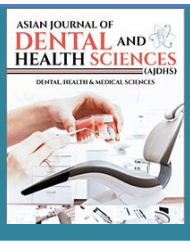

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Factors Contributing to Sleep Disorders Among Young Adults

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Abstract

Sleep disorders are increasingly being reported among young adults. The recent Gallup Survey is an indication of the magnitude of the problem more so among young Americans. Sleep is important for good health and well-being. Different studies have shown the negative effects of sleep disorders on overall health and well-being. Sleep deprivation and disorders increase the risk of depression and anxiety. It also increases the risk of diabetes, obesity, hypertension, and heart attack. Sleep disorders occur because of a number of factors including psychosocial stressors, chronic pain, caffeine intake, smoking, lack of physical activity, poor sleep environment, use of screens before bedtime, and alcohol consumption. These factors are prevalent among the youth which explains the increased risk of sleep disorders in this population. Addressing sleep disorders is vital because they are associated with poor functioning. Individuals who report sleep disorders tend to have lower work productivity, increased risk of accidents, and poor health. Lifestyle modifications can help to address the growing problem of sleep disorders among young adults.

keywords: Sleep disorders, insomnia, obstructive sleep apnea, sleep deprivation, daytime sleepiness

Introduction

Although it is an area that is still greatly understudied, research on sleep disorders has been gaining traction because more and more people are reporting the problem and the impact it is having on their health and overall well-being. Sleep disorders cause a lot of distress to individuals affected affecting key aspects of their lives including health, work, productivity, and social life.[1] Although sleep disorders can occur at any age, they are very common among young adults, with one study showing that one in every five young adults suffered from one sleep disorder or another.[2] Some of the common sleep disorders that are reported among young adults are chronic insomnia, severe obstructive sleep apnea, restless legs syndrome, and narcolepsy. Addressing sleep disorders is very important. Different studies have linked sleep disorders to mental health problems and chronic conditions including depression, anxiety, obesity, hypertension, and cardiovascular conditions.[3,4,5,6,7] In addition to mental health problems, sleep disorders affect work productivity.[8] Some studies have linked sleep disorders to poor outcomes in diseases such as hypertension, diabetes, and heart disease.[9,10,11] This means that sleep deprivation increases the risk of morbidity and mortality from these conditions. Other studies have linked sleep disorders to increased safety incidents at work, on the road, and increased absenteeism.[8,12,13]

Addressing sleep disorders is paramount. With projections showing that sleep disorders are likely to increase in the coming decades, more negative impacts of these disorders on overall health and well-being are expected. Factors such as psychosocial stressors, smoking, lack of physical activity, and alcohol consumption are some of the factors that contribute to sleep disorders such as chronic insomnia among young adults.[14] Besides, the modern lifestyle is contributing to a lack of sleep. For instance, people are getting busier with work finding little time to rest because of taking more shifts. Also, the use of phones among young people during bedtime is contributing to increasing cases of sleep disorders.[15] Therefore, ensuring young adults get the right amount of sleep on a regular basis is vital for their overall health, productivity, and well-being.

The aim of this review is to investigate the factors that contribute to sleep disorders among young adults. The review will also explore the impact of these disorders on different aspects of life, and measures that can be taken to address this problem.

Prevalence of Sleep Disorders in the US

Although the American Academy of Sleep Medicine and the Sleep Research Society recommend at least 7 hours of sleep every night for adults, more than one-quarter of the adult population do not meet this sleep recommendation. Adults are the most affected by lack of adequate sleep with 13.5% reporting feeling tired or exhausted most of the days.[16] Additionally, in 2020, 14.5% of adults reported that they had trouble sleeping most of the days in the last 30 days.[17] According to a 2022 Gallup survey, a quarter of American adults (33%) which is about 84 million people report having poor or inadequate sleep.[18] Among these, young adults under the age of 30 report struggling with sleep and sleep-related stress. Another nationally representative study involving 9,004 adults also reported similar findings. Of the 9,004 adults, 30.5% reported at least one hour of sleep deficit while another 46.5% reported one hour or more of social jet lag.[19] Furthermore, 29.8% reported having trouble sleeping and another 27.2% reported daytime sleepiness.[19]

