The Effect of Smart mobile devices usage on Sleep Quality and academic performance – A Narrative Review

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ABSTRACT

More than two-thirds of United States high school students report lacking sleep on an average school night which is associated with a variety of health-risk behaviours. Insufficient or poor sleep quality has a substantial risk influence on academic performance. Good sleep quality is essential for recovery. Information used in this review paper was mainly obtained from scientific electronic academic journal databases. Studies have revealed that medical students who performed worse in their medical board exams mostly sleep poorly. Most of these students who performed worse in their exams seem to suffer stress as a result of poor sleep quality. University students, especially, medical students are most vulnerable to poor sleep quality. This review explores the major effects of sleep quality in relation to academic performance of students, especially, adolescents and young adults from primary to tertiary education levels as discussed by different authors. The extant literature seems to suggest that sleep quality affect academic performances or achievements but they failed to link the mediating roles that socio-economic factors could play in the relationship between sleep quality and academic performance. In view of this, this piece suggests a further new area that future researchers could explore: the effect or impact of sleep quality on academic performance or achievements and the mediating roles that socio-economic factors play in this regard. Sleep is an essential need of every human being especially, the young and the elderly. Therefore, special attention should be given to this area of research.

Keywords: Sleep, Quality, Socio-Economic, Academic, Students

INTRODUCTION

Sleep is a persistent physiological and necessary practice in every human being, irrespective of your gender, place of birth, or profession. Nevertheless, the features of sleep are persuaded by heritable background and environmental effects [1]. Research conducted by [2] recommended that universities should endorse sleep quality and mental health illness screening programs for students. This underpins [3] position that sleep quality should be routinely assessed. Sleep quality is an essential need of humans especially the young and the elderly. A good night or good sleep is a great determinant of one’s ability to function effectively and efficiently during the daytime activities [4]. Prolonged sleep loss and related drowsiness and daytime deficiencies in the teenage years are a serious menace to the educational accomplishment, wellbeing, and welfare of the world’s youth and an imperative public wellbeing concern [4,5]. Lack of sleep quality is a common problematic issue and contributes to a wide variety of sleep disorders in the society and the world as a whole. The public and monetary costs of sleep illnesses are massive [6]. Insufficient sleep undermines many intellectual functions, including...
memory, attentiveness, and responsiveness, which are important in everyday activities [7]. Lack of sleep affects the homeostasis of the biological functions in the human being [8]. Studies conducted by [9] provide evidence that poor sleep quality is a risk factor for mortality. Sleep is indisputably essential for human health. Inadequate sleep and poor quality sleep are persistent during adolescence and link to impairments in cognitive control and increased risk taking. However, the neurobiology underlying the association between sleep and adolescent behaviour remains elusive [10]. This paper intends to review the effects of sleep quality on academic performance of students of all ages with socio-economic factors playing the mediating role.

1. Selection of Relevant Literature

Information used in this review paper was mainly obtained from scientific electronic academic journal databases such as; John Wiley and Sons, PLOS ONE, MDPI, Elsevier, Springer, Web of Science, Google Scholar and Science Direct from different sources of academic journals. The information gathered covers most current and relevant academic articles. The paper primarily draws on a selection of peer reviewed publications in English language available online in all the mentioned academic article databases. Relevant articles were searched using the following key words with Boolean method; ‘sleep quality AND academic performance’, ‘smart mobile devices OR mobile device AND sleep quality’, ‘smart mobile devices usage and sleep quality’, ‘smart mobile devices usage and academic performance’, ‘sleep quality AND socio-economic factors’. Relevant results of related literature were downloaded, sorted, read through and important information fished out and sifted. In the end, the final relevant information was put together to compose this paper with the use of Mendeley Referencing Software.

