



Sleep and substance use: Practice considerations for social workers

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ABSTRACT

Poor sleep health is consistently associated with the initiation of substance use, development of substance use disorders (SUDs), dropout from treatment, and return to use. Quality sleep health holds promise as a modifiable factor that can reduce the occurrence and severity of SUDs. Unfortunately, social workers typically receive little to no training in the assessment and evidence-based treatment of sleep disorders. This article, authored by an interdisciplinary team of clinicians and researchers, provides important sleep and SUD considerations for social workers. After providing a summary of the empirical literature surrounding the relationship between sleep and SUDs, we discuss the inclusion of the following in SUD treatment settings: (1) sleep health assessments, (2) psychoeducation on behaviors to promote healthy sleep, (3) referral to appropriate specialists when sleep disorders are suspected, (4) the promotion of a healthy sleep environment in residential treatment settings, and (5) evidenced-based behavioral interventions.

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Sleep health is a holistic examination of sleep across multiple dimensions including sleep duration, sleep continuity, sleep timing, sleep regularity, and satisfaction with sleep (Buysse, 2014). Sleep health is integral for maintaining optimal physical and mental health, and plays a vital role in the context of substance misuse and substance use disorders (SUDs). The initiation of substance use, substance misuse, premature termination from SUD treatment, and return to problematic substance use have all been associated with suboptimal sleep health (Brower & Perron, 2010).

Sleep can be viewed as a modifiable behavior with important implications not only in the context of substance use and misuse, but also in the context of health disparities (Groton & Spadola, 2021; Hale et al., 2020; Jackson et al., 2020; Spadola et al., 2022). Throughout the lifespan, minoritized groups experience poorer sleep health (Cao & Yang, 2022). For

example, sleep impacts many facets of physical and mental well-being including increasing one's risk of mortality, cardiovascular disease, obesity, cancer, Alzheimer's disease (Burke et al., 2018, 2019, 2016a, 2016b), depression, anxiety, self-harm attempts and death by suicide (see review: Hale et al., 2020). Accordingly, sleep health promotion can play a significant role in promoting overall health equity. There have been calls to promote sleep health more broadly among health care and behavioral health professions (Meaklim et al., 2020; Spadola et al., 2022; Wolfson & Germain, 2019; Zhou et al., 2021) and sleep health promotion can be particularly important for professionals working with clients at risk for or impacted by substance misuse. This article aims to discuss the relationship between sleep and substance use problems and provide important considerations for professionals working in the field of substance use treatment.

Temporal associations between sleep and substance use

There are associations between several sleep characteristics and substance use initiation. Specifically, insufficient sleep duration for adults, is defined by the Centers for Disease Control and Prevention and in the empirical literature as six or fewer hours of sleep on an average night (Bertisch et al., 2018; Centers for Disease Control and Prevention, 2021), and poor sleep quality have been associated with substance use initiation as well as ongoing unhealthy substance use (Mike et al., 2016; Pasman et al., 2020; Wong & Brower, 2012; Wong et al., 2015, 2015). Most of the research surrounding these associations has been conducted among adolescents and young adults.

Analyses using the National Longitudinal Study of Adolescent Health Data have demonstrated that among adolescents and young adults, short sleep duration and sleep difficulties predicted later problems with alcohol and other psychoactive substances (Wong & Brower, 2012; Wong et al., 2015). For example, Wong et al. (2015) found that difficulty falling asleep predicted later alcohol-related interpersonal problems.

In a four-year prospective study of middle schoolers, Miller et al. (2017) found that shorter sleep duration and daytime sleepiness were significantly associated with later alcohol use, heavy alcohol use, and alcohol-related negative consequences. In addition, shorter sleep duration predicted future marijuana use. It is important to note that these associations were maintained even after controlling for confounding variables such as sex, current college enrollment, weekends versus weekdays, insomnia severity, and drinking quantity (Miller et al., 2017).

Pasman et al. (2020) utilized genetic data from the largest genome-wide association study to date to examine causal relationships between insomnia symptoms and substance use. Results indicate that insomnia had moderate causal relationships with the development of an alcohol use disorder, initiation of cannabis use, nicotine use, and decreased chances of smoking cessation (Pasman et al., 2020).