In addition to inadequate sleeping hours and trouble falling asleep, sleep disorders are also a prevalent issue affecting millions of adults in the US.[16] Approximately, 30% of American adults reported that they had symptoms of insomnia.[16] Another 9% to 385 of the general population reported that they were suffering from sleep apnea.[16] Of the people who reported experiencing insomnia, 10% reported that insomnia affected their daily activities.[16] Other sleep disorders that affect American adults are restless leg syndrome which affects about 2 to 7.2% of the population, narcolepsy which affects 0.02 to 0.04% of the population, and hypersomnolence (also known as excessive sleepiness) which affects 5 to 10% of the general population.[16] The extent of sleep disorders among Americans is documented in a study by Acquavella et al.[20] The study reports that the number of Americans who seek care for sleep disorders almost doubled between 2013 and 2016.[20] The study reported that for 100,000 people who sought treatment for narcolepsy, the rates increased from 38.9% in 2013 to 44.3% in 2016.[20] For obstructive sleep apnea, the numbers increased by 41%.[20] Increases were also reported for rapid periodic limb movement, rapid eye movement, and idiopathic hypersomnia.[20] The increment in healthcare utilization and expenditure for sleep disorders is also proof that the number of Americans struggling with sleep disorders is increasing.[21]

When it comes to sociodemographic factors, adults aged 18 to 44 years are more likely to report having difficulty falling asleep. This group accounted for the highest number of those who reported getting fewer hours of sleep than recommended and also trouble falling asleep at 38.3% and 15.5% respectively.[16,17] The percentage of adults who had trouble sleeping decreased with age with adults aged 18 to 44 being the most affected and those 65 years and older being the least affected.[17] Young adults particularly those under the age of 30 reported having greater struggle with sleep which was mostly attributed to stress. They also reported that lack of adequate sleep had an impact on their lives more so their mood. With regard to gender, women are more likely to report struggling with sleep than men 17% and 12% respectively.[18] In terms of race, non-Hispanic White adults were also more likely to report having trouble sleeping than non-Hispanic Blacks, Hispanics, and non-Hispanic Asians.[17]

Socioeconomic status and urbanization level are also determinant factors when it comes to sleep difficulties. Family income was a determinant factor when it came to sleep difficulties with the percentage of those who reported trouble sleeping reducing with increasing family income.[17] In terms of urbanization, the number of adults who reported having trouble sleeping decreased as the place of residence became more urban. Those in rural or non-metropolitan areas were more likely to report trouble sleeping at 22.4% compared to 14.4% in large metropolitan areas.[17]

Although more than half of the American population cite sleep as a priority, most report having trouble sleeping or poor quality of sleep. Based on the statistics above, sleep quality remains a prevalent issue for most Americans with the number of sleep disorders projected to rise in the coming years. Young adults are one of the population groups that is affected by sleep disorders with most citing factors such as work, stress, long-term health conditions, mental activity, and poor mental health as some of the factors that affect sleep and sleep quality.[18] Addressing the root causes of sleep disorders can help to address the problem and improve the quality of sleep among young adults.

Factors Contributing to Sleep Deprivation and Disorders

Sleep deprivation and disorders are attributed to a number of factors. One of these factors is stress. Research has shown that stress contributes to poor sleep quality.[22,23] According to Kalmbach et al. poor sleep quality increases the risk of sleep reactivity which is the degree of sleep disruption.[22] Sleep reactivity in this case is the degree to which stress disrupts sleep and causes difficulty falling asleep and remaining asleep.[22] Exposure to stress from either normal life events or major life events causes significant disruption to sleep patterns and affects normal sleep function.[24] Consequently, sleep deprivation triggers the body's stress response system which leads to an elevation of stress hormones, particularly cortisol resulting in sleep disruption.[25] Stress also prolongs the time one takes to sleep which is why it is associated with sleep deprivation and the risk of developing major sleep disorders such as chronic insomnia. According to the Gallup Survey, stress was one of the factors that contributed to poor sleep quality among Americans with most noting that experiencing stress during the previous day resulted in poor quality of sleep during the night.[18] Young adults are more prone to stress with factors such as loneliness, work, finances, and career decisions being major causes of stress in this population.[26,27] The high level of stress in this population could explain why they are more prone to sleep problems compared to other adults.

