

Infant Sleep and Parent Health Literacy



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ABSTRACT

OBJECTIVE: Child sleep problems are prevalent and have been linked to poor behavior, worse school performance, and obesity. Low health literacy (HL) is associated with suboptimal parenting practices and worse health outcomes, but the relationship between parent HL and child sleep-related issues is not known. We examined the association between parent HL and child sleep-related issues.

METHODS: This was a cross-sectional analysis of data from caregivers enrolled in a cluster randomized trial of a primary care-based child obesity prevention program in 4 pediatric clinics. Parent HL was assessed using the Short Test of Functional Health Literacy in Adults. At the 9-month well-child visit, sleep-related factors were assessed: presence of TV in room where child sleeps, regular naptimes and bedtimes (≥ 5 days/wk), low daytime and nighttime sleep duration (>1 SD below mean on the basis of national data). Multiple logistic regression analyses were performed.

RESULTS: We enrolled 557 caregivers of 9-month-old children (49.7% Hispanic, 26.9% black, 56.2% $< \$20,000$ annual in-

come); 49.6% reported having a TV in the room where their child sleeps; 26.6% did not have regular naptimes nor bedtimes. Median sleep duration was 2.3 (interquartile range, 1.5–3.0) hours (daytime), and 9.0 (interquartile range, 8.0–10.0) hours (night) (30.2% low daytime; 20.3% low nighttime sleep duration). Children of parents with low HL were more likely to have a bedroom TV (66.7% vs 47.7%, $P = .01$; adjusted odds ratio, 2.2; 95% confidence interval, 1.1–4.3) and low nighttime sleep (37.0% vs 18.5%; $P = .002$; adjusted odds ratio, 2.4; 95% confidence interval, 1.2–4.8).

CONCLUSIONS: Low parent HL is associated with TV in the bedroom and low night sleep duration. Additional study is needed to further explore these associations and intervention strategies to address child sleep problems.

KEYWORDS: health literacy; infants; sleep; sleep duration; sleep hygiene; television

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WHAT'S NEW

Suboptimal parenting practices related to infant sleep are common. Presence of TV in the child's bedroom and low child nighttime sleep duration are associated with low parent health literacy; targeted intervention might be beneficial for these at-risk parents.

ONE IN FOUR parents of infants and toddlers report a concern about sleep, with common problems involving sleep regularity and duration.^{1,2} Child sleep problems have been linked to issues with attention, behavior, and school functioning, and can have negative secondary effects on maternal and family well-being.¹ Irregular sleep schedules have been shown to alter sleep-wake cycles, negatively affect sleep quality, and lead to sleep problems.^{1–5} Parenting practices related to sleep in

infancy likely contribute to the development of child sleep issues.²

Parents can help children establish healthy sleep habits that are sustained through childhood.^{1,6} The American Academy of Pediatrics (AAP) Bright Futures program recommends family behaviors that promote good sleep hygiene through the creation of a calm and sleep-promoting environment, including absence of a TV in the room where the child sleeps and consistent routines, such as maintenance of consistent bedtimes and regular naptimes.⁷

Parent health literacy is one factor that might contribute to suboptimal child sleep-related parenting practices and the development of child sleep issues. Low parent health literacy has been linked to poor parenting practices, including suboptimal child feeding practices (eg, lower breastfeeding rates, pressuring feeding styles),⁸ as well as poor child health outcomes (eg, worse asthma-related

morbidity).^{9,10} Individuals with low health literacy have less access to high-quality health information and greater difficulty understanding and acting on health recommendations.^{9,10} Parents, particularly pregnant and new mothers, rely on obstetric and pediatric providers, as well as parenting books and online sources, for information on common parenting questions, especially with respect to child sleep.¹¹ In the context of sleep problems, parents with low health literacy might have decreased access to information on how to promote healthy sleep practices and thus would be less likely to access and incorporate health recommendations made by groups such as the AAP Bright Futures regarding sleep hygiene and television viewing.^{7,12}

To date, there has been limited study of the relationship between parent health literacy and child sleep. In this study, we therefore sought to examine the association between parent health literacy and specific aspects of child sleep, in particular, presence of a TV in the room where the child sleeps, sleep regularity, and sleep duration.

