

Common Sleep Disorders in Adolescents- A Survey

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Abstract:

Topic: Common sleep disorders in adolescents- a survey **AIM :** The aim of this survey is to know the occurrence of common sleep disorders in adolescents by giving a questionnaire.

Objective: To know the common sleep disorders which are widely prevalent among adolescents.

Background: Sleep is essential for adolescent health, development and functioning. Inadequate sleep in adolescents may cause poor performance in school, anxiety, depression and even aggressive behaviour. One reason is that there is a shift in the timing of the circadian rhythms after puberty which result in abnormal sleep. Some common sleep disorders found in adolescents are chronic insomnia, delayed sleep phase syndrome(DSPS), obstructive sleep apnea, narcolepsy and so on.

Reason: Sleep disorders in adolescents lead to further changes which may cause complications in the future. It can be avoided by treating these sleep disorders at an early stage itself.

Keywords: adolescents, behaviour, circadian rhythms, lifestyle changes, prevalent.

INTRODUCTION:

Sleep is the most beautiful thing, yet the most mysterious thing. Sleep may be defined as a naturally occurring state of the body within relatively inhibited sensory activity, reduced metabolic rate and decreased interaction with the surrounding. Averagely, a person requires about 7-8 hours of sleep for good functioning of the brain and the body. Adolescents and older children may suffer from lack of sufficient amount of sleep. This may be ascribed to two categories: * Not sleeping for adequate number of hours * Lack of quality sleep The reasons for this may be due to the fact that they get involved in school, studies after-school activities, certain commitments, circumstances etc. Also, social factors such as reduced parental influence may affect adolescent's sleep pattern. Refusal to attend school or lack of interest may be due to the lack of proper sleep. According to the National Commission on Sleep Disorders Research, approximately 70 million Americans suffer from sleep related disorders[1]. Out of these 70 million, about 40 million have chronic sleep disorders [2]. A number of recent studies have demonstrated that individuals with sleep problems report significantly poorer health, less energy and worse cognitive functioning than those categorized as having no sleep problems [3] [4]. Also, inadequate sleep quantity and quality have been associated with poor school performance, mental health problems, poor sociability, behavioral problems, the development of obesity and its accompanying comorbidities in adolescents [5]. There might also be a link between smoking and sleep disorders. Several studies have reported a positive association between second hand smoke (SHS) and inadequate sleep[6]. Alternate theories have also been put forth. Davila et al. reported that no significant association between SHS exposure and sleep disorders in a US-population based sample [7]. Among adolescents, though, SHS has been associated with greater sleep-onset latency, greater sleep disturbance, more frequent parasomnias and more symptoms of sleep disordered breathing, like snoring. Self-reported snoring is

associated with significant negative sleep time, decreased sleep time, failure to obtain enough sleep and unintentionally falling asleep [8]. Another major reason for the occurrence of sleep disorders in adolescents may be due to the delayed secretion of melatonin by the pineal gland which is a small endocrine gland at the base of the brain. There is a change in the circadian rhythms of adolescents. The various sleep disorders that were taken under the study are sleep apnea, delayed sleep phase syndrome, insomnia, night terrors and narcolepsy. Besides these, certain disorders like restless leg syndrome also prevail.

MATERIALS AND METHODS:

The questionnaire based study was carried out among healthy adolescents who did not exhibit any deformities or diseases to find out the occurrence of sleep disorders in a healthy population. The questionnaire comprised of 32 questions which were used to detect the prevalence of sleep disorders. The diseases that were included in the study are: sleep apnea, delayed sleep phase syndrome, insomnia, night terrors and narcolepsy. The questions were based on the symptoms exhibited by the individuals who had that particular disorder. The questionnaire was just a screening questionnaire and cannot be used for diagnostic purposes.

The following questions were used to assess the occurrence of sleep apnea:

- 1) Do others say that you snore while you are sleeping?
- 2) Do others say that you get irritated easily?
- 3) Do you feel drowsy after travelling 10 minutes in your school bus/ car?
- 4) Is your weight more than it is supposed to be?

