



Examination of neighborhood disadvantage and sleep in a multi-ethnic cohort of adolescents



Wendy M. Troxel^{a,*}, Regina A. Shih^b, Brett Ewing^c, Joan S. Tucker^c, Alvin Nugroho^a, Elizabeth J. D'Amico^c

^a RAND Corporation, Behavioral and Policy Sciences, 4501 Fifth Avenue, Suite 600, Pittsburgh, PA 15213, USA

^b RAND Corporation, Behavioral and Policy Sciences, 1200 South Hayes Street, Arlington, VA 22202-5050, USA

^c RAND Corporation, Behavioral and Policy Sciences, 1776 Main Street, Santa Monica, CA 90407-2138, USA

ARTICLE INFO

Keywords:

Adolescents

Sleep

Neighborhoods, socioeconomic status, poverty

Social environments

ABSTRACT

Purpose: Neighborhood-level socioeconomic disadvantage and lower individual-level socioeconomic status are associated with poorer sleep health in adults. However, few studies have examined the association between neighborhood-level disadvantage and sleep in adolescents, a population at high-risk for sleep disturbances.

Methods: The current study is the first to examine how objective (i.e. via census tract-level data) and subjective measures of neighborhood disadvantage are associated with sleep in a racially/ ethnically and socioeconomically diverse sample of 2493 youth [Non-Hispanic White (20%), Hispanic (46%), Asian (21%), and Multiracial/ Other (13%)].

Results: Findings indicated that greater perceived neighborhood-level social cohesion and lower neighborhood-level poverty were associated with better sleep outcomes in adolescents. However, there was some evidence that the magnitude of the associations differed according to family-level socioeconomic status and race/ ethnicity.

Conclusions: Findings suggest that subjective and objective neighborhood characteristics may affect the sleep health of older adolescents, with certain demographic subgroups being particularly vulnerable.

1. Implications and contributions statement

Our study is the first to examine both objectively and subjectively measured neighborhood factors in relation to sleep in older adolescents. Findings highlight the importance of considering how neighborhood environments influence sleep health, particularly during critical developmental periods, such as adolescence.

Sleep problems in youth are associated with a wide variety of adverse consequences, including increased risk of depression and anxiety, poorer academic functioning, obesity, cardiovascular risk factors, and motor vehicle accidents (Curcio et al., 2006; Ivanenko et al., 2005; Javaheri et al., 2011; Wong et al., 2015). In fact, the impact of driver sleepiness on serious motor-vehicle related injuries and fatalities is comparable to that of driving under the influence of alcohol (Powell et al., 2001). Adolescence is a critical time for examining sleep health because this is a particularly vulnerable period for the development of sleep problems and sleep patterns that can persist into adulthood (Carskadon et al., 2004). Findings indicate that minority adolescents (primarily African American or Hispanic) and

adolescents from lower SES (socioeconomic status) families or single-parent homes, are at increased risk for sleep problems, including insufficient sleep duration, poor quality sleep, and greater variability in sleep patterns (Keyes et al., 2015; Matthews et al., 2014; Moore et al., 2011; Troxel et al., 2014) as compared to their non-Hispanic white or higher SES counterparts. Therefore, it is important to examine underlying social determinants of adolescent sleep problems in order to identify high-risk groups and potential novel targets of intervention to improve adolescent health trajectories and population health more generally.

Increasingly, it is recognized that beyond individual-level social determinants of health, neighborhood level factors also contribute to diverse indicators of health. In particular, a burgeoning literature suggests that neighborhood level factors (including neighborhood-level SES), as well as subjective measures of neighborhood characteristics (including greater social disorder and lower neighborhood cohesion), are associated with poorer sleep quality in adults (Brouillette et al., 2011; Hale et al., 2010, 2013; Hill et al., 2009). Theoretically, disadvantaged neighborhoods, which are characterized by low levels

Abbreviations: MHI-5, Mental Health Inventory; NSCH, National Survey of Children's Health; PHQ, Patient Health Questionnaire; SES, socioeconomic status; TST, total sleep time
* Corresponding author.

E-mail addresses: wtroxel@rand.org (W.M. Troxel), rshih@rand.org (R.A. Shih), bewing@rand.org (B. Ewing), jtucker@rand.org (J.S. Tucker), anugroho@rand.org (A. Nugroho), damico@rand.org (E.J. D'Amico).

<http://dx.doi.org/10.1016/j.healthplace.2017.03.002>

Received 21 September 2016; Received in revised form 13 February 2017; Accepted 5 March 2017

1353-8292/ © 2017 Elsevier Ltd. All rights reserved.

of social cohesion and safety and high levels of neglect, disrepair, and crime, may lead to heightened feelings of vigilance and psychological distress—opponent processes of sleep (Hale et al., 2010, 2013). These negative affective states, in turn, may lead to chronic activation of the physiological stress response and exposure to stress hormones associated with impaired sleep. Such environmental influences on sleep may be particularly salient among adolescents, as this is a time of increasing autonomy from parents and greater influence from the broader social context, as well as dramatic changes in sleep and circadian biology (Carskadon et al., 2004). As such, and consistent with the objectives of *Healthy People 2020* (2016), there have been increasing calls from researchers and policy-makers for greater consideration of neighborhood-level effects on child and adolescent health disparities, including sleep health (Panel on High-Risk Youth, 1993).

