

# Children and Adolescents' Sleep Patterns and Sleep Disorders

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## Introduction

Based on behavioural and physiological criteria, sleep is classified into two states: rapid eye movement (REM) sleep, which is characterised by rapid eye movements, muscular atonia, and desynchronized EEG, and non-rapid eye movement (NREM) sleep, which is separated into three stages (N1, N2, and N3). The master clock in the hypothalamus' suprachiasmatic nuclei regulates the circadian pattern of sleep-wakefulness. The ventrolateral preoptic nucleus of the hypothalamus is home to the neuroanatomical substrates of NREM sleep, whereas those of REM sleep are found in the pons. As a result of functional changes in the autonomic and somatic nervous systems, numerous significant physiological changes affect all body systems and organs while we sleep.

## Sleep disorders: what are they?

Daytime sleepiness and other symptoms may occur from sleep disorders, which affect your sleep quality or prevent you from receiving enough restorative sleep. Everybody occasionally struggles with sleep issues. However, the following may indicate a sleep disorder:

1. You frequently have trouble falling asleep.
2. Even though you slept for at least seven hours the night before, you are frequently exhausted during the day.
3. Your capacity to carry out typical daytime activities has been diminished or impeded.

## Sleep patterns over the lifespan have changed

According to the maturation of the central nervous system<sup>1</sup>, the evolution of EEG and sleep states from the foetus, pre-term and term infant, early childhood, adolescence, and adulthood continues in an orderly fashion.

Co-morbid medical or neurological illnesses as well as neurological, environmental, and genetic factors will all have a substantial impact on these ontogenetic changes. From childhood to old life, sleep needs drastically vary. With a total of 16 hours of sleep per day, new-borns have a polyphasic sleep pattern. Sleep assumes a biphasic rhythm in pre-schoolers. Adults typically sleep for 7.5 to 8 hours per night in a monophasic pattern; however, as people age, the pattern shifts back to being biphasic. About 50% of new-born infants' sleep time is spent in the REM stage, but by the time they are 6 years old, this percentage has dropped to 25%, which is more in line with the normal adult pattern. The NREM/REM

cycling pattern of adult sleep is established by three months of age.

## Dreams and sleep

It is thought that roughly 80% of dreams happen during REM sleep and 20% happen during NREM sleep. REM dreams are easier to remember than NREM ones. As opposed to attempting to remember dreams the next morning after getting out of bed, it is also simpler to recollect dreams if someone is awakened right away after the start of REM dreams. REM dreams are frequently vivid, irrational, and strange. On the other hand, dream recall, which can occasionally happen in part after being immediately awakened from the NREM dream state, is more realistic. Instead of being in black and white, the majority of our dreams are in natural colour. We make use of all five senses when we dream

The long-term effects of lack of sleep include an increase in morbidity and mortality from car accidents, coronary artery disease, heart failure, high blood pressure, obesity, type 2 diabetes mellitus, stroke, memory impairment, and depression. However, opinions on the long-term effects are divided. It is believed that sleep has recuperative, protective, adaptive, thermoregulatory, and memory-consolidating effects. After conducting sleep deprivation tests, Walker's group came to the conclusion that sleep prior to learning is essential for human memory consolidation.

## Narcolepsy-cataplexy syndrome

With a peak incidence between the ages of 15 and 30, adolescents and young adults are typically the first to experience narcolepsy-cataplexy. Narcolepsy is divided into three categories by the ICSD 2, including secondary narcolepsy and narcolepsy with cataplexy. Narcoleptic sleep attacks (100%), cataplexy (60-70%), sleep paralysis (25-50%), hypnagogic hallucinations (20-40%), disturbed night sleep (70-80%), and automatic behaviour (20-40%) are the main clinical signs of narcolepsy.

## Insomnia

The most prevalent disease seen in the practise of sleep medicine is insomnia, which is also the most prevalent sleep disorder affecting the general population. Early morning awakenings and non-restorative sleep that occurs three to four times per week and lasts for more than a month are among the sleep problems that insomniacs report, along with the impairment of daytime function.

## Sleepwalking (Somnambulism)

Children between the ages of 5 and 12 frequently sleepwalk. It occasionally lasts into adulthood or hardly ever starts in adults. A sudden onset of motor activity during the first third of sleep, which arises from slow wave sleep, is the start of sleepwalking. In general, episodes are under 10 minutes long. The likelihood of a positive family history is very high.

## Conclusion

The index for general practitioners ought to be high significant concern regarding the possibility of sleep disturbances, which are common in society. Nearly all sleep disorders once diagnosed, it is manageable with only a little consultation. Treatment of any potential disease is the first step. Secondary cause of severe drowsiness or lacking the ability to get enough good sleep. Treatment for basic sleep disturbances is, however, ideally handled by a sleep expert.