3. Sleep quality effect on academic performance

More than two-thirds of United States high school students report lacking sleep on an average school night which is associated with a variety of health-risk behaviours [11]. Insufficient or poor sleep is a substantial risk influence for poor school academic performance that is commonly overlooked [12]. Good sleep quality is essential for recovery. A study conducted by [13,14] revealed that medical students who performed worse in their medical board exams were mostly poor sleepers. Most of these students, who performed worse in their exams seemed to have suffered from stress as a result of poor sleep quality. Poor sleep quality may have negative effect on academic performance[13]. University students, especially medical students are most vulnerable to poor sleep quality [14]. For example, students who suffer decreased sleep duration are identified to be associated with increased risk of life [15]. Many findings in recent years point toward the importance of sleep for memory association. Sleep seems to stabilize as well as enhance a wide variety of memory contents [16,13]. However, the lack of sleep in terms of its quality or quantity is a rising problem in modern society. Several studies strongly suggest that timing of sleep as well as its quality and quantity are linked with students’ learning abilities and academic achievement and that students are often persistently sleep deprived [17]. Poor sleep quality and drowsiness are common complications in teenagers, adolescents and young adults. Note that these complications can be linked to poor learning, memory loss and poor academic performance [18]. Sleep is a necessity that contributes to optimum physical and cognitive functioning of every human being, as well as overall well-being of humans. The negative effects of lacking sleep in students especially, include poorer academic performance [19]. The conclusion from a research conducted by [20] revealed that sleep quality had the strongest effect on school achievements in adolescents who were enrolled at that time. This is also in support that sleep is a necessity to human life and longevity as reported by other research works. Unsatisfactory sleep has been connected to increased risk taking and inconsistent decision making, improved functional responses to stress, and weakened anterior insula activities to risk. The anterior insula activities have also been connected to risky decision making under desperate circumstances [21]. Results of the research conducted by [22], reinforce the claim that specific areas of sleep behaviours can directly or indirectly predict the physical and the mental health and academic performance of students.

4. Smart mobile devices’ usage and sleep quality

The findings from Rensselaer Polytechnic Institute’s Lighting Research Centre established that smart movable phones could extremely disturb sleep rounds [23]. Mobile phone usage is evolving as an imperative issue which affects sleep excellence and magnitude, mainly as clever movable phones become extensively
obtainable to teenagers [24]. The use of movable processing devices and smart portable televisions on larger quantities has been linked to hindering sleeping/sleep and waking/wake strategies and wake lag with possibly harming healthiness and instructive results [25]. Study has discovered that smart mobile devices’ addiction was a risk factor for poor sleep quality. Nevertheless, not much is known about the causal mechanisms that might mediate this association [26].

A study conducted by [27], examined two key things: associations between technology use for the period of sleeping/sleep time, sleep quality, and hopelessness or nervousness and wakeful time due to technology consumption. The same study reviewed that out of a total of 236 university learners, most of them testified nocturnal-time getting up to answer text messages whiles some testified getting up to answer mobile phone call. According to the same authors, regression interpretations that higher stages of technology use before and after the inception of siesta anticipated worse sleep quality. Moreover, [27] continued that sleep quality was a mediator between technology use after the onset of sleep and depression/anxiety. They concluded that College students who had difficulty setting restrictions on technology use could be at high risk for psychological health concerns [27].

Several Adolescents use many forms of technology late into the night and at the same time drank coffee. Consequently, the ability of the adolescents to stay attentive and completely efficient during the daylight decreased by extreme afternoon drowsiness [28]. Sleepiness was extra common in those who reported symptoms of hopelessness or nervousness conditions and significantly influences their quality of life [29].

Youngsters consumed a greater volume of time through the day and at sleep time using digital gadgets. Bedtime and daytime use of digital gadgets were equally associated with sleep procedures, with an augmented threat of long nap onset latency, short sleep duration, and amplified sleep insufficiency [30]. Other vulgar manifestations of period drowsiness include inadvertent slumbering and going to sleep at unsuitable periods during the daytime. Specified exuberant somnolence can make multiethnic and occupational difficulties as symptomless as low attentiveness [31]. Extreme afternoon drowsiness is a major community health issue with its incidence in the public projected to be as great as eighteen percent. Drowsiness is triggered by irregular sleep quality or quantity. Threat issues for extreme drowsiness include heaviness, hopelessness, old age and inadequate sleep [29]. Deprived sleep quality is associated with prehypertension in strong adolescents. Scarce sleep quality is related to high lifeblood pressure [32].

5. Usage of smart mobile devices and sleeping disorders

The effect of information communication technology on sleep is a subject of massive concern in current media and must be made easily accessible to the whole community in a thoughtful style to provide persons opportune contact to recent tendencies [24].

