



ELSEVIER

 JOURNAL OF
 ADOLESCENT
 HEALTH

www.jahonline.org

Original article

The Prospective Association Between Sleep and Initiation of Substance Use in Young Adolescents



Mary Beth Miller, Ph.D. *, Tim Janssen, Ph.D., and Kristina M. Jackson, Ph.D.

Department of Behavioral and Social Sciences, Center for Alcohol and Addiction Studies, Brown University School of Public Health, Providence, Rhode Island
Article history: Received June 14, 2016; Accepted August 10, 2016

Keywords: Alcohol; Tobacco; Marijuana; Sleep health; Bedtime

 See Related Editorial p. 129

ABSTRACT

Purpose: This study aimed to determine the unique utility of poor sleep health in predicting the onset of substance use in adolescents.

Methods: Middle school students ($N = 829$, mean (M)_{age} = 12.6 years, 52% female, 73% white) who participated in an ongoing prospective study of alcohol onset and progression completed a set of Web-based health behavior surveys over a 4-year period, with recruitment beginning in 2009. Surveys included assessments of alcohol, cigarette, and marijuana use as well as sleep duration, bedtime delay (from weekdays to weekends), and daytime sleepiness. Data were analyzed using discrete-time Cox Proportional hazard's regression.

Results: Controlling for participant age at sleep assessment, gender, and internalizing and externalizing behaviors, shorter sleep duration and greater daytime sleepiness in year 1 were associated with increased odds of having had a full drink of alcohol, having engaged in heavy episodic drinking, and having experienced alcohol-related consequences by year 4. Shorter sleep duration was also associated with increased odds of marijuana use by year 4. No sleep parameter was uniquely associated with increased odds of cigarette use (first puff or first full cigarette). Effects were evident for both males and females. Age at sleep assessment did not moderate effects.

Conclusions: Sleep health is a prospective predictor of the onset of alcohol and marijuana use among adolescents. Increased efforts to prevent and intervene in sleep problems among adolescents are warranted.

© 2016 Society for Adolescent Health and Medicine. All rights reserved.

IMPLICATIONS AND CONTRIBUTION

This study suggests that poor sleep health is a prospective predictor of alcohol and marijuana use in adolescents, independent of internalizing and externalizing behaviors. The independent effect of sleep on substance use suggests that interventions targeting the types of sleep problems that are common in adolescence are needed.

Poor sleep health and heavy substance use are public health concerns that tend to co-occur among adolescents and young adults [1,2]. Both of these behaviors have been associated with a host of negative consequences, including impaired immune functioning, motor vehicle accidents, depression, and suicidal ideation [3,4]. Yet, little is known about the direction and degree of prospective associations between these health behaviors.

Research delineating the temporal precedence and significance of the association between poor sleep and substance use is needed to inform prevention and intervention efforts.

Research has documented longitudinal, bidirectional relationships between sleep and substance use in adolescents. Alcohol and illicit drug use have been associated prospectively with delayed bedtimes [1,5] and disturbed sleep physiology [6–8]. Conversely, poor sleep health (defined as <9 hours per night for adolescents, inconsistent timing of sleep, trouble falling/staying asleep, daytime sleepiness, or poor subjective sleep quality [9]) prospectively predicts the likelihood and frequency of cigarette,

* Address correspondence to: Mary Beth Miller, Ph.D., Center for Alcohol and Addiction Studies, Box G-S121-5, Providence, RI 02912.

E-mail address: millerme04@gmail.com (M.B. Miller).

marijuana, and alcohol use in adolescents and young adults [5,10–12]. Poor sleep health has also been associated with increased likelihood of binge drinking [11] and may compound risk for alcohol-related consequences [11,13]. However, few studies have examined the impact of sleep on the initiation of substance use in youth who are substance naïve. Those that have examined this association have been limited by parent report of substance use [14,15], recruitment of high-risk participants [12,14,15], and failure to control for psychiatric symptoms that may impact sleep and substance use [12,13].

Without examining sleep in individuals who are substance naïve, the directionality of the association between poor sleep health and substance use cannot be determined. Evidence suggests that substance use creates disturbances in sleep health [6,8], which may then perpetuate substance use and related risk. However, it could also be that poor sleep health confers unique and independent risk for the onset of substance use and problems. In the case of the latter, increased efforts to prevent and treat sleep problems in childhood and early adolescence may be warranted.