The following questions were asked to detect insomnia:

- 1) How long does it normally take for you to fall asleep?
- 2) Do thoughts flash across your mind before you fall asleep?
- 3) Do you wake up suddenly in the middle of the night and just cannot go back to sleep?
- 4) Do you wake up in

the morning before your alarm goes off without intending to?

The following questions were asked to analyze the prevalence of Narcolepsy includes the following, which mainly involves day time sleepiness:

- 1) Do you feel sleepy during the day even though you had sufficient amount of sleep the previous night?
- 2) Do you get dreams usually?
- 3) Do you have difficulty in staying awake during the day at school/ college?

The following questions were asked to detect Delayed Sleep Phase Syndrome (DSPS):

- 1) When do you off your lights and go to bed at night usually?

- 2) Do you use your mobile/ tab/ or any other electronic gadgets after switching off your lights?
- 3) How much hours of sleep do you usually get?

The questions used to predict the possibility of the occurrence of night terrors are:

- 1) Do you get dreams when sleeping?
- 2) Have you woken up all of a sudden in the night startled because of a bad dream?

The data was categorized based on the symptoms of the specific diseases, and a conclusion was obtained based on it. It must be noted that this is not a diagnostic questionnaire and cannot be used to exactly predict the number of persons exhibiting sleep disorders. Based on the responses from the subjects, the statistics was done and the results was obtained in a systematic manner.

CONCLUSION:

Among adolescents, there are various symptoms indicating the widespread prevalence of various sleeping disorders. Obstructive sleep apnea and insomnia are the two most common disorders. However, the symptoms of these disorders tend to overlap each other as they exhibit some similar symptoms and hence, detection of the exact number of adolescents detected with sleeping disorders is quite difficult. Females tend to show more symptoms of sleep disorders and experience difficulty in sleeping almost everyday. Around 20% of females have said that they are depressed often which may also affect their circadian rhythms. Hence any difficulty during sleep or abnormality during or after sleep might be recommended to consult a sleep specialist regarding this.

DISCUSSION:

Adolescence is the stage of life in which one is in an intermediate stage between childhood and adulthood. Many changes, both physically and emotionally take place during this transitional stage of life, which affects sleep pattern. There are various factors which may cause a change in the pattern of sleep in adolescents. Social factors include their school/ college activities, hanging out with friends, after school activities and so on. With certain hormonal changes included, the effects on their sleep habits naturally occur. It is found that adolescent's sleep pattern

(i.e) their circadian rhythm is altered due to the delayed secretion of melatonin, which is a sleep inducing substance produced by the pineal gland situated at the base of the brain. This delays sleep and hence they just cannot fall asleep before a certain time which keeps them awake, which might help to the fact that about 24% of adolescents sleep only after 12 in the night. Also, 61% have said that they use some electronic gadget like mobile phones after switching off the lights and falling asleep. This might even be a cause for delaying sleep. Sleep is characterized by a period of slow-wave sleep which lasts for about an hour or so, and then followed by Rapid Eye Movement sleep (REM sleep). In case of sleep disorders, this gets altered in certain cases. The various sleep disorders included under the study are discussed below:

SLEEP APNEA: It is classified as a dyssomnia, which refers to abnormal behaviour that occurs during sleep. It is a sleeping disorder characterized by pauses in breathing (which is known as apnea) or moments of shallow breathing or infrequent breathing during sleep. Each apnea can last for several seconds and may occur at least 5 times an hour. When an apnea occurs, the intake of oxygen is reduced (hypoxia) and carbon dioxide accumulates in the blood. This rise in the level of carbon dioxide is sensed by the various chemoreceptors and the brain is signalled to increase oxygen intake by breathing. Breathing restores oxygen level to normal and the person falls back asleep. Three forms of sleep apnea have been identified, namely: central, obstructive and mixed. It can be treated by polysomnogram or by surgery[9].

