National Eating Disorder Information Centre

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The Importance of Sleep and Eating Behaviours

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How was your sleep last night? Did you fall asleep easily? Did you sleep through the night? Did you feel alert when your alarm went off? Take another moment to reflect on what you ate yesterday. Did you eat regularly? Were you satisfied? Did you nourish your body?

How do you feel after a poor night's sleep? What about after eating too little or too much?

According to Maslow, and his well-known hierarchy of needs theory (1943), sleep and eating are basic needs, vital to everyone's physical and psychological functioning. Not only that, but it appears that these two basic needs are highly connected. A few studies have shown the effects of eating behaviour on sleep and vice-versa (Bos et al., 2013; Soares & Macedo, 2015). The sleep-eating interaction is observed in animals, the general population, patients with eating disorders (EDs), and individuals classified per the body mass index (BMI) as "overweight" or "obese" (OW/OB) (Cooper et al., 2020; Soares & Macedo, 2015). These primary behaviours appear to be linked via cellular, systemic, and behavioral pathways that are not completely understood (Soares & Macedo, 2015; Tubbs et al., 2020). What we do know, however, is that when sleeping and/or eating are disturbed, mental health also suffers.

Impaired sleep is recognized in the *Diagnostic and Statistical Manual of Mental Disorders-5* (DSM-5; American Psychiatric Association, 2013) as a central symptom in a range of mental health disorders, including anxiety, mood, post-traumatic stress, and psychotic disorders. Importantly, across clinical diagnoses, abnormal sleep and eating patterns tend to indicate more severe symptomology and worse treatment outcomes (Bartlett & Jackson, 2016). While the research on sleep in the context of EDs is scarce, it is clear that the frequent co-occurrence necessitates more research and clinical attention.

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WHAT THE RESEARCH ON SLEEP AND EATING DISORDERS TELLS US

There are many ways to measure sleep disturbance. Objective sleep measures, typically administered in a medical practice, include polysomnography and wrist actigraphy; these assess characteristics of sleep physiology. There are also many questionnaires available to measure subjective perceptions of sleep difficulties, but the most common and helpful tool is the daily sleep diary in which anyone can assess their individual sleep efficiency (i.e., ratio of time in bed to time asleep), timing, duration, satisfaction, and daytime alertness. This is the constellation of variables most helpful in determining an individual's overall sleep health (Buysse, 2014).

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Sleep research in ED populations was primarily conducted in the 1980's and 1990's. To this day, results remain contradictory due to small sample sizes and differences in methodology. In the last decade, however, the sleep-ED topic has gained more attention. Indeed, approximately half of individuals diagnosed with an ED report sleep disturbances (Kim et al., 2010). Specific sleep disturbances we are likely to see in this population include difficulty falling asleep (the most common), parasomnia (e.g., sleep walking), daytime sleepiness, early morning awakenings, and midsleep awakenings (Kim et al., 2010). Importantly, the prevalence rate in the ED population parallels that found in the depression-sleep literature (Lundgren et al., 2008), and individuals with anorexia nervosa (AN) binge-eating/purging type report even higher rates of sleep disturbance (Kim et al., 2010). Given the pervasiveness of disturbed sleep in individuals with EDs and the lack of research on this topic, this is an apt area for continued exploration and improved understanding. The following two paragraphs will provide a brief overview of the research on sleep disturbances across the EDs.

SLEEP IN NIGHT EATING SYNDROME AND BINGE-EATING DISORDER

Night eating syndrome (NES) is characterized by high caloric consumption in the evening, after dinner, and can involve waking in the middle of the night to eat. NES lends itself to a rich study of the relationship between food intake and sleep disturbance, and accordingly, has received a greater deal of research attention. The broad relationship between sleep and eating has been well-established in the non-restrictive eating disorders, specifically binge-eating disorder (BED) and NES. Importantly, the sleep-eating relationship—at least in those with NES and BED—cannot be attributed to high BMI alone. That being said, weight status needs to be included in the model, given the well-documented physical and psychological health problems associated with each end of the weight spectrum.