The limited focus on sleep relative to substance use research in adolescents may stem in part from the field's tendency to view difficulty falling/staying asleep as a symptom of an underlying psychiatric disorder [16]. Psychiatric disorders have been linked to adolescent substance use in a number of studies [17], and individuals with psychiatric disorders tend to demonstrate signs of disturbed sleep [18]. Thus, the association between sleep and substance use may be attributable to their respective associations with psychopathology. Few studies have examined the association between adolescent sleep and substance use in the context of psychiatric symptoms, and the results of these studies have been mixed. Specifically, one study found that the cross-sectional association between sleep and substance use is attributable in part to internalizing/externalizing behaviors [19], while others found that controlling for these behaviors did not weaken the prospective impact of sleep on substance use [2,14,15].

This study extends previous research [11–15] by determining the unique utility of poor sleep health in predicting the onset of self-reported substance use in adolescents, after accounting for internalizing and externalizing behaviors. We hypothesized that shorter sleep duration, greater discrepancy between weekday and weekend bedtimes (bedtime delay), and greater daytime sleepiness would be associated with greater probability of alcohol, cigarette, and marijuana use. We also investigated the moderating effect of gender, as gender differences in these associations have been found inconsistently in previous studies [2,11,15].

Method

Participants

Data were collected between 2009 and 2015 from a sample of adolescents in an ongoing prospective study examining the extent to which individual and contextual risk factors explain initiation of and progression through drinking milestones [20]. Five cohorts of adolescents ($N = 1,023$) from six schools in urban, suburban, and rural Rhode Island were enrolled every 6 months from 2009 to 2011. Of the 1,023 respondents, 992 (97%) contributed follow-up data within the 4-year assessment interval, 923 (90%) provided data on sleep parameters, and 829 (81%) were accompanied by parent report data on internalizing/externalizing behaviors. Thus, the current sample consisted of 829 adolescents aged 12–16 years (52% female, 15% non-white, 12% Hispanic; Table 1).

Table 1

Demographic characteristics, sleep parameters, and substance use for participants who provided sleep and parent report data ($N = 829$)

	N	M OR%	SD
Age at T1	829	12.6	1.02
Female (%)	434	52.4	—
Non-white (%)	127	15.3	—
Hispanic (%)	97	11.7	—
Sleep duration (hours)	815	8.79	1.47
Bedtime delay (hours)	805	1.64	1.91
Daytime sleepiness	827	1.80	.79
Internalizing behavior	829	5.02	5.66
Externalizing behavior	827	4.81	6.47
Social anxiety	829	7.28	5.26
	N substance naïve at first sleep assessment	% Reporting substance use by T7 ^a	
Full drink of alcohol	779	37.7	
Heavy episodic drinking	779	22.2	
Alcohol problems	779	13.7	
Puffing cigarette	771	15.7	
Full cigarette smoking	771	7.9	
Marijuana use	777	25.1	

M = mean; OR = odds ratio; SD = standard deviation; T1 = time 1; T7 = time 7.

^a Participants who were substance naïve at initial assessment of sleep parameters and endorsed substance use at any subsequent assessment.

Participants who were excluded from and included in analyses did not differ in terms of gender [$t(1,021) = .20, p = .84$] or ethnicity [$t(1,021) = -.22, p = .82$]. Those excluded were significantly older than those included [$t(1,021) = 2.87, p = .004$] and more likely to report non-white race [$t(260) = -2.68, p = .01$].

Procedure

Interested youth whose parents provided written informed consent attended a 2-hour orientation session, during which they provided assent, and completed the 45-minute baseline survey (time 1) in a private location. Follow-up assessments, which were administered in waves based on school cohort, were conducted using Web-based surveys. These assessments took place every 6 months for a period of 2 years (times 2–5); at 3-year follow-up (time 6); and at quarterly intervals thereafter, from which we coded a 4-year follow-up (time 7). In the first 2 years of the study, participants also completed brief monthly surveys assessing substance use; if participants denied substance use in the past 30 days, they completed filler items regarding a variety of health behaviors, one of which was sleep. Sleep parameters were assessed a maximum of two times, depending on whether or not the participant had already engaged in substance use. The first sleep assessment was conducted in month 1 or month 7 (depending on school cohort); for those who did not complete the first sleep assessment ($n = 34, 4\%$), we used data from their second sleep assessment, which was conducted in months 13 or 19. Because the discrepancy in timing of these assessments led to age differences between participants, all analyses controlled for age at first sleep assessment. Participants were compensated with a \$25 gift card for the orientation session, a \$20 gift card for each follow-up survey, and \$10 cash for each monthly survey. Response rates ranged from 92% (time 2) to 79% (time 7).

One self-selected parent (86% biological mother) provided data on participants' internalizing and externalizing behaviors. These assessments were collected via mailed, 30-minute, paper-and-pencil surveys at baseline and 1-year post baseline.

Download English Version:

<https://daneshyari.com/en/article/5121389>

Download Persian Version:

<https://daneshyari.com/article/5121389>

[Daneshyari.com](https://daneshyari.com)