Mental health conditions have also been linked to poor sleep quality and increased risk of insomnia and hypersomnia. Depression, anxiety, sleep deprivation, and sleep disorders are linked.[14,28] According to Nutt et al. approximately three-quarters of patients who are depressed report insomnia symptoms another 40% report hypersomnia.[14] Depression and anxiety are also common in people who report insomnia.[28] Sleep disturbance is another symptom that is commonly reported in patients with depression with most citing difficulty sleeping, waking up at night, difficulty going back to sleep, and sleeping for longer periods.[14] The Gallup Survey also showed that adults who reported symptoms of anxiety and depression were more likely to report poor sleep at 44% than adults who did not report feelings of anxiety and depression at 28%. Evidently, anxiety and depression affect sleep. Considering that young adults are more prone to depression and anxiety, they are more likely to report sleep deprivation.[29]

Other long-term health conditions also increase the risk of sleep deprivation and disorders. For instance, individuals who report chronic pain are also more report poor sleep quality.[18] According to Haack et al. pain can lead to sleep deficiency and can also be a consequence of sleep deficiency.[30] Epidemiological studies show that individuals who report poor sleep quality and inadequate sleep time have a high risk of developing chronic pain.[31] Disorders such as insomnia are also prevalent in people who have chronic pain.[32] A high prevalence of insomnia up to 53% has been reported in people living with chronic pain compared to 3% in the control group.[33] Pain makes it difficult to initiate and maintain sleep which explains the high prevalence of insomnia in people living with chronic pain. Other than chronic pain being a causative factor for insomnia, insomnia is also a causal factor for chronic pain. Some studies have established this bidirectional relationship between chronic pain and insomnia by noting that sleep impairment predicts the onset and worsening of chronic pain.[34] Although chronic pain is not as commonly reported in young adults as in other adult population groups, it is still a prevalent issue in this population group. As such, addressing it is important to ensure positive outcomes when it comes to addressing sleep disorders. Other health conditions that can increase the risk of developing sleep disorders are respiratory illnesses such as asthma and obesity. Obesity does not directly affect sleep but it increases the risk of disorders like obstructive sleep apnea.[15]

An additional factor that plays a crucial role when it comes to sleep is the sleep environment. Different studies show the importance of the sleep environment when it comes to sleep,

sleep quality, and sleep environment and how the sleep environment impacts sleep patterns.[35,36,37] Factors such as light exposure, noise, room temperature, and room humidity influence sleep.[35] Research suggests that for adequate sleep, the noise levels should be below 35dB.[38] The room temperature and humidity should also be ambient and range between 17 and 28 °C humidity at 40–60%.[38] Other factors that are vital to ensure good sleep quality are air quality and proper ventilation. All these factors are instrumental in supporting adequate and quality sleep. The significance of these factors when it comes to sleep quality explains why the physical environment is a key determinant factor when it comes to sleep health and sleep disorders. Billings et al. note that the physical environment comprises the natural environment, the built environment, and the ambient environment.[36] The physical environment refers to how the neighborhood is constructed, designed and planned. This environment has an influence on factors such as walkability, social engagement, crowding, and physical activity. The natural environment comprises features such as green spaces, water bodies, soil quality, and air quality of an area. The ambient environment comprises features such as neighborhood lighting, sounds, temperature, humidity, and atmosphere. All these factors play a crucial role in influencing sleep quality. For instance, a noisy neighborhood is not likely to create an ambient environment for quality sleep. Individuals in such neighborhoods are likely to experience sleep disruption, insufficient sleep, delayed sleep and even insomnia.[36] A study by Altun et. established that noise was an environmental stressor and a main contributing factor to poor sleep experiences among university students.[39] The built environment is also instrumental when it comes to sleep. Living in a neighborhood that can be considered disadvantaged or dilapidated can have a negative impact on sleep.[35] In such neighborhoods, factors such as safety concerns, noise, and crowding come to play. All these factors affect sleep quality more so sleep onset, struggling to remain asleep, and even hyperarousal. Research has shown that living in a disadvantaged neighborhood increases the risk of insomnia.[40]

An additional factor that is emerging as a key contributor to sleep deprivation and sleep disorders is screen time. Screen time before bed affects young people significantly. With most young people reporting using screens before bed, sleep deprivation and disorders are likely to become common.[41] Research has shown that using screens before bed has a significant impact on sleep quality.[15,42,43] Screens, more so smartphone and computer screens emit blue light which has been shown to suppress the production of melatonin a key hormone that is vital for the sleep-wake cycle. According to a study by Falbe et al., children who slept near a screen had 20.6 fewer minutes of sleep.[44] They also had less rest. Similarly, children who slept in a room that had a TV had 18 minutes of less sleep.[44] Therefore, using screens before bedtime affects sleep quality and can contribute to sleep disorders such as insomnia in the long term.