Studies have shown significant relationships between NES, restless leg syndrome, and insomnia at levels stronger than seen in depression (Allison et al., 2006). The serotonin system, appetite regulating hormones, food behaviour, and circadian rhythm all act as primary mechanisms of onset and maintenance of NES (McCuen-Wurst et al., 2018). The most common sleep problems in this population include difficulties related to sleep initiation and maintenance, as well as daytime sleepiness (Allison et al., 2006).

Research on the sleep-BED relationship is limited, and the extent of its similarity to the cross-sectional and longitudinal patterns found in the sleep-NES relationship remains unknown (Chan et al., 2018). To date, there have been four studies examining sleep health in BED clinical samples. Similar to the sleep-AN research discussed below, BMI and the neuroendocrine system are purported to play a main role in the sleep-BED relationship (Trace et al., 2017). The most recent cross-sectional study to date, conducted in 2018 by Kenny and colleagues suggests that adults with BED experience significantly greater insomnia symptoms compared to controls. Insomnia symptoms were fully mediated by depression and partially mediated by anxiety symptoms (Kenny et al., 2018).

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SLEEP IN BULIMIA NERVOSA AND ANOREXIA NERVOSA

According to recent research, poor sleep health appears most often in individuals with AN, compared to those with other EDs (Kim et al., 2010). Underweight status (Abdou et al., 2018) and malnutrition (Sauchelli et al., 2016) play a large role in the sleep problems found in this population. Research shows that we are likely to observe shortened sleep time, insomnia, mid-sleep awakenings, and decreased sleep efficiency in patients diagnosed with AN (Lauer & Krieg, 2004),

The sleep health in those with bulimia nervosa (BN) appears to be equal to or less disrupted than those with AN and BED, although the limited literature on the sleep-BN relationship leaves this conclusion speculative. Individuals with BN specifically report difficulties such as hypersomnolence, restlessness, and early awakenings (Kim et al., 2010). Interestingly, it may be that BN patients with OW/OB show more significant sleep disturbances than those in a "normal" weight range (Levy et al., 1989).

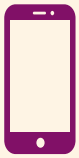
GENERAL CONCLUSIONS ON THE SLEEP-EATING DISORDER RELATIONSHIP

The links between sleep and EDs is strong. In fact, more than 50% of patients with EDs complain of impaired sleep. Disturbed sleep appears most in individuals with AN and NES. Common sleep-related difficulties across ED diagnoses include insomnia, poor subjective sleep quality, and mid-sleep awakenings. Despite the evidence, we lack the studies that properly assess the sleep-ED temporal relationship and the clinical implications. Impaired sleep may very well be a maintenance factor of ED symptomology. The ED field would benefit from further research into the sleep-ED relationship, with a cohesive set of reliable and valid sleep measures in the context of treatment. Whether sleep improves with the current ED treatments, by virtue of targeting weight status and ED-specific symptomology, remains important to investigate in future research. Cognitive behavioural therapy for insomnia may be a beneficial addition to ED treatments.

FOUR TIPS TO IMPROVE SLEEP

Many people struggle with disrupted sleep. Sleep is crucial for adequate energy levels, bodily functions, and psychological health. Before changing your sleep, it is necessary to first observe it. Keep a sleep diary, or use a sleep app (one option is CBT-I Coach), to note your sleep patterns.

1. **Set the stage for good sleep.** Dim your lights, make sure your bedroom is cool enough, get comfortable, and turn off your devices. Maximize relaxation.
    - If you find yourself full of anxious thoughts before bed, engage in a relaxing activity. Try writing down your thoughts, stretching, or reading.
2. **Get enough sleep.** The amount of sleep necessary for each person varies. Between 7 and 9 hours per night is recommended.
    - Among many other things, sleep deprivation can affect appetite, weight, and mood.
3. **Stick to a sleep schedule.** That is, go to bed and wake up around the same time every day—yes, even on the weekends! This helps to maintain your circadian rhythms.
    - A consistent sleep schedule also helps to maintain regular eating patterns. It's all about teaching your body when to get sleepy, when to be alert, and when to get hungry.
4. **Pay attention to what, and when, you drink and eat.** Make sure you nourish your body, eat regularly, and stay hydrated.
    - Try to limit your fluid intake right before bedtime, so you can reduce mid-sleep awakenings for bathroom use.
    - Eat regular meals and snacks of sufficient quantity, nutritional variety, and frequency. This is relevant for both sleep disorders and eating disorders.



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