Sleep, sleep patterns, disorders, dreams and its significance

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Abstract: Encouraging, paralimbic, and limbic areas are activated throughout both NREM and REM sleep, according to compelling research. These activations support critical higher order cognitive processes like creativity, theory of mind, emotional control, and memory storage. The neurological and mental processes that take place during sleep and dreaming, therefore, influence awake awareness, at least partly. Sleep and dreaming seem to contribute differently to some specific functions (including memory consolidation and creativity), and they are linked to various sleep stages and perhaps dream states. They also appear to be distinct from similar processes that happen during wakefulness. Dreaming may help with some other processes, such social cognition and emotional control.

Key words: Non- Rapid Eye Movement, Rapid Eye Movement, Sleep, Insomnia, Melatonin

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Introduction

The initial stage of sleep is non-rapid eye movement (REM), which is followed by a brief REM phase, and then the cycle repeats itself. REM sleep is typically when dreams happen. Non-REM sleep occurs in three stages (Le et al 2020). A stage may take five to fifteen minutes to complete. Before entering REM sleep, we pass through each of these phases. While your eyes are closed at stage 1, it is simple to rouse you up. This stage may take five to ten minutes (Carskadon et al 2011). Stage 2 is when the body gets ready for deep sleep, causing the heart rate to slow down and the body temperature to drop. This phase may extend for ten to twenty-five minutes (Kryger et al 2010). This is the profound slumber stage of stage 3. During this phase, it is challenging to wake up, and if someone does, they will experience temporary disorientation. The body creates bones, muscles, and fortifies the immune system while in the deep period of non-REM sleep (Morrone et al 2012). We sleep shallower and lighter as we become older. Less time spent sleeping is also associated with aging. Ninety minutes after falling asleep is when REM sleep usually happens (Lockley et al 2012). Typically, the initial REM phase lasts for ten minutes. The next several REM phases are all extended, with the final one lasting up to an hour during which your breathing and heart rate increase (Chokroverty et al 1994). The reason REM is significant is that it activates brain regions linked to enhanced protein synthesis and learning. Because your brain is more active during REM sleep, you may experience vivid dreams (Hobson et al 2009). Compared to adults, babies only experience 20% of their sleep in the REM state, although they can experience up to 50% of it. Pregnant women typically require many more hours of sleep during the first three months of their pregnancy (Hunter et al 2009).

Effect of sleep deprivation

Memory issues, depression, a lack of drive, irritability, decreased immunity (raising the risk of illness), increased pain perception, a higher risk of high blood pressure, diabetes, heart attacks, and obesity, a decrease in sexual desire, dark bags under the eyes, poor choices, and overindulgence in food (Kumar et al 1992).

Dreams

One of the most interesting parts of sleep is dreaming. Dreams are pictures, ideas, or emotions that come to mind while you're asleep. While some people only see black and white in their dreams, others see color (Rosen et al 2004). Blind individuals typically have greater auditory, gustatory, and olfactory components in their dreams. Most people dream for almost two hours every night on average (Vitali et al 2022). Though they can happen at any stage of sleep, dreams are strongest when they happen during the rapid eye movement (REM) period. REM sleep is characterized by more imaginative dreams, however they sometimes contain aspects of the real world (Hobson et al 2009). When someone is dreaming and truly aware that they are dreaming, it's known as lucid dreaming. For instance, using lucid dreaming to practice a job interview could help someone who is nervous about saying the wrong thing (Krippner et al 2012). Dreams that

are vivid suggest information that is particularly obvious or lifelike. Example: Though they are still asleep, the person believes they have woken up. It include things like stumbling, getting chased, getting lost in public restrooms, etc (Duff et al 2014). A nightmare is an unpleasant dream that wakes a person up. These could consist of unsettling, menacing, or terrifying nightmares. Regular nightmares can lead to cognitive difficulties, depressive symptoms during the day, and eventually develop into a condition (Nielsen et al 2005).

Significance of sleep

Insufficient sleep has been related to obesity by altering hormones that control appetite. People who get enough sleep generally consume less calories than people who don't. Sleeping adequately enhances your memory and problem-solving skills (Djojosaputro et al 2023). A 7 to 8 hour sleep duration per night is associated with a higher risk of heart disease, stroke, diabetes, and hypertension. Getting at least eight hours of sleep per night will boost defenses against colds. Anxiety and irregular sleep schedules are closely associated. Your social skills may suffer from sleep deprivation (Besedovsky et al 2019).

Inadequate sleep may cause following disorders

The individual has unexpected sleep attacks or daytime tiredness. They struggle to stay awake for extended periods of time. Typical sleep condition is characterized by insomnia, excessive daytime sleepiness, and fatigue upon waking. Excessive drowsiness is a characteristic of hyper somnolence (Gandhi et al 2021). Individuals who have this illness may nod off during the day at odd hours, like at work or school. Abnormal activity that takes place during sleep is known as parasomnias that include chatting, eating, and sleepwalking while asleep (Chokroverty et al 2010).

Herbal Medication

Chamomile herb relieves headaches, relieves muscle tension, facilitates digestion and encourages relaxation. Valerian root relieves joint pain, relaxes muscles, reduces sadness, and improves sleep (Mars et al 2024). Melatonin is supplemented for sleep-related purposes. Ten to thirty drops of liquid passion flower before bed can have a relaxing effect. Ginseng promotes rest, strengthens your immune system and combats stress (Vukovic et al 2005).

Conclusion

Encouraging, paralimbic, and limbic areas are activated throughout both NREM and REM sleep, according to compelling research. These activations support critical higher order cognitive processes like creativity, theory of mind, emotional control, and memory storage. The neurological and mental processes that take place during sleep and dreaming, therefore, influence awake awareness, at least partly. Sleep and dreaming seem to contribute differently to some specific functions (including memory consolidation and creativity), and they are linked to various sleep stages and perhaps dream states. They also appear to be distinct from similar processes that happen during wakefulness. Dreaming may help with some other processes, such

social cognition and emotional control, since it can offer a secure, virtual, offline setting where the

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