

A review on Impact of Lifestyle and Sleep Deprivation on Adolescents

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Abstract: Sleep is essential for an individual's existence itself. Without enough and quality sleep one cannot perform and lead a healthy life. As a period of growth, during adolescence also, we need adequate sleep for better and healthy living. During adolescence, the major lifestyle changes happen and it will have an effect on our overall health and wellbeing. Lifestyle changes such as gadget use and involvement in social media and related issues will lead to disruption of sleep and will cause sleep related issues, which will further adversely affect the academic performance, wellness and overall health and wellbeing of adolescents. Sleep is found to be an essential aspect for staying healthy during this stage. Otherwise, sleep deprivation will negatively affect psychological, physical and social aspects of adolescents' lives. This paper will help to explore more on various components and key concepts in the research as well as it acts as the basement of this study. It also gives ideas on various aspects of research like sampling, design, nature of measures, major gaps in past research as well as to explore the importance and depth of the issues depicted in various studies. The scope and areas which can be explored through further research are identified and comparisons between studies will help to analyze the studies in an effective way.

Key Words: Life Style, Sleep Deprivation.

Introduction

As the Irish proverb says, "A good laugh and a long sleep are the two best cures for anything". Without sleep, it's difficult for one to survive and it has power to cure many issues. Sleep is one of the most important aspects in each stage of human growth. During adolescence, which is a phase of rapid growth(Hurlock, 1981), as result of major changes in life, adolescents will be more directed towards attention seeking behaviors,they focus more on gadget use and involvement in social media. These lifestyle changes may result in sleep related issues. And the lack of quality sleep will negatively affect the overall well-being of adolescents, their academic performance, psychological wellness and health. Various researchers analyzed the sleep quality and its effect on various aspects of adolescent's lives. The use of cellphones and its adverse effect on the adolescent's sleep, which may in turn result in ill-being(Li, Lepp, & Barkley, 2015). Certain studies also show that sleep deprivation will result in obesity and health related issues (Shochat, Cohen-Zion, & Tzischinsky, 2014).

This review will help to explore much on the effect of sleep deprivation on adolescents. Thereby, we can understand how the lifestyle influences the quality of adolescent's sleep and how the deprivation of sleep affects psychological wellness, academic performance and health of adolescents. It will give an elaborate explanation of various lifestyle factors which can have an effect on all aspects of psychological wellness, academic performance and major health issues and study the effect of various lifestyles on adolescent's sleep quality.

lifestyle and Sleep

Studies show that the use of technology and gadgets as well as the social media use are various factors which can affect the level of sound sleep in adolescents. People using mobile phones during bed time reported higher levels of insomnia and fatigue (Exelmans & Van den Bulck, 2016). The difficulty to fall in sleep may also guide them to social media use, which may in turn result in more intense sleep issues(Levenson, Shensa, Sidani, Colditz, & Primack, 2016). Research conducted by Jan li et al. on college going students shows that individuals with external locus of control have difficulty in regulating the cell phone use. This excess cell-phone use during their bedtime as well as during classes and study time will affect them negatively. It directly or indirectly affects their academic performance as well as their sleep quality (Li et al., 2015). Similarly, studies show that as adolescents get addicted to video games, they will be having shorter sleep duration which results in health related risks such as cardio-vascular diseases, obesity, blood pressure, etc. Thus,addiction to technology is negatively

associated with sleep duration and quality (Turel, Romashkin, & Morrison, 2016). In a study conducted in 1886 Australian adolescents, it was found out that students with problematic social network use have more sleep related issues which in turn results in academic difficulties and low school satisfaction than others. It will cause low sleep qualities and sleep disruptions. These sleep disruptions had a negative impact on school satisfaction. Thus, promoting better sleep routines in adolescents will result in their enhanced state of well-being and school satisfaction (Vernon, Barber, & Modecki, 2015).

