, Chang A-M, Spilsbury JC, Bos T, Emsellem H, Knutson KL. Sleep in the modern family: protective family routines for child and adolescent sleep. Sleep Health. 2015;1(1):15–27. doi:10.1016/j.sleh.2014.12.002 [PubMed: 26779564]
2. Beebe DW. Cognitive, behavioral, and functional consequences of inadequate sleep in children and adolescents. Pediatr Clin North Am. 2011;58(3):649–665. doi:10.1016/j.pcl.2011.03.002 [PubMed: 21600347]
3. Miller MA, Kruisbrink M, Wallace J, Ji C, Cappuccio FP. Sleep duration and incidence of obesity in infants, children, and adolescents: a systematic review and meta-analysis of prospective studies. Sleep. 2018;41(4). doi:10.1093/sleep/zsy018
4. Mindell JA, Owens J, Alves R, et al. Give children and adolescents the gift of a good night's sleep: a call to action. Sleep Med. 2011;12(3):203–204. doi:10.1016/j.sleep.2011.01.003 [PubMed: 21316296]
5. Wheaton AG, Ferro GA, Croft JB. School start times for middle school and high school students–United States, 2011-12 school year. MMWR Morb Mortal Wkly Rep. 2015;64(30):809–813. doi:10.15585/mmwr.mm6430a1 [PubMed: 26247433]
6. Honaker SM, Meltzer LJ. Sleep in pediatric primary care: a review of the literature. Sleep Med Rev. 2016;25:31–39. doi:10.1016/j.smrv.2015.01.004 [PubMed: 26163054]
7. Mindell JA, Du Mond CE, Sadeh A, Telofski LS, Kulkarni N, Gunn E. Long-term efficacy of an internet-based intervention for infant and toddler sleep disturbances: one year follow-up. J Clin Sleep Med. 2011;7(5):507–511. doi:10.5664/jcsm.1320 [PubMed: 22003347]
8. Quante M, Khandpur N, Kontos EZ, Bakker JP, Owens JA, Redline S. A qualitative assessment of the acceptability of smartphone applications for improving sleep behaviors in low-income and minority adolescents. Behav Sleep Med. 2019;17(5):573–585. doi:10.1080/15402002.2018.1432483 [PubMed: 29400557]
9. Honaker SM, Dugan T, Daftary A, et al. Unexplained practice variation in primary care providers' concern for pediatric obstructive sleep apnea. Acad Pediatr. 2018;18(4):418–424. doi:10.1016/j.acap.2018.01.011 [PubMed: 29391284]
10. Gradisar M, Gardner G, Dohnt H. Recent worldwide sleep patterns and problems during adolescence: a review and meta-analysis of age, region, and sleep. Sleep Med. 2011;12(2):110–118. doi:10.1016/j.sleep.2010.11.008 [PubMed: 21257344]