

Influence of Sleep in Academic Performance – An Integrated Review of Literature

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Abstract:

Background: Students are exposed to a substantial level of pressure due to academic stresses. They are not able to sleep most of the time due to the number of assignments, examinations and other academic responsibilities. A literature search was conducted in the year of 2014 to understand about the academic performance of nursing and medical students.

Methodology: A literature review of abstracts and articles discussing the study aim on the importance of sleep in academic performance, written in English, and published between 2001 and 2014 were searched. Articles were identified from four data bases using CINAHL, Pub Med, Google Scholar, and Medline with Full Text.

Findings: The results of this review clearly indicate that there is still insufficient evidence to enable us to make a judgment as to whether the sleep can have an impact on the academic performance of students. Majority of the studies shows that decreased sleep has an impact on students' academic performance.

Conclusion: Majority of the students is at risk of insomnia, and has an impact on their academic performance. So the teachers and the institution should have some programmes and activities to improve the sleeping pattern so that students can perform better in their personal and professional life.

Key Words: Insomnia, students, academic, performance

I. Introduction

Sleep is an important component of our day to day life, and its latent effects would not be ignored. There are many studies on the result of somnolence that proved the negative results of losing sleep. Murphy, Richard, Masaki, and Segalowitz (2006) studied the effects of wakefulness on test taking. The tests were given after four hours of wakefulness as well as after 20 hours of wakefulness. They concluded that participants were less able to recognize mistakes that were made during the tests after extended wakefulness.

Sleep is very significant for children from their young age. El-Sheikh, Buckhalt, Cummings, and Keller (2007) found many disruptions in third graders including marital conflict, emotional security, child adjustment, and sleep habits using a biological test. They found that marital conflict and emotional insecurity were related. In this study, emotional security was related to sleep disruptions. Sleep disruptions were related to a child's social problems as well as academic functioning. There was not a direct relationship between marital conflict and sleep, suggesting that emotional security is a central variable. Texeira, Lowden, Turte, Nagai, Moreno, and Latorre (2006) observed sleepiness in high school students. This study examined the sleepiness levels of evening high school students (both workers and non-workers) in Sao Paulo, Brazil. They administered questionnaires about lifestyle and assessed sleepiness by self-reports and a biological test. They found that daytime sleepiness was elevated in the evening for workers. The workers also had a cumulative sleep deficit during the week that was not visible in non-workers.

II. Background of the Study

Inadequate sleep is a significant public health issue with adverse medical consequences. Sleep disturbances are common among university students and have an effect on this group's overall health and functioning. Across-sectional study carried out in 2012 among 735 University Students in Lebanon. Pittsburg Sleep Quality Index (PSQI) was used to assess sleep quality and habits. The results shows that less than half of the total study population (47.3%) were good sleepers (PSQI<5), and the bivariate analysis, males experienced more sleep difficulties than females (57.8% vs. 40.8%). The majority (60%) of males vs. 40% of females had trouble performing daily activities more than once per week (P=0.02). Decreased sleeping will affect attention, concentration and memory which will have an impact on their academic performance.

A survey conducted in São Paulo, Brazil to compare the academic performance of children with and without symptoms of sleep disorders (SSD). Children with symptoms of sleep disorders (SSD) and symptoms of sleep-breathing disorders (SSBD) were compared to children with no symptoms of SSD (no-SSD). Results Mean Portuguese (6.6 ± 2.2) and Mathematics (6.3 ± 2.2) grades were lower in children with SSD or sleep-

breathing disorders (SBD) than those among children with no-SSD (Port, 7.1 ± 2.1 and Math, 7.1 ± 2.1 ; $P < .05$). Boys with SSD or SSBD had lower grades (Port, 6.4 ± 2.2 and Math, 6.1 ± 2.2) than girls (Port, 6.9 ± 2.2 and Math, 6.5 ± 2.2 ; $P < .05$). There were more children with failing Port grades with SSD or SSBD (13%) than those among children with no-SSD (9%) Regarding Math, 25.4% of SSD or SSBD children had failing grades vs. 8.4% of children with no-SSD ($P < .05$). Keeping these significance aspects in mind, a literature search was conducted in January 2014 to understand the importance of sleep in academic performance for children and adolescents.