Lack of sleep and psychological wellness

Studies show that lack of sleep or sleep disturbances negatively affects an individual. It may result in various psychological issues such as depression, suicidal tendency, etc. and there exists a relationship between disturbances in sleep and depressive symptoms. Poor sleep quality will hinder the individual's ability to disengage from negative stimuli, and it will lead to depressive symptoms or can have sleep issues due to depression. Hence, Sleep issues may precede or may succeed depressive symptoms (Michael Vanderlind et al., 2014). Similarly a community-based cohort study suggests that sleep deprivation can lead to depression or the depression can also be a reason for sleep deprivation (Roberts & Duong, 2014). Studies show that individuals with more external locus of control will involve excessive cellphone use which results in lack of sleep quality and it may indirectly influence their subjective well-being or life satisfaction (Li et al., 2015). A study by Sarchiapone and his colleagues on 11,788 adolescents randomly selected from 179 schools from different countries shows that reduced hours of sleep leads to peer related problems and suicidal ideation. Association between anxiety and reduced sleep hours is comparatively smaller than the association between reduced sleep hours with peer related problems and suicidal ideation in adolescents (Sarchiapone et al., 2014). Similarly, other studies also show that adolescents with shorter sleep duration had more suicidal ideation and higher suicidal attempts than adolescents with longer sleep duration. And the depressive symptoms may mediate the effect of sleep deprivation on suicidal ideation and attempts of adolescents (Guo et al., 2017). A cross-sectional study with control and experimental groups on individuals with suicide attempts and psychiatric inpatients shows that shorter sleep duration is more prevalent in people who had suicide attempts than other inpatients and they also had more risk for suicide. Shorter duration of sleep has more effect on male suicide attempters than females (Blasco-Fontecilla et al., 2011). Similarly, a study conducted on 4145 Korean adolescents also shows that insufficient sleep hours on weekdays are indicator of suicide attempts, self-injury and suicidal ideation among adolescents. The time spent in a private institution, age, gender, poor academic achievement, depressed mood etc. also contributes to suicidal ideation and suicide attempts (Kang et al., 2014). A study on Chinese adolescents shows that one night without sleep had a negative impact on an adolescent's various mood states such as anger, confusion, anxiety, depression, fatigue, etc. Sleep deprivation affected females worse than male participants. Females had comparatively more mood deficits, depression and anxiety following sleep deprivation than males. All the participants who had sleep deprivation reported having confusion following sleep deprivation (Short & Louca, 2015).

Sleeplessness and academic performance

Many studies suggest that sleep deprivation has a negative association with academic achievement of adolescents. For instance, a study suggests that sleep quality can determine success in academics as well as stress before exam. It can also determine the grades obtained by students in exams and perceived stress is the reason behind sleeplessness among students. Students who expect least scores in academics are more prone to sleep issues and sleeplessness. High stress as well as poor quality of sleep has a major impact on exam related stress and performance during exams (Ahrberg, Dresler, Niedermaier, Steiger, & Genzel, 2012). Similarly, a study conducted on 8424 students from high school shows that delayed sleep phase will lead to poor academic achievement and performance (Sivertsen, Glozier, Harvey, & Hysing, 2015). Another group of researchers found out that as the efficiency of sleep increases there will be an increase in grades obtained in exams. Better sleep quality is a contributor to high levels of achievement in school. They failed to find out the correlation between duration of sleep and school achievement (Tonetti, Fabbri, Filardi, Martoni, & Natale, 2015).

Sleep and health

Studies show that sleep deprivation causes health related issues. A study on sleep deprivation and adolescent's health on 3476 students. Most adolescents reported having difficulty in initiating sleep, headache, fatigue, etc. sleep deprivation results in many health-related issues like nervousness, irritability, fatigue, headache, pain in shoulder and neck, etc... and girls reported more health-related symptoms than boys due to sleep deprivation (Short & Louca, 2015). In a cohort study it's been found out that video game addiction negatively affects the sleep duration of adolescents. And in turn, it leads to obesity in children as well as cardio metabolic related issues (Turel et al., 2016). Similarly, researchers found out that sleep deprivation and poor sleep leads the children to emotional eating and obesity (Burt, Dube, Thibault, & Gruber, 2014). In another study, they found out that children who had slept more than 10.7 hours gained more weight than the children with less than

10.4 hours of sleep. This association is mediated by the energy intake by them. Children sleep less over eat than children sleep more. Thus, it will lead them to wait gain and obesity (Rangan, Zheng, Olsen, Rohde, & Heitmann, 2018). In a longitudinal study it's found out that bed time of children belonging to preschool age determines obesity and weight gain during adolescence. Family environment, socio-economic status, etc. are various factors which determine bed time of children. Children belonging to poor families and from minority races as well as from uneducated backgrounds will be having late bedtime and late bedtime will determine the weight gain and obesity during their adolescence (Anderson, Andridge, & Whitaker, 2016). In a study as part of HELENA studies (Healthy Lifestyle in Europe by Nutrition in Adolescence) they found out that 8 hours is the average duration of sleep in European adolescents and who had shorter sleep gained much more weight in terms of BMI and body fat mass. Body fat due to shorter sleep duration is more found to be in female adolescents than that of males. The type of food they take up and time spent in front of television also plays a major role in determining the obesity and weight gain in European adolescents (Rangan et al., 2018). Hence, we can understand that sleep duration and quality of sleep in their childhood as well as in adolescence can determine an individual's quality of health.