INSOMNIA: It is a sleep disorder that is characterized by difficulty in falling asleep, which is very common now a days. There are two types of insomnia, namely primary insomnia in which a person has sleep problems that are not directly associated with any other health problem, and secondary insomnia, in which the person has another disorder like asthma, arthritis, cancer etc. Insomnia can be treated by the use of melatonin and valerian, though they are proven to have marked side effects. This is characterized by the inability to fall asleep, thoughts flashing across the mind before falling asleep, facing difficulty in relaxing and waking up earlier than expected to. Data says that females fall asleep later than men, which may indicate the prevalence of insomnia.

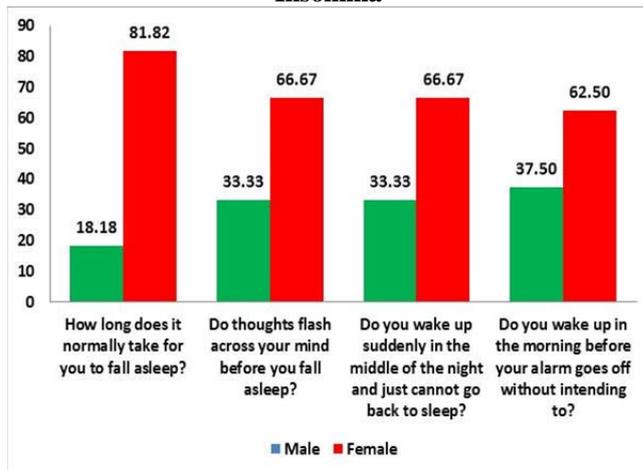
NARCOLEPSY: It is a chronic neurological disorder involving the loss of the brain's ability to regulate sleep-wake cycle. It affects 0.03% to 0.16% of the general population [10]. The sleep of persons affected with narcolepsy begins with REM sleep within 5 minutes of falling asleep. Another common symptom of narcolepsy is cataplexy, which is a transient episode of muscle weakness in the face or limbs. This, however, is a variable symptom [11] and is seen only in 70% of the people who have narcolepsy. Narcolepsy is characterized significantly by "sleep attacks" during the day during which the person falls asleep suddenly during day time,

and also the occurrence of dreams as soon as falling asleep. The affected people feel sleepy even during the day, and experience drowsiness almost all the time. The main treatment for excessive day time sleepiness in narcoleptic persons is the use of Central Nervous System Stimulants.

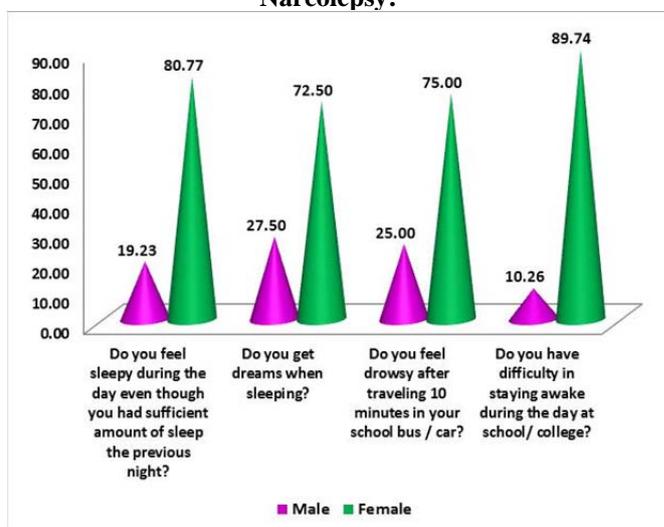
DELAYED SLEEP PHASE SYNDROME (DSPS): It is characterized by a remarked delay in the conventional bed time of the person. This in turn, leads to a difficulty in the waking up at the desired time. Also, their peak times of performance, body temperature and hormonal rhythms are delayed from societal norms [12]. Hence, non- attendance in school/ college was also inquired about in the questionnaire, along with the time the person gets to sleep usually and the time taken to actually fall asleep. The sleep pattern among adolescents with DSPS exhibited the expected sleep characteristics, with shorter sleep duration due to late bed time and early awakening to rush off to school/ college. Adolescents with DSPS also had lower sleep efficiency and higher sleep deficiency [13]. According to Gradiser et al., it may be difficult to distinguish the characteristics of DSPS from the sleep patterns that are normal during adolescence, and therefore one has a risk of underestimating the prevalence of DSPS [14].