Caffeine intake is an additional factor that has been shown to contribute to sleep deprivation and sleep disorders. Research has shown that caffeine intake near bedtime affects sleep quality and is one of the factors that is reported to make individuals feel tired in the morning.[45,46] According to Drake et al., caffeine intake up to 3 to 6 hours before bedtime contributes to sleep disturbances.[45] Caffeine intake also contributes to shorter sleep duration, increases wake time, and increases daytime sleepiness.[15] The recommendation to avoid caffeine before bedtime as one of the sleep hygiene practices is also an indication that caffeine affects sleep quality. Caffeine has also been shown to help address deficits that are associated with fatigue which increases overdependence and the risk of developing disorders such as insomnia.[46] The high dependence on caffeine creates a cycle where individuals have to continue to take it to address the effects of fatigue because of inadequate sleep the previous night. Because of their busy schedules and other life responsibilities, young adults tend to consume high volumes of caffeine which increases the risk of sleep deprivation significantly. Another study showed that caffeine consumption was frequent among young adults.[47]

Work hours, alcohol consumption before bedtime, mattress comfort, and spine support also increase the risk of sleep disorders. Working long shift hours more so at night is associated with poor sleep outcomes. Research has shown that shift work impacts sleep and even contributes to a condition known as Shift Work Sleep Disorder (SWSD).[48] Some of the common manifestations of individuals who report SWSD are trouble sleeping, fatigue, and excessive sleepiness. Ganesan et al., also report that working during night shifts affects alertness and performance, more so if an individual works for subsequent nights.[49] The comfort of the mattress and its ability to provide spine support also matter when it comes to sleep quality. Individuals who have mattresses that do not provide comfort and spine support tend to report bad night's sleep.[18] Another factor that increases the risk of sleep disorders more so in young adults is alcohol dependence. According to Brower, sleep problems are more common among alcoholics with the most commonly reported being having trouble sleeping and having fewer hours of sleep time.[50] Alcohol increases the risk of chronic sleep disturbance and contributes to a lower slow wave.[51] In terms of sleep disturbance, alcohol dependence increases the risk of persistent sleep abnormalities. In addition to sleep disturbance, alcohol increases the risk of sleep apnea. People who have insomnia are also likely to result to alcohol to aid sleep.[50]

Although a lot of young adults are increasingly becoming aware of the importance of sleep on their overall health and well-being, getting adequate sleep still remains a major challenge. The impact of inadequate sleep on overall health and well-being is significantly documented. Lack of good quality sleep affects physical and mental health and contributes to a high risk of developing depression and anxiety. It also affects other aspects of life such as work productivity and social well-being.

Impact of Sleep Disorders

Addressing sleep disorders among young adults is important because of the significant connection between sleep disorders, poor mental health, poor physical health and chronic diseases. Sleep deprivation increases the risk of obesity, high blood pressure, diabetes, and heart attack.[16] When it comes to obesity, research shows that short sleep duration increases an individual's risk because it alters metabolic profiles more so insulin, cortisol, leptin, and ghrelin all of which are known to increase the risk of sleep loss.[52] Alterations in these profiles also increase appetite which explains why individuals who do not get adequate sleep tend to consume more calories.[53] These individuals also tend to have lower energy expenditure which explains the link between sleep deprivation and a high risk of developing obesity. According to Knutson and Van Cauter, inadequate sleep causes the dysregulation of the neuroendocrine control of appetite, leads to a reduction of leptin which is responsible for satiety, and increases ghrelin, which is the hormone responsible for leading to hunger.[9] Some studies have established the risk of obesity to be as high as 80% for every hour of sleep lost.[54] Cooper et al. also established that people who slept less than 7 hours every night had a higher body mass index and obesity than those who slept more.[55] The link between obesity and sleep disorders has been established early in life with one study showing sleeping problems in childhood increase the likelihood of obesity in young adulthood.[56] Sleep disorders have also been linked to increased risk of other chronic diseases such as diabetes, cardiovascular disease, and high blood pressure.[9,10,11] The link between sleep

deprivation and the risk of developing chronic diseases shows that sleep disorders have a detrimental impact on health. For young adults, such impacts can lead to negative health outcomes and affect their quality of life. As such, there is a need to put measures in place to address sleep disorders.