Results and Discussion

Most of the research with small sample size can hinder causal inference and result in type I error. Providing incentives can lead to selection bias (Michael Vanderlind et al., 2014). There is an absence of physiological measures in assessing characteristics of sleep in most studies, they used self-reports by participants while gathering data. Some researchers study samples from limited areas only. We can see that in some research, the female samples are more than male sample (Li et al., 2015). Thus, generalization and comparison will be difficult. Self-report of hours of sleep in adolescents may be influenced by their psycho social characteristics. Their tendency to please others, cognitive and recall bias, or to provoke others, the adolescents may report wrong data (Sarchiapone et al., 2014). Incentives such as, drinks, coffee etc. in experimental studies may interfere with the response to sleep loss in adolescents (Short & Louca, 2015). Cross sectional design is not useful to have causal inference. In a study, the researcher studied 20130 students, which is a large sample size, but it was only limited to a geographical area, i.e., only from Fujian Province of China, hence the results cannot be generalized to a wider population (Guo et al., 2017). In study on sleep duration and suicidal behavior, they used SAD PERSONS scale, which is usually used in male samples of older age, thus, while studying the effect of sex and age on suicidal risks, its only possible for the sample it really meant to, otherwise the validity will not be there (Blasco-Fontecilla et al., 2011). Other symptoms without global assessments such as insomnia, nightmares, excess sleep in daytime, etc. may also have an impact on sleep duration and they should also be considered (Kang et al., 2014). Physiological studies also should be conducted in terms of symptoms due to sleep deprivation (Roberts & Duong, 2014).

Similarly, In studies, they used adolescent samples based on school registers and excluded students who are not going to school, thus the generalizability can be questioned (Sivertsen et al., 2015). Studies found out that use of medias and mobile phone on bedtime has negative effect on sleep quality, they didn't consider certain important factors which disrupts them from quality sleep such as watching provoking videos, posting pictures, involvement in discussions in social medias, bright light emitted by the device, etc. can also interfere with the duration of sleep (Levenson et al., 2016). Findings from studies conducted on adolescents from a particular number of clinics cannot be generalized to a wider population of adolescents (Turel et al., 2016). Students self-report on habits before sleep is used in the studies on bedtime habits and its effect on sleep quality. There is a chance for bias from the participant side itself while using self-report measures (Vernon et al., 2015).

A study on eating behavior and sleep only conducted on samples without being overweight, so it cannot be generalized with all populations including adolescents with overweight (Burt et al., 2014). In some studies parents reported on the child's bed time, but the time of initiation of sleep and bed time differs, the child may seem to be going to bed on a particular time which doesn't mean that the child will sleep on that time itself, so there will be bias based on parental reporting (Rangan et al., 2018). We can also understand that for an observational study on bedtime and obesity in children, it's difficult to infer causality. It won't examine the underlying biological factors which contribute to weight gain. The study was conducted on children born in 1991, thus the findings cannot be generalized to the children belonging to the recent generation (Anderson et al., 2016). In certain studies, the frequency of food intake is measured only using certain food frequency questionnaires, which is a major limitation of study (Garaulet et al., 2011).

Conclusion and Suggestions

Further studies can be focused on why the people use mobile phones and social media prior to bedtime can be examined in detail. Can also explore the same on people with and without difficulties in sleep. Age as a factor of use of media on bedtime can also be studied in future and can work on why adults specifically use mobile phones more frequently only before bed time, same can be replicated in adolescents also. Effect of

different social media interactions on sleep disturbance of adolescents should also need to be investigated. Researchers should use longitudinal studies to arrive at causal inference and focus on how different types of social media use an effect of age in sleep related issues. Studies to analyze the effect of locus of control on mobile phone use of young people while doing other activities like during, during exercise, class time etc. need to be considered. Rather than confined to self report measures physiological measures also need to be considered. Larger number of samples and extended geographical areas will help for generalization of findings on population intended. Suicidality and sleep duration can be studied using standardized scales. Insufficient sleep as well as depression should be considered as a critical factor while studying suicidal behavior in adolescents. The effect of various symptoms like nightmare, sleep during day time, insomnia, etc. on sleep duration also needed to be explored, these factors may also lead to lesser sleep duration in adolescents. Information regarding long term and short-term sleep should also be considered in order to study long term effects of sleep deprivation on adolescents. Researchers can explore behavioral intervention programs and its effect on quality and duration of sleep. Behavioral intervention programs like minimizing use of phones, eliminating blue light from phones and making a routine for sleep and all can be implemented and observed in adolescents. Other stable and situational predictors of sleep as well as the obesity and weight gain due to genetics and family, biological factors, culture can be explored. Physiological measures should be used to understand hormonal influence and variations in adolescent's obesity, heightened arousal which cause wakefulness during bed time, etc. comparative study on how the sleep of adolescents with low and high video game addiction varies can be conducted. Adolescents' health can be deteriorated due to pressure exerted by family, parents, society, academics, peers etc. Also, it's needed to explore the association between sleep deprivation and energy balance.

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