METHODS

STUDY DESIGN

This was a cross-sectional analysis of self-reported data from caregivers of infants participating in the Greenlight study, a cluster randomized controlled trial of a primary care-based, low literacy health communication intervention to reduce obesogenic behaviors in early childhood. Greenlight study details have been previously described.¹³

Enrollment of consecutive eligible parent-child dyads was performed across 4 academic medical centers: NYU School of Medicine/Bellevue Hospital Center, Vanderbilt University School of Medicine, University of North Carolina School of Medicine at Chapel Hill, and University of Miami Miller School of Medicine. NYU and Vanderbilt University were randomized to receive the obesity prevention intervention; University of North Carolina and University of Miami were active controls. The low literacy Greenlight toolkits were available for use as part of counseling for well-child visits from 2 months through 2 years of age. Toolkits included low literacy booklets focused on evidence-based obesity prevention messages targeting each well-child visit, along with supplemental booklets that providers had the option to give. The 4-page "Sleep Time for Your Baby and Toddler" supplement focuses on sleep routines, eliminating overnight feeding after 6 months of age, and avoidance of bottle propping and cereal in the bottle. The active control sites received an injury prevention program adapted from the AAP's The Injury Prevention Program (TIPP), with no emphasis on low literacy communication, but did include one sleep-related message—putting the infant to sleep on his back.

Inclusion criteria for parent-child dyads in the Greenlight study were: child (6 to <16 weeks of age) presenting for a 2-month well-child visit with a trained pediatric resident, with an English- or Spanish-speaking caregiver who planned to return to clinic for all well-child visits through the child's 2-year check-up. Exclusion criteria were: child's birth at <34 weeks' gestational age or birth weight

<1500 g, 2-month weight/length less than the third percentile, diagnosis of failure to thrive, or known medical problems that might affect the child's ability to gain weight; and parent younger than 18 years old or with significant mental or neurological illness, or poor visual acuity (Fig). Written and verbal informed consent was obtained from all caregivers. Institutional review board approval was obtained from each participating site.

DATA OBTAINED

Data were collected via parent interview at the 2- and 9-month well-child visits by trained research assistants in English or Spanish (caregiver preference). Research Electronic Data Capture tools hosted at Vanderbilt University was used to manage study data.¹⁴

DEPENDENT VARIABLES: SLEEP-RELATED FACTORS

Child sleep data were assessed by caregiver report at the 9-month well-child visit, and included presence of a TV in the room where the child sleeps, sleep regularity, and sleep duration. The 9-month well-child visit was chosen because most 9-month-old infants are physiologically capable of sleeping through the night without feeding, daytime naps are likely to be distinct from night-time sleep, and regular meal times are being established, all making this an important developmental point for establishing and maintaining clear sleep routines.⁴ All sleep-related survey questions were adapted from surveys used in similar populations.^{3,15–17}

Presence of TV in the room where child sleeps.—Presence of a TV in the room where the child sleeps was assessed using the question: "Is there a working TV in the room where your child sleeps?" (yes/no).¹⁸

Sleep regularity.—Sleep regularity refers to the frequency with which caregivers reported that their infant goes to sleep at about the same time every day. Naptime regularity was assessed with the question: "Does your child usually take a nap at about the same time each day?" Parents who answered yes were asked: "In the past 7 days, how many days did your child go to sleep at his/her regular nap time?" Bedtime regularity was assessed with the question: "Does your child usually go to bed at about the same time every night?" Parents who answered yes were asked: "In the past 7 days, how many days did your child go to sleep at his/her regular bedtime?" Naptimes and bedtimes were considered regular if the caregivers reported consistency for ≥ 5 days per week. Overall child sleep regularity was categorized as: neither regular naptime nor bedtime; regular naptime or regular bedtime; and both regular naptime and bedtime.^{3,6}

Sleep duration.—Sleep duration was assessed by determining the number of hours the infant slept during the day and night. Daytime duration was assessed using the question: "For how many hours does your baby usually nap in the morning or afternoon?" and nighttime sleep duration was assessed using the question "For how many hours does your baby usually sleep during the night?"¹⁵

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