Equally important, the relationship between sleep and alcohol use disorder (AUD) is complex and bidirectional (Hasler et al., 2012; Pasch et al., 2012). While most studies described previously have considered the role that poor sleep plays in the development of SUDs, other studies have found that earlier initiation of substance use, or unhealthy patterns of consumption are also associated with later sleep problems. Pasch et al. (2012) reported that alcohol or cannabis use by 14- and 15-year-olds was associated with altered weekend sleep duration; Ogeil, Cheetham, et al. (2019) reported that earlier substance use

by adolescents first assessed at 12 years old and subsequently followed up at ages 14, 16 and 18 years, was associated with poorer sleep quality at age 18. Different facets of alcohol and cannabis use were found to be important in these associations. For alcohol, heavy episodic drinking from a younger age and total lifetime use at the age of 18 years were associated with poorer sleep outcomes. For cannabis, recent use at the age of 18 years was associated with poor sleep quality.

Taken together, prospective studies using self-report data as well as genetic studies reveal that problems sleeping (i.e., short sleep duration, sleep disturbances, and symptoms of insomnia) are associated with future substance use initiation, and unhealthy substance use. Moreover, there are likely bidirectional relationships that are important to study and assess.

Concurrent substance use and sleep problems

The literature has also established the relationship between concurrent substance use and sleep problems. Sleep problems can be prevalent during all stages of substance use including recreational use, active use, withdrawal, and abstinence (Ogeil et al., 2021; Ogeil & Phillips, 2015; Roehrs et al., 1999; Schierenbeck et al., 2008). Alcohol, nicotine, and cannabis are associated with sleep fragmentation, poor sleep quality, lower sleep duration, and insomnia symptoms (Brower, 2001; Chakravorty et al., 2016; Ogeil & Phillips, 2015; Schierenbeck et al., 2008). In addition, SUDs often co-occur with symptoms of insomnia and insomnia disorder (Brower, 2001; Chakravorty et al., 2016; Schierenbeck et al., 2008). For example, among a sample of 239 individuals who self-reported problems with alcohol, 76% demonstrated insomnia symptoms (Hartwell et al., 2015). It is also important to note that psychoactive substances including alcohol may aggravate other sleep complaints, including obstructive sleep apnea, leading to poorer clinical outcomes (Scanlan et al., 2000).

It is a common perception that consuming alcohol can help to promote sleep onset. Conversely, while alcohol use initially promotes sleep onset, it subsequently leads to sleep fragmentation, especially in the later part of the night (Arnedt et al., 2011a; Chakravorty et al., 2016; Ebrahim et al., 2013; Spadola et al., 2019). It is interesting to note that although individuals might subjectively perceive better sleep on nights they consume alcohol (Miller et al., 2022), alcohol tolerance builds rapidly, potentially leading to increased use of alcohol over time to facilitate sleep (Roehrs & Roth, 2018).

Nicotine use, including the use of electronic nicotine delivery systems (vaping), also are associated with sleep problems (Baiden et al., 2023; McNamara et al., 2014; Jaehne et al., 2012; Ogeil & Phillips, 2015; Spadola et al., 2019). Using nicotine within four (4) hours of bedtime can be especially problematic. Among individuals reporting insomnia symptoms, nicotine use within four hours of bedtime was associated with about a 42-minute reduction in sleep duration (Spadola et al., 2019). In addition, sleep deprivation has been linked to an increase in the number of cigarettes smoked, with researchers speculating that the increase in cigarette smoking was perhaps due to participants' beliefs that cigarettes help to promote wakefulness (Hamidovic & de Wit, 2009).

Cocaine and methamphetamine are psychostimulants that negatively impact sleep. Acute cocaine use is associated with sleep disturbances, with sleep disturbances existing even after use (see reviews: Bjorness & Greene, 2021). Disruptions in the 24-hour sleep wake cycle (circadian rhythm) associated with cocaine use might also exacerbate sleep disturbance following use (Kosobud et al., 2007). Methamphetamine is another psychostimulant with

high abuse potential (Paulus & Stewart, 2020). Methamphetamine use and withdrawal from use is associated with increased sleep disturbances such as increased sleep onset latency, lower sleep duration, and lower sleep quality (Herrmann et al., 2017; Vrajová et al., 2021).

