SLEEP AS A DETERMINANT OF ACADEMIC PERFORMANCE OF UNIVERSITY STUDENTS IN OGUN STATE, SOUTH WEST, NIGERIA

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Abstract

Sleep has been found to be of the least priority of most individuals especially students. This may not be unconnected with the fact that, they feel they must always meet up with deadlines in form of school assignments and examinations. A descriptive survey design was used to find the relationship between sleep and the academic performance of University students. The population comprised undergraduate students attending Private universities in Ogun State, South-west Nigeria. Three hundred and eight participants were randomly selected for the study. The Groninger Sleep Quality Questionnaire was adapted for the purpose of this study. The scale has response choices ranging from strongly disagree to strongly agree, measuring the students' sleep quality. The Cumulative Grade Point Average of the respondents was correlated with the amount of sleep, using Pearson moment correlation coefficient. The result shows a significant relationship between adequate / inadequate sleep and academic performance. The study has important implications for policy makers, school administrators and educators planning to improve students' academic performance who should consider the potential benefits of taking a multidisciplinary approach at understanding and promoting the academic and behavioral wellness of the students.

Keywords: Sleep, determinant, academic performance

Introduction

A number of reports have indicated that adolescents and indeed everyone needs at least eight hours of sleep per night (Carskadon, Harvey , Duke , Anders , Litt , Dement, 1980; Carskadon,1980). However, adolescents and young adults have been found to obtain less sleep than their adult counterparts. A number of factors such as social activities and a

number of behavioural activities may have contributed to the change in sleep pattern. Generally, University undergraduates have school schedule requirements which require them to be fully awake early in the morning, this probably because most of them have classes by 7am. These students are required to be in school till about 5pm or even longer depending on their schedule and are also required to meet up with various class assignments.

Reduction of nighttime sleep due to reduced or altered sleep schedules has been associated with excessive sleepiness and impaired school performance (Carskadon, Harvey , Dement, 1981; Randazzo, Muehlbach, Schweitzer, Walsh, 1998; Gibson, Powles, Thabane , et al., 2006) while Physiological studies have also shown that adequate sleep may be important for the consolidation of memory which could have important implications for school success in adolescence (Carskadon Acebo & Jenni, 2004; Stickgold, 2005). In poor sleepers, the risk of failing one or more years at school is double that of normal controls (Kahn, Van de Merckt , Rebuffat , et al., 1989). Similarly, in a study on sleep patterns and daytime functioning in 3,000 children, students with lower grades reported later bedtimes on school nights and increased weekend delays of sleep onset (Wolfson & Carskadon, 1998). The reason could be that these individuals stay up over the weekends to watch movies late into the night. Thus, there is increasing evidence that sleep loss and resulting excessive sleepiness due to reduced time in bed, poor sleep quality, or variable sleep schedules is associated with impaired academic performance (Curcio , Ferrara , De Gennaro, 2006 ; Drake, Nickel , Burduvali, Roth , Jefferson & Pietro, 2003).

It is also possible that poor academic performance may also lead to poor sleeping attitude, thus, making it a bi-directional relationship. This is supported by Perez-Chada, Perez-Lloret, Videla, Cardinali, Bergna, Fernández-Acquier, Larrateguy, Zabert & Drake (2007) who stated that the association between sleep and academic performance can potentially be bi-directional as poor academic performance may adversely affect sleep through concomitant stress or other mechanisms. According to Killgore, Balkin and Wesensten,(2006) and Crowley, Acebo and Carskadon (2007), sleep deprivation also results in reduced metabolism of the prefrontal cortex of the cerebrum, the area of the brain responsible for most decisions and judgments, and significantly reduces executive function and reaction time. In one study, Heuer, Spijkers, Kiesswater and Schmidtke (1998) found that as the amount of sleep a person gets per night decreases, the person's ability to learn implicitly also decreases. Implicit learning is usually related to difficult or complex tasks learned more passively than actively (Heuer and Klein, 2003). Another study showed that subjects who had been awake for 17-19 hours performed much worse than those with a blood-alcohol concentration of 0.05 % in a test of cognitive and motor performance (Dreamland's jagged

terrain, 2007). The lack of sleep in general can also lead to impairment on daytime performance, for instance falling asleep in class, lacking energy, and inattentiveness (Smaldone, Honig & Byrne, 2007; Wolfson & Carskadon, 2003) and poorer academic performances in school (Wolfson & Carskadon, 2005)

Sleep has been found to be on the bottom of the priority list of most individual especially students because they feel they must always meet up with deadlines. Most of the studies already carried out have considered the negative effects of insufficient sleep on students and adults but there is the need to study and understand how a non-medical related cause (poor academic performance) can affect the sleep pattern as well as how poor or inadequate sleep pattern can affect poor academic performance among University undergraduates in Ogun State. Therefore, this study was designed to specifically investigate how sleep deprivation affect academic performance and how poor academic performance affects sleep pattern among university undergraduates.

Research Questions

1. Will there be any significant relationship between adequate sleep pattern and academic performance?

2. Will inadequate sleep pattern significantly affect academic performance?

Performance ?

Methodology

Research design

A descriptive survey design was adopted to find out if sleep pattern affect academic performance.

Sample and Sampling Techniques

The sample for this study consists of randomly selected 308 undergraduate students from a private University in Ogun state, Nigeria.

Instrument

Instruments for this study include a questionnaire and the students' grade point average from the department. The first instrument which is a questionnaire contains items adapted from the Groninger Sleep Quality Questionnaire (Meijman, de Vries-Griever, de Vries G.) with response choices of true or false, measuring the student's sleep quality. The Groninger Sleep Quality Questionnaire is primarily used to assess seasonal affective disorder, mood disorders, and sleep disorders. Examples of items from the Groninger Sleep Quality Questionnaire are "I felt rested after waking up this

morning and I didn't get more than 5 hours sleep last night. While the second instrument used for this study was the student's Grade Point Average obtained from the departments to access their academic performances.

Data Analysis

The data collected was analyzed using Pearson product moment correlation to find the significant relationship between sleep pattern (adequate and inadequate) and academic performance. Table of percentage was also used to ascertain the differences in the effect of sleep pattern on the academic performance.

Results

Table 1: Correlation between Adequate/Inadequate Sleep Pattern and Academic Performance

		Adequate sleep	Inadequate sleep	academic performance
Adequate sleep	Pearson Correlation			.769(**)
	Sig. (2-tailed)			.000
	N			308
Inadequate sleep	Pearson