College students are well known for sleep deprivation; therefore, Buboltz, Brown, and Barlow (2001) researched the sleep quality of this age group and the high percentage of sleep problems, which supported past research that college students suffer more from sleep problems than the “normal” adult population. McClelland and Pilcher (2007) also examined college students’ self-report on sleepiness. They surveyed 14 undergraduate students and studied their self-assessment of sleepiness during a 28-hour period of sleep deprivation. At the beginning of the night the participants were able to separate sleepiness into two dimensions, state and behavioral. However, as the night progressed the participants could not distinguish between the two dimensions. Baranski (2007) observed adults during a 28-hour period of sleep deprivation as well. The study focused on the metacognitive ability to self-monitor cognitive performance during sleep deprivation. They found that persons’ ability to assess their performance accuracy did not change significantly with sleep deprivation.

Purpose

This paper reports a literature review experimentally test whether chronic sleep restriction, which is common among adolescents, is causally related to poor learning, inattentive behaviors, and diminished arousal in a classroom-like situation.

III. Methodology

A literature review of abstracts and articles discussing the study aim on the importance of sleep in academic performance, written in English, and published between 2001 and 2014 were searched. Articles were identified from four data bases using CINAHL, Pub Med, Google Scholar, and Medline with Full Text. Search terms included “role of sleep in education”, “importance of sleep in academic performance”, “role of sleep in academic performance of medical and nursing students”.

Inclusion criteria:

- Original research studies
- Primary data with full text
- Studies including Nursing, Medical and School students
- Published in English between 2001 and 2014

Exclusion criteria:

- Unpublished manuscripts or doctoral dissertations
- Review or opinion articles about sleep and academic performance.

The initial search generated 88 articles and with full text online articles were 31 which were reviewed for replication and ended with 20. Available of 17 papers retrieved finally, 9 were eligible for inclusion which had relevant information about sleep, academic performance and grade point average of students, and the rest of the articles were utilized for writing background information of the article (ref.fig-1).

Findings

The findings are presented in a narrative format. The 17 articles included in the review were based on studies conducted in 7 countries like Saudi Arabia, USA, Lebanon, Australia, Brazil, Iran, and Taiwan. The results of this review clearly indicate that there is still insufficient evidence to enable us to make a judgment as to whether the sleep can have an impact on the academic performance of students. Majority of the studies shows that decrees sleep has an impact on the students’ academic performance. Students classified as poor-quality sleepers reported significantly more problems with physical and psychological health than did good-quality sleepers. Students overwhelmingly stated that emotional and academic stress negatively impacted sleep. Some studies projects that insomnia at night has an impact on day time functioning.

IV. Discussion

All the review says that decreased sleep at night have a serious impact on academic performance of students. Late school year bedtime was associated with shorter total sleep time cross-sectionally, whereas late summertime bedtime was not. Moreover, late school year bedtime was not associated with late summertime bedtime cross-sectionally. Late school year bedtime was associated with worse educational outcomes and

emotional distress 6–8 years later. In addition, late summertime bedtime was associated with more emotional distress and short total sleep time was not associated longitudinally with changes in emotional and academic functioning (2014). Insufficient sleep is a significant public health issue with adverse medical consequences. Sleep disturbances are common among university students and have an effect on this group’s overall health and functioning (2014). A better understanding about the etiology of sleep problems in medical trainees is essential if we hope to improve the overall quality of medical students' lives, including their academic performance. Sleep self-awareness and general knowledge appear insufficient in many studied cohorts, so increasing education for students might be one beneficial intervention. We conclude that there is ample evidence for a high prevalence of the problem, and research in this area should now expand towards initiatives to improve general sleep education for medical students, identify students at risk, and target them with programs to improve sleep (2015). Daytime sleepiness may affect student learning achievement. Research studies have found that daytime sleepiness is common in university students; however, information regarding the determinants of daytime sleepiness in this population is still lacking(2014).

V. Conclusions

Most of the students are at risk for insomnia, and those may also be at risk for academic failure. So there should be an accurate programme to help the students to identify the physical and psychological symptoms as early as possible. This will help to provide adequate guidance and to improve the academic as well as physical performance. Any student those who perform poorly in academic or noticed that any student those who dassing in the class to be monitored and referred to the concerned professional.