Research on heroin and other opioids indicates that not only can opioids impact sleep duration and quality, occurring in between 30% to 80% of those consuming opioids, but also that there is a complex relationship between pain and sleep which must be addressed when seeking to decrease the use of opioid pain medication while at the same time trying to improve sleep quality (Huhn & Finan, 2021; Tripathi et al., 2020; Wilkerson & McRae-Clark, 2021). In summary, there is a high prevalence of sleep-related problems among individuals engaged in active substance use, which persist even when one initiates substance use treatment.

Sleep and SUD treatment engagement and return to use

Sleep disturbances are risk factors for not completing SUD treatment as well as returning to substance use (Angarita et al., 2014; Conroy & Arnedt, 2014; Wilkerson et al., 2021). In fact, sleep has been deemed ‘a universal risk factor for relapse’ (Brower & Perron, 2010). This is of particular concern because about 10% of individuals in need of treatment for substance use disorders seek treatment (Lipari et al., 2016), and those who seek treatment face high odds of premature treatment termination and return to use (Brecht & Herbeck, 2014; Scott et al., 2005).

Recent research has highlighted the importance of circadian disruption, and variations in sleep schedules (the time one goes to bed and the time one wakes up), in relation to substance use. Among treatment-seeking adults, more variability in sleep midpoint (i.e., the halfway point between bedtime and waketime) is related to lower odds of completing treatment for substance use disorders (Schick et al., 2022). Irregular sleep timing among adolescents also prospectively predicts earlier age of onset for alcohol, cannabis, and cocaine use disorders (Hasler et al., 2016). Sleep loss and circadian misalignment due to irregular sleep timing may impair inhibitory control and emotion regulation skills, as well as increase reward sensitivity and impulsivity, all of which may contribute to more problematic substance use behaviors (Hasler & Clark, 2013).

Similarly, individuals who experience high variability in sleep timing (e.g., rotating night shift workers) have a higher likelihood of binge drinking disorder (Richter et al., 2021), smoking (Trinkoff & Storr, 1998), and use of sleep-inducing medications (Tucker et al., 2021). Research also reveals that night-shift workers, compared to day workers, may be more likely to consume methamphetamine before a shift to offset fatigue to meet work demands (Kirkpatrick et al., 2009).

Implications for substance use treatment

Sleep health holds promise as a modifiable behavior that can reduce the frequency and severity of SUDs. In this section, we describe how social workers and other behavioral health professionals can promote a culture of sleep health when working with clients at risk for and impacted by substance misuse. Resources on education, assessment, intervention, and referral are provided in [Table 1](#).

Assessment

The inclusion of sleep health assessments and education regarding the relationship between sleep and substance use as a routine part of SUD treatment is imperative due to the relationship between impaired sleep, ongoing substance use, and return to substance use. Initial and ongoing evaluation of a client's sleep and sleep behaviors can be a low-intensity addition to routine clinical assessments. Nonetheless, to the best of our knowledge sleep health assessments are rarely incorporated in substance use treatment settings (Huhn & Finan, 2021). As indicated in Table 1, clinicians can assess sleep using brief, standardized sleep measures, sleep diaries and discussion with clients and at intake. In addition to promoting discussions with clients about sleep health, sleep assessments can prompt substance use treatment professionals to make a referral to a sleep health professional.

Clinicians should also consider obstructive sleep apnea when assessing for sleep problems. Obstructive sleep apnea (OSA) is an underdiagnosed sleep-related breathing disorder with grave health implications including stroke and heart attacks (Redline et al., 2010). Importantly, OSA might be especially prevalent in populations impacted by substance misuse (Colvonen et al., 2022; Mahfoud et al., 2009). Thus, educating clinicians about how to assess for risk factors for sleep apnea may be helpful (i.e., the STOP-BANG assessment: Snoring, Tiredness, Observed apnea, high blood Pressure, Body mass index (BMI), Age, Neck circumference, and male Gender; Chung et al., 2008).

Assessing sleep at discharge is also important. In fact, as many as 49% of individuals in residential treatment still reported sleep problems at discharge, which increases the risk of return to substance use (Arnedt, Rohsenow et al., 2011b). Discharge planning should include providing clients with resources to counter this increased risk of ongoing disrupted sleep, such as referrals and educational materials on healthy sleep.