However, only a handful of studies to date have investigated neighborhood-level factors and adolescent sleep, and the existing studies have not included both objective and subjective neighborhood characteristics, have limited assessments of sleep, and have not included racially/ ethnically diverse samples, including Hispanics and Asians (Felden et al., 2015). In particular, living in a low SES neighborhood is associated with increased risk of certain sleep disorders, such as obstructive sleep apnea (OSA), which may reflect the direct effects of exposures to environmental toxins that can increase risk of sleep-related breathing disorders (Brouillette et al., 2011). Using data from the National Survey of Children's Health (NSCH) (Singh and Kenney, 2013; Smaldone et al., 2007) and the Mobile Youth Survey (Umhlauf et al., 2014), several studies found that neighborhood safety and exposure to violence may be associated with increased frequency of inadequate sleep or sleep problems in both children and adolescents. Importantly, however, although the NSCH data provides a comprehensive assessment of a variety of neighborhood characteristics including social conditions, and built environment characteristics, the validity of assessing inadequate sleep via parent report is questionable particularly for older adolescents. Nevertheless, Bagley et al. (2016) found similar results using objectively measured sleep efficiency (via wrist actigraphy) and subjectively measured sleep quality and problems. The use of objective and subjective measures of sleep are significant strengths of Bagley's study; however, several important questions remain as there was limited assessment of neighborhood characteristics, and limited racial/ ethnic diversity in this sample which lacked Asian and Hispanic youth. Considering broader racial/ethnic differences in the association between neighborhood-level factors and sleep is important, given prior research showing that racial/ ethnic minorities have higher rates of sleep problems (Matthews et al., 2014; Roberts et al., 2006) as compared to non-Hispanic whites and Asians, and are more likely to live in impoverished neighborhoods compared to non-Hispanic whites, even after accounting for individual-level SES (Pattillo, 2005). Furthermore, as Jarrin et al. (2014) articulate, families with lower socioeconomic status have less organized houses, with more noise pollution, particularly in urban environments and less knowledge about sleep hygiene, all of which can contribute to increased risk for sleep disturbance. Thus, there may be important interactions between neighborhood-level disadvantage and family-level SES that potentiate the risk for sleep disturbances in adolescents. Only a handful of studies exist on neighborhood factors and sleep (as reviewed in Felden et al., 2015). Of these studies, few have considered both objective and subjective neighborhood characteristics, most have utilized samples of children and/ or younger adolescents and have limited racial/ ethnic diversity, and few have examined multiple sleep outcomes germane to adolescent health and development or examined the degree to which indicators of family-SES such as maternal education or race/ ethnicity may moderate observed associations between neighborhood characteristics and adolescent sleep.

Therefore, the purpose of the present study is to extend the limited existing literature on neighborhood factors and sleep by examining both subjective (i.e., perceived neighborhood social cohesion, safety,

and monitoring) and objective (i.e., census-tract determined percent living below the federal poverty level) neighborhood characteristics and sleep in a racially/ ethnically diverse sample of older adolescents from Southern California. We include key sleep domains that have been identified as particularly important for adolescent health and functioning (National Sleep Foundation, 2000): self-reported sleep timing (bedtimes), sleep duration and variability in sleep duration (weekdays vs. weekends), and sleep quality. We expected that adolescents who lived in neighborhoods where they perceived greater neighborhood disadvantage (as indicated by lower social cohesion, perceived safety, and monitoring) and where a greater percentage of households were living below the federal poverty line would report later bedtimes, shorter sleep duration, poorer sleep quality, and would exhibit greater difference in weekend versus weekday sleep duration, as this difference score may be an indicator of “weekend oversleep” for sleep-deprived teens (Hasler and Clark, 2013). Furthermore, we explored whether the strength of the associations between neighborhood-level characteristics and sleep characteristics differed by maternal education, which has been used as an indicator of family-level SES in prior research (Korupp et al., 2002) or the adolescent's race/ ethnicity. Consistent with Jarrin and colleagues' work (2014), we hypothesized that the influence of neighborhood-level disadvantage on sleep would be stronger among those adolescents who identify as Hispanic or “other” or those who have a mother with lower educational attainment, by contributing to increased stress in the home and potentially decreased parental involvement or education concerning healthy sleep practices.

2. Methods

Adolescents from this study originated from 16 middle schools across three school districts in southern California that were part of a large, ongoing longitudinal study with a school-based intervention that occurred in 2008 (D'Amico et al., 2012). As previously reported (D'Amico et al., 2012), 92% of parents returned a consent form at the baseline and 71% gave permission for their child to participate in the baseline survey. Of consented students, 94% completed the baseline survey, which is higher or comparable to other school-based survey completion rates with this population (Kandel et al., 2004). We continued to follow two cohorts of youth (the original 6th grade cohort, and the original 7th grade cohort) as they transitioned into high school. For this study, we used web surveys that were administered from May 2014 to May 2015 when youth were on average 17.3 years old ($n=2493$). Missingness was less than 0.5% for all variables; (for mother's education 7.4% of respondents replied ‘Don't Know’ and are excluded from the analyses). All research on human subjects was approved by the institution's IRB.

2.1. Race/ethnicity and maternal education (hypothesized effect modifiers)

At baseline, respondents classified themselves by ethnicity (Hispanic or not Hispanic) and were then asked about their race (National Institutes of Health (NIH), 2001). These responses were categorized as non-Hispanic white (20.2%), Hispanic (46.0%), Asian (20.5%), and “Multiracial/Other” (13.3%; which included African American 2.3%, American Indian 0.6%, Native Hawaiian 0.7%, Multiracial 9.8%). In addition to examining racial/ethnic differences in observed associations, we also included a measure of educational attainment of the participant's mother (less than high school diploma/ GED, high school diploma, or greater than high school education) as an indicator of family-SES.

2.2. Covariates

We adjusted for covariates known to be associated with sleep such as age, gender, and family structure (i.e., two-parent household versus

Download English Version:

<https://daneshyari.com/en/article/5114793>

Download Persian Version:

<https://daneshyari.com/article/5114793>

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