The risk of poor mental health is also elevated in individuals who are suffering from sleep disorders. Some of the mental health problems that are likely to be reported in individuals who are suffering from sleep disorders are depression and mood disorders. The Gallup Survey reported that lack of sleep had a significant impact on mood with most participants indicating that lack of sleep impacted their ability to have fun.[18] Other mood changes that are associated with inadequate sleep are irritability, lack of motivation, and anxiety. Insomnia is significantly implicated in depression with the relationship being bi-directional [14,57] Patients who have depression tend to have insomnia symptoms and insomnia increases the risk of depression.[57] Depression and its effect on mood are not the only effects of sleep disorders on mental health. Sleep disorders and sleep problems also increase the risk of suicidal ideation.[15,58,59]

Sleep disorders also impact other aspects of life such as physical and social functioning. For instance, increased occurrence of road and work accidents is one of the consequences of insomnia, restless leg syndrome, and sleep apnea.[1] Sleep disorders increase tiredness, fatigue, and excessive daytime sleepiness which leads to compromised cognitive performance.[13] Compromised cognitive performance increases the risk of accidents. In a study comprising 35,004 drivers, about 16.9% had at least one sleep disorder. The most reported were insomnia, obstructive sleep apnea, hypersomnia, and narcolepsy.[60] 8.9% also reported at least one episode of sleepiness behind the wheel every month. 31.1% had near-miss accidents of which 50% were sleep-related. Of the 2520 drivers who reported an accident, 146 of those accidents were attributed to sleep deprivation with the most risk of accidents being reported in drivers with hypersomnia and narcolepsy.[60] The findings from this study were similar to those by Liu et al.[61] Liu et al. established that sleep disorders impacted road safety and increased the likelihood of crash.[61] Females with restless legs syndrome and drivers with symptoms of narcolepsy and insomnia had a higher risk of a crash or near-crash.[61] Drivers with SWSD also had higher rates of crashes. Similar findings were reported for drivers with sleep apnea. Other problems that were reported were unsafe maneuvers. Increased risk of accidents is not only reported on roads but also at workplaces. A systematic review by Uehli et al. established that workers with sleep problems were more likely to report work injuries with the risk being 1.62 times higher than workers who did not report sleep problems.[12] The systematic review also established that 13% of injuries reported at work were attributed to fatigue, sleepiness, and sleep disorders.[12]

Sleep disorders also affect work productivity, with most individuals who report sleep disorders reporting that they compromise different aspects of productivity such as concentration, difficulty performing expected duties, increased errors, and likelihood of absenteeism.[1] According to the Gallup Survey, a poor night of sleep costs the economy approximately $44.6 billion every year with most workers who reported poor sleep quality being likely to skip or miss work.[18] The survey also reported 2.29 days of unplanned absenteeism each month because of poor sleep quality.[18] Another study of young adults reported greater workplace productivity loss among individuals with sleep disorders at 164 hours/year compared to 30 hours/year in those without sleep disorders.[62] Similarly, a national American poll showed that sleep disorders affected different aspects of work performance including the ability to concentrate, increased likelihood of making mistakes, organization problems, decreased productivity, absenteeism, falling asleep at work, and failing to complete assigned tasks.[8]

Good sleep is vital for good health and well-being. Sleep disorders lead to negative health effects, poor daily functioning, and low quality of life. Although a number of strategies including medication and supplements can be used to treat sleep disorders, lifestyle modifications in the long-term can be more effective. For instance, avoiding alcohol and caffeine before bedtime can lead to positive impact on sleep. Also, having a routine bedtime and limiting nap time can lead to a positive impact on sleep. Other measures that can improve sleep quality are having a good sleep environment, exercising regularly, and good diet.

Conclusion

The number of sleep disorders reported among young people is increasing. As people become busier with work and other aspects of life, the number of sleep hours is decreasing which is contributing to increased numbers of sleep disorders. Addressing sleep disorders is important. They cause a lot of distress and affect key aspects of life including health, work, productivity, and social life. The risk of depression, anxiety, obesity, diabetes, hypertension, and cardiovascular diseases is high in people with sleep disorders. The risk of road and work accidents is also high when sleep disorders are present. Other negative effects associated with sleep disorders are poor work productivity, absenteeism, increased likelihood of making mistakes, and failure to complete assigned tasks. Addressing sleep disorders is important. As more people report sleep problems, the negative impact of these disorders on the quality of life is expected to worsen. Besides, factors that contribute to sleep disorders such as life stressors, smoking, inadequate physical activity, alcohol consumption, screentime before bedtime, and caffeine are getting worse due to modern lifestyle changes. Therefore, the number of young adults affected by sleep disorders is projected to worsen necessitating the need for measures to address the problem.

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