Majority of studies reviewed tend to explore the use of mobile phones or smart mobile phones and its association with sleep complaints or disturbances and disorders. Insomnia may aggravate certain physical and mental health problems of people who work at night as shift workers, and ruin their quality of life [33].

Use of smart mobile devices close to bedtime is exceedingly common among the youth, especially, in United States of America [34]. Amongst a variety of information communication technology devices, communicating with high-tech gadgets are greatest when related to sleep grievances [34]. Information communication skill practice through bedtime duration was much sophisticated than imagined by the researchers. Examination of diverse year groups confirmed that individuals who practice information communication technologies in the last minute before going to bed were younger than thirty years old [34]. The same groups also reported the biggest amount of sleep disorders. The various findings suggested that information skill practice is evolving as a conceivable causative issue to sleep disruption in the 21st era [34].

For example, young male adults play electronic games and use the Internet more frequently than young female adults. Information Technology usage is connected with amplified wake up time weariness. The relations are sex explicit particularly amongst young adults [35].

Absence of sufficient sleep accumulation over a period of time may result to more sleep liability. This may lead to bigger negative concerns among individuals [36]. People may not be able to concentrate very well due to the impact of lingering sleep deficit or the accumulation of sleep debt [37]. There are many negative consequences of nap insufficiencies comprising of school absenteeism, drowsiness, weariness, reduced incentive, and trouble directing attention, feeling and performance. Sleep insufficiencies may trigger someone to have trouble with continuous thoughtfulness, intellectual promptness and exactness, operational reminiscence,
feedback time, and overall interactive capability, often deprived of the sleep depressed individual being conscious of the insufficiencies [37]. Common symptoms of prolonged sleep deficiency comprise of petulance, trouble focusing or making judgments, deficient of short-range memory retention. Outcomes of further current research study designate that sleep deficit may be connected to augmented vulnerability to corporate viral ailments, diabetes, heaviness, cardiovascular ailment, and hopelessness [37].

6. Effect of smart mobile devices usage on academic performance

The usage of smart mobile devices has been greater than before in recent years, and this has brought about addiction [5]. The results from randomized experiment conducted by [38] suggested that smart mobile devices can reduce knowledge gained by a student during the semester. It was estimated that the implication of permitting smart mobile devices usage in a classroom lowered exam scores of students [38]. Video game playing has both positive and negative effect on academic performance [39]. The Researchers stated that video game playing had positive and negative relations found between video game genre preference and the outcomes suggesting particular video games have different effects on valued outcomes [39].

Smart mobile phone use for text messaging was negatively related to academic performance of students according to research conducted by [40]. This outcome adds to the argument about student smart mobile devices use and how increasing the use of these devices may negatively affect academic performance of students especially, the adolescents and young adults [40].

CONCLUSION

This review discovers the major effects of sleep quality in relation to academic performance of students especially, adolescents and young adults from primary to tertiary education levels as discussed by different authors. Almost all the authors researched in the area of sleep quality effect on academic performances or achievements but not linking the mediating roles that socio-economic factors could play in the relation between sleep quality and academic performance. In view of this, I would like to suggest new areas that further future researches could be done like conducting research in the area of ‘the effect or impact of sleep quality on academic performance or achievements and the mediating roles that socio-economic factors play, either negative or positive. The other areas that researchers focused on according literatures reviewed also looked into the effect of smart mobile devices usage on sleep quality or sleep disorders. This is also another area that the mediating roles of socio-economic factors could also be looked in future researches. Not much has also been done in the area of the positive or negative effect of the use of smart mobile devices (smart mobile phone, tablets, notebook computers etc.) on academic performance or achievements and the mediating roles of socio-economic factors. Sleep is an essential need of every human being on earth especially the young and the elderly and therefore special attention should be given to this area of research. Insufficient sleep can affect humans and cause disasters in the vulnerable and in dangerous circumstances.

COMPETING INTERESTS

The authors declare that there are no competing interests regarding the publication of this paper.

AUTHORS CONTRIBUTION

All Authors contributed significantly to the writing of this narrative review manuscript from literature searching to the final write up.

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REFERENCE