Psychoeducation

Healthy Sleep Behaviors. Psychoeducation surrounding sleep health as a routine part of substance use treatment may be an important consideration (Lukens & McFarlane, 2004). Discussing the importance of sleep for recovery from substance use disorders can help to promote 'buy-in' from the client. Moreover, education surrounding sleep health behaviors, often termed 'sleep hygiene' may improve client outcomes. Please note, due to the pejorative nature of 'hygiene,' we prefer to use the term sleep health, opposed to sleep hygiene. Sleep health recommendations typically include maintaining a consistent sleep and wake schedule, limiting screens as well as caffeine, nicotine, and alcohol before bedtime, and creating a relaxing bedroom environment (Irish et al., 2015). The American Academy of Sleep Medicine and the Centers for Disease Control and Prevention have both published websites on sleep education (see, Table 1). While the impact of sleep health education on substance-involved populations is understudied, the existing data is promising.

Barati and Amini (2020) found that a multicomponent sleep health education program improved self-reported sleep quality among individuals engaged with substance use treatment. Another study investigated daily associations between modifiable sleep behaviors and sleep outcomes among individuals reporting heavy alcohol use and meeting diagnostic criteria for insomnia. A comfortable sleeping environment, limiting naps, and maintaining consistent wake time was associated with an increase in self-reported sleep quality (Miller

Table 1. Evidence-based sleep health promotion resources.

Description	Purpose	How to access resource (link/journal article)	Notes
EDUCATION			
American Academy of Sleep Medicine	Education on healthy sleep, sleep disorders, and resources	https://sleepeducation.org/healthy-sleep/	No cost.
Center for Disease Control and Prevention	Education on healthy sleep and sleep disorders	https://www.cdc.gov/sleep/index.html	No cost.
National Institute of Occupational Health and Safety	Education on shift work related risks and long work hours and ways to alleviate risks	https://www.cdc.gov/niosh/work-hour-training-for-nurses/default.html	No cost.
Pediatric Sleep Council	Education for caregivers on sleep in pediatric populations	https://www.babysleep.com/	No cost.
U.S. Department of Veteran Affairs	Sleep health education tailored to military veterans	https://www.veterantraining.va.gov/insomnia/index.asp	No cost. Includes a CBT-I course
ASSESSMENT			
Global Sleep Assessment Questionnaire	Broad screener for sleep disorders	Roth, T., Zammit, G., Kushida, C., Doghramji, K., Mathias, S. D., Wong, J. M., & Buysse, D. J. (2002). A new questionnaire to detect sleep disorders. <i>Sleep Medicine</i> , 3(2), 99–108. doi:10.1016/s1389-9457(01)00131–9	
Insomnia Severity Index	Brief screener for insomnia	Bastien, C. H., Vallières, A., & Morin, C. M. (2001). Validation of the Insomnia Severity Index as an outcome measure for insomnia research. <i>Sleep Medicine</i> , 2(4), 297–307.	
Stop Bang assessment	Brief screener for sleep apnea	http://www.stopbang.ca/osa/screening.php	
Sleep Disturbance Short Form	Validated screener for sleep disturbances, Patient Reported Outcomes Measurement Information Systems, NIH (National Institutes of Health)	https://www.healthmeasures.net/index.php?option=com_instruments&task=Search.pagination&Itemid=992	Can search and view measures and scoring instructions
Sleep related impairment short form	Validated screener for sleep related impairment, Patient Reported Outcomes Measurement Information Systems, NIH	https://www.healthmeasures.net/index.php?option=com_instruments&task=Search.pagination&Itemid=992	Can search and view measures and scoring instructions
INTERVENTION TRAINING			
Cognitive Behavioral Therapy for Insomnia	CBT-I training, supported by the Office of the Assistant Secretary of Defense for Health Affairs	https://cbtiweb.org/	No cost, unless you claim CE credit.
Brief Behavioral Therapy for Insomnia	BBT-I training protocol	Troxel, W. M., Germain, A., & Buysse, D. J. (2012). Clinical management of insomnia with brief behavioral treatment (BBTI). <i>Behavioral Sleep Medicine</i> , 10(4), 266–279. doi: 10.1080/15,402,002.2011.607200	No cost; open access article.
REFERRAL			
American Academy of Sleep Medicine	Locate accredited sleep centers in the US	https://sleepeducation.org/sleep-center/	
Society for Behavioral Sleep Medicine	Locate behavioral sleep medicine providers	https://www.behavioralsleep.org/	

et al., 2022). Clinicians need to note that while practicing healthy sleep habits can be beneficial, it is not recommended as a standalone treatment for insomnia disorder (Edinger et al., 2021; Irish et al., 2015), and referring the client for follow-up evaluation from a medical professional may be warranted (as will be discussed in the following section).

