Exploring sleep hygiene, quality, and assessment in adults

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**Sleep quality is crucial for maintaining overall health, however,
nearly half of the adult population experiences poor sleep.
Understanding sleep parameters through measurement tools such
as the B-PSQI, and identifying maladaptive sleep hygiene behaviors seems essential to improve sleep interventions.**

Understanding the concept of sleep quality and its components is important for maintaining overall health and well-being. Sleep quality plays a crucial role in promoting physical and mental health, and in preventing a range of illnesses including obesity, diabetes, cardiovascular diseases, and several forms of cancer (e.g., Wang et al., 2020). Despite this, 47 % of the general adult population experiences poor quality of sleep (Sancho-Domingo et al., 2020).

When we talk about sleep quality, it involves the examination of several qualitative and quantitative sleep parameters and their implications during the daytime. Some of these parameters include subjective perception of sleep quality, sleep latency – the time it takes to fall asleep–, frequency of night awakenings, duration of total sleep, and sleep efficiency –the percentage of time spent in bed while sleeping (Sancho-Domingo et al., 2021).

During wakefulness, the symptoms experienced are closely associated with the degree of restfulness of sleep, such as daytime fatigue or sleepiness. Regarding this, the assessment of sleep quality has been predominantly measured with the Pittsburgh Sleep Quality Index (PSQI; Buysse et al., 1989), used in both clinical and research contexts. The PSQI addresses seven sleep components using 18 items and the sum of these component scores yields a global score that ranges between 0 and 21, with higher scores representing poorer sleep quality.

While the PSQI has served as a key tool for evaluating sleep quality, shorter adaptations were needed in order to optimize its applicability in long surveys and as a screening tool for identifying poor sleep. The Brief Pittsburgh Sleep Quality Index (B-PSQI; Sancho-Domingo et al., 2021) comprises 6 items while maintaining the evaluation of sleep components, including bed and wake-up times, sleep efficiency, sleep duration, night disturbances, and time to fall asleep, which leads to a global sleep quality score. The B-PSQI version has proven favorable psychometric properties in men and women, including satisfactory internal consistency of items (Cronbach's alpha α=0.79 and ordinal omega ω=0.91), and concurrent and convergent validity of other related sleep measures. Notably, the potential of the B-PSQI in assessing sleep quality straightforwardly remains promising, and the findings have demonstrated that sleep quality underlines a multidimensional nature and emphasizes the interconnectedness of sleep parameters with overall health (Buysse et al., 1989; Mollayeva et al., 2016; Sancho-Domingo et al., 2021).

In this regard, the quality of sleep can be affected by various factors, including sleep hygiene behaviors. Sleep hygiene encompasses a collection of behaviors and environmental conditions that can influence the quantity and quality of sleep. Therefore, there are beneficial habits to maintain sleep health, but also maladaptive behaviors that can significantly be associated with poor sleep (Sancho-Domingo et al., 2020). These maladaptive sleep hygiene practices can be classified as follows:

1. Schedule of sleep. This includes behaviors that can disrupt the circadian clock, such as having inconsistent bed and wake-up times, sleeping in on weekends, staying in bed while awake, lack of light exposure every day, etc.

2. Arousal-related behaviors. This refers to cognitive and physical behaviors that have the potential to stimulate both the mind and the body, therefore increasing alertness during bedtime. Some examples include pondering unsolved matters in bed, trying to fall asleep with media on (e.g., TV), unpleasant talks before sleep, vigorous exercise during the previous hours of bedtime, etc.

3. Food and Drinks. Some foods and beverages can contribute to disrupting the quality of sleep, for example by increasing the time to fall asleep. This can include caffeine consumption during the day or night, use of stimulating drugs before sleep (e.g., tobacco), overeating before bedtime, etc.

4. Sleep environment. This refers to the physical and sensory conditions of the bedroom, which should be adapted to promote a restful atmosphere for sleep. Some maladaptive guidelines related to sleep environment include bedroom temperature too cold/hot, too much light and noise during sleep time, uncomfortable mattress/pillow, etc.

Some maladaptive sleep hygiene behaviors have proven to have a greater association with poor sleep than others. In previous studies, the strength of the association between sleep hygiene practices and sleep quality has been examined among the non-clinical adult population (Sancho-Domingo et al., 2020). The results showed significant associations between specific practices and poor sleep quality, with the strongest association found for worrying about falling asleep in bed, having inconsistent bedtimes, checking the time during the night, and pondering unresolved matters while lying in bed. Regarding this, the behavior of worrying in bed about not being able to sleep showed that those individuals who engage in this behavior have a 1.9 times higher likelihood (almost double) of indicating poor sleep quality compared to those who exhibit no concerns during bedtime. Similarly, the probability of experiencing poor sleep was 1.56 times greater for individuals with inconsistent bedtimes, 1.44 times higher for those who checked the time during the night, and 1.39 times higher for individuals who ponder unresolved matters while lying in bed. These results highlight that irregular sleep schedules and cognitive arousal, mainly due to rumination and worrying, are important factors associated with sleep disturbances in healthy individuals.

These behaviors could be addressed by using psychological strategies such as refocusing attention from intrusive thoughts or solving stressful problems, as well as by adjusting the schedule of bedtimes. Therefore, in order to improve sleep quality and prevent potential health issues, psychological interventions should work over these types of sleep hygiene behaviors while addressing the multidimensional nature of sleep quality by using reliable tools such as the B-PSQI (Sancho-Domingo et al., 2021).

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