NIGHT TERRORS: It is mostly found in children of ages 8- 12 and it doesn't prevail during adolescent period. However, certain symptoms might be exhibited, which might not exactly portray the prevalence of night terrors. The main symptom is the sudden waking up from sleep in the middle of the night because of a bad dream. It typically occurs during the first hours of non- REM sleep. It has been found that only less than 10% of adolescents may exhibit symptoms of night terrors. Findings suggest that the REM and non-REM sleep arousal may indicate continuous stress progressed at night [15]. This stress might be attributable to being bullied at school. Counselling maybe employed to dissolve the issue.

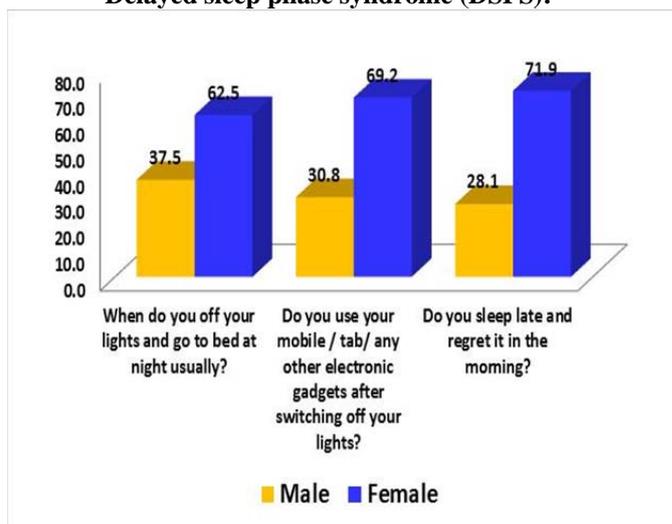
Insomnia



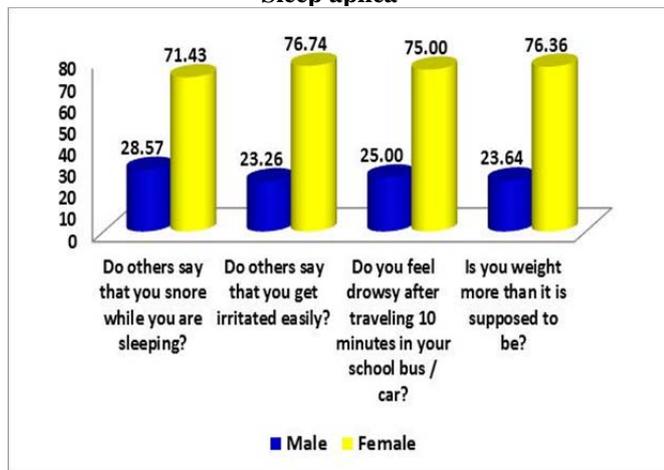
Narcolepsy:



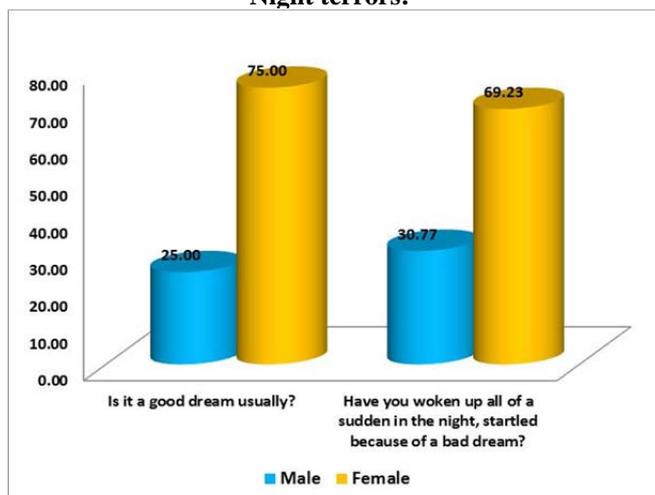
Delayed sleep phase syndrome (DSPS):



Sleep apnea



Night terrors:



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