Earlier we described emerging research highlighting the negative impact of irregular sleep and wake patterns on SUDs (Schick et al., 2022; Slavish et al., 2022). From a holistic perspective, sleep irregularity also presents physical risk factors including a 2-fold increased risk of cardiovascular disease, independent of sleep duration (Huang et al., 2020). Important educational opportunities surround this such as the importance of maintaining a consistent sleep schedule. This can be feasible by asking the client to set an alarm clock for the same time every morning (one will naturally start to fall asleep on a regular schedule with a consistent wake-up time). Additionally, morning light helps to set the sleep and wake cycle (i.e., circadian rhythm), so advocating for natural light in the morning to promote circadian rhythmicity can be an important educational point for clients engaged with SUD treatment (Nagare et al., 2021).

Finally, SUD clients who engage in shift work might benefit from specialized sleep health education as they are particularly vulnerable to circadian rhythm disruption and the negative impacts associated with circadian rhythm disruption (Tucker et al., 2021). The CDC published a training for nurses and night shift workers to understand the risks associated with night shift work and ways to combat those risks (Table 1).

Sleep Expectancies. Behavioral health professionals should consider discussing ‘sleep expectancies’ with their clients. In defining ‘sleep expectancies’ we borrow from the literature surrounding alcohol use expectancies. Expectancies can be defined as positive and negative beliefs about a substance that can drive motivation to use (Fromme et al., 1993). Thus, we define sleep expectancies as beliefs about sleep and how certain behaviors, including substance use, might negatively or positively impact sleep.

Often clients in treatment for SUDs have consistently used substances to go to sleep. Thus, in addition to highlighting the negative, bidirectional relationship between sleep and substance use, education surrounding ‘typical’ sleep might be helpful. As an example, if the client was aware that it can often take 30 minutes to fall asleep, this knowledge might help alleviate the temptation to use a substance to promote sleep onset. Moreover, it is common for sleep disruptions to exist up to two years into their recovery period (Brower, 2003); educating the client about this research is another way to promote sleep expectancies.

Clients may be currently using or have previously used substances (cannabis, alcohol) to assist with sleep issues. While researchers and medical professionals have identified disruptions to sleep architecture and circadian cycles (He et al., 2019) from alcohol consumption, its status as a sedative and perceived assistance with sleep latency may make it attractive to clients as a sleep aid. In fact, sleep onset latency is the most common issue associated with a return to problematic alcohol use (Brower, 2001; Conroy & Arnedt, 2014). Cannabis has also been linked to subjective improvements in sleep latency (i.e., the time it takes to fall asleep), awakenings, and limb movement disorders but objective data has documented both positive and negative sleep outcomes (Sullivan & Winkelman, 2020). Thus, discussing the likelihood of sleep issues in recovery and ways to promote sleep without substances (i.e., practicing sleep health behaviors, stress management, meditation, relaxation exercises before bedtime, etc.) can be important.

Referral

Multidimensional and personalized approaches to substance use treatment are ideal to promote best outcomes (Volkow, 2020). Because of the relationship between sleep and substance use, targeting a client's sleep issues is a part of multidimensional and personalized care. Following assessment, social workers and other behavioral health professionals should refer clients to a primary care provider, behavioral sleep medicine specialist, or sleep medicine physician when sleep issues are reported or suspected. For example, a combination of behavioral measures (e.g., engaging in healthy sleep behaviors) and medication(s) may be appropriate to address sleep concerns and reduce chances of a return to use (Kolla et al., 2011). Moreover, while referring clients to a medical professional is not only ethical but warranted whenever a health or sleep concern is noted, exploring the benefits of seeking behavioral (non-pharmacological) treatments for insomnia in the context of SUDs can be especially meaningful and will be further explored.