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Author	Objective	Method	Design	Result
Abdulghani (2012)	To examine the prevalence of sleep disorder among medical students and academic performance.	A cross-sectional self-administered questionnaire-along with The Epworth Sleepiness Scale (ESS) were distributed among 491 medical students.	Descriptive and inferential statistics	Sleeping between 6-10 h per day was associated with normal ESS scores (p == 0.019) as well as the academic grades ≥3.75.
Asarnow (2014)	To clarify and better characterize the sleep/circadian patterns of adolescents	Used three waves of data National Longitudinal Study of Adolescent Health to assess sleep/circadian patterns of 2,700 adolescents in grades seven through 12.	Descriptive and inferential statistics	Inlate summertime bedtime in Wave II (1996) was associated with more emotional distress at Wave III (2001–2002).
Beebe (2010)	To experimentally test whether chronic sleep restriction, which is common among adolescents, is causally related to poor learning, inattentive behaviors, and diminished arousal in a classroom.	16 healthy adolescents underwent a sleep manipulation that included, in counterbalanced order, five consecutive nights of sleep deprivation (6½ hours in bed) versus five nights of healthy sleep duration (10 hours in bed). At the end of each condition, participants viewed educational films and took related quizzes in a simulated classroom. Eight	Descriptive and inferential statistics	As compared with the healthy sleep condition, sleep-deprived participants had lower quiz scores (p = .05), more inattentive behaviors (p < .05), and lower arousal (p = .08).

Influence of Sleep in Academic Performance – An Integrated Review of Literature

		participants also underwent video and electroencephalography monitoring to assess levels of inattentive behaviors and arousal, respectively.		
Gaultney, (2010)	To examine the prevalence of risk for sleep disorders among college students by gender and age, and their associations with grade point average (GPA).	A validated sleep disorder questionnaire surveyed sleep data during the 2007-2008 academic year. Students' GPAs were obtained from the office of the registrar.	Descriptive and inferential statistics	27% of students were at risk for at least one sleep disorder. Students reported insufficient sleep and a discrepancy between weekday and weekend amount of sleep. Students at risk for sleep disorders were overrepresented among students in academic jeopardy (GPA < 2.0).
Huang (2014)	To investigate the determinants of daytime sleepiness in first-year nursing students.	A cross-sectional and correlational design was employed and the Participants were recruited from two nursing programs at an institute of technology located in southern Taiwan. Ninety-three nursing students completed the questionnaires one month after enrollment into their program.	Descriptive and inferential statistics.	Nearly 35% of the participants experienced excessive daytime sleepiness at the beginning of the semester. Six variables (joining a student club, perceived symptoms, daytime dysfunction, sleep disturbances, sleep latency, and subjective sleep quality) were significantly correlated with daytime sleepiness.
Lamberti (2012)	To improve sleep in college students	A convenience sample of 56 students participated in an experimental design study. The control and experimental groups took a baseline survey by Survey Monkey using the Pittsburgh Sleep Quality Index and the Sleep Hygiene Practices Scale	Repeated measures ANOVA were performed	Showed no significant difference among or between the groups Sleep quality declined at the end of the semester
Lund (2010)	To characterize sleep patterns and predictors of poor sleep quality in a large population of college students	1125 students aged 17 to 24 years from an urban Midwestern university completed a cross-sectional online survey about sleep habits that included the Pittsburgh Sleep Quality Index (PSQI), the Epworth Sleepiness Scale, the Horne-Ostberg Morningness-Eveningness Scale, the Profile of Mood States, the Subjective Units of Distress Scale, and questions about academic performance, physical health, and psychoactive drug use.	Descriptive and inferential statistics	Over 60% were categorized as poor-quality sleepers, bedtimes and risetimes were delayed during weekends, and students reported frequently taking prescription, over the counter, and recreational psychoactive drugs to alter sleep/wakefulness
Mak(2012)	We investigated the prevalence of sleep patterns, naps, and sleep disorders, and their associations with academic performance in Hong Kong adolescents	22,678 students aged 12-18 (41.6% boys) completed a questionnaire on sociodemographic characteristics, sleep patterns and problems, and lifestyle factors including exercise, smoking, alcohol drinking, and academic performance.	Descriptive and inferential statistics	The prevalence of having >8 hours of sleep was higher on holiday nights (86.4%) than on school-day nights (27.4%). Sleeping after midnight was more common before holidays (49.3%) than before school days (19.9%).
Stroebele (2013)	To improve support and justification for health promotion efforts in schools, it is helpful to understand how students' health behaviors affect academic performance	online school-administered health survey with questions regarding their eating behavior, physical activity, academic performance, and sleep patterns	Logistic regression was used to determine the relationship between academic performance and the health behaviors.	Self-reported overweight status was related to lower self-reported academic performance, fewer lunch and breakfast occasions, less physical activity, not meeting the recommendations for vegetable and soda consumption as well as hours of television watching. Sufficient sleep (≥9 hours/night) was associated with better grades, meeting the recommended hours of daily television watching and video game playing, being more physically active and increased breakfast and lunch frequency.