Promote a healthy sleeping environment

Inpatient substance use treatment facilities can implement environmental considerations to help promote sleep health among the clients they serve. Being intentional about lighting (eliminating bright light at night and reducing ambient light in the nighttime) can be beneficial (Cain et al., 2020; Giménez et al., 2014). Research indicates that weighted blankets may also improve sleep disturbances and decrease anxiety (Ekholm et al., 2020; Meth et al., 2022). Furthermore, eye masks (Fang et al., 2021) and white noise (Cao & Yang, 2022; Riedy et al., 2021) might also help promote sleep in treatment and home environments. At the very least, introducing weighted blankets, white noise, and eye shades to clients can help them experiment with what objects, if any, benefit their sleep and can be a sleep-promoting strategy clients can implement after discharge.

Promoting a culture of sleep health in SUD treatment settings is also important. In addition to environmental considerations that promote sleep health, educating clinicians on sleep health and fostering clinical skills in the domain of sleep health assessment and intervention can be useful.

Behavioral and psychological therapies for insomnia

Cognitive Behavioral Therapy for Insomnia (CBT-I) is the recommended first-line treatment for adults presenting with insomnia disorder in the general population (Edinger et al., 2021) and for individuals with comorbid insomnia and alcohol use disorders (Geoffroy et al., 2020). CBT-I is a multi-component intervention that involves sleep restriction, stimulus control, sleep education, cognitive therapy, and relaxation exercises (Arnedt et al., 2011; Chakravorty et al., 2019). CBT-I can be effectively delivered via several different treatment modalities, including individual, group, and web-based (Edinger et al., 2021; Zhou et al., 2022).

While standard CBT-I has proven efficacious among those with SUD, there have been recent efforts to tailor treatment protocols. Recommendations include a greater emphasis on psychoeducation about the impact of alcohol and SUDs on sleep, and discussions surrounding behaviors to promote sleep (e.g., relaxation exercises to promote sleep as an

alternative to substance use; Bowyer et al., 2022). It is important to note, however, that we are not aware of studies investigating CBT-I in patients using substances other than alcohol.

Investigating the feasibility and acceptability of Brief Behavioral Therapy for Insomnia (BBT-I) in populations engaged with SUD treatment also seems warranted. BBT-I is a shorter version of CBT-I and is conducted in only 4 sessions (Troxel et al., 2012). The main components of BBT-I focus on maintaining a regular wake time, stimulus control (e.g., limiting time in bed for only sleeping and not working), only going to bed when one feels sleepy, and getting out of bed when is unable to sleep (Troxel et al., 2012). BBT-I can have a promising impact on insomnia symptoms and can be delivered by health and behavioral health care providers including social workers (Wanberg et al., 2022; Elliman et al., 2022). Thus, BBT-I would be a useful, brief intervention for social workers (and social work students) to be trained in, especially given that social work students may be eager to receive sleep health education (Spadola et al., 2022).

Overall, non-pharmacological interventions for insomnia in populations presenting with SUD are preferable due to the risk and abuse potential of medications (Brower, 2015). Moreover, in a meta-analysis that examined the efficacy of behavioral and pharmacological interventions for insomnia among individuals diagnosed with AUD, both behavioral and pharmacological interventions improved sleep quality, with behavioral interventions demonstrating more consistent effects (Miller et al., 2017). Taken together, non-pharmacological treatments should be the first line treatment for individuals with comorbid insomnia and SUD.

Limitations

It is important to note the limitations of this paper. Overall, interventions for sleep among SUD populations remain understudied and more research is needed surrounding best practices to promote sleep health among this population. In addition, we are not aware of any published intervention studies that accounted for severity of SUD. It seems reasonable that approaches to address sleep in populations impacted by SUDs should be tailored based on SUD severity as well as by the type of substance(s) used.

Conclusion

This article provided a summary of the current literature on the relationship between sleep and substance use. The authors also discussed implications for social workers and other behavioral health professionals working with individuals impacted by SUDs such as the importance of assessing for sleep issues throughout substance use treatment, psychoeducation, referring to a medical or behavioral sleep medicine professional, facilitating a sleep-promoting culture and environment, and implementing evidenced-based interventions.

Finally, it is important to recognize that systemic barriers to health (and sleep) exist. Sociocultural and environmental factors such as environmental noise, housing quality, access to healthcare, perceived safety, and discrimination can all negatively impact sleep (Jackson et al., 2020; Ward-Peterson & Wagner, 2020). Thus, we also advocate for upstream approaches to address sleep health and co-occurring health disparities in addition to promoting sleep health on the individual level.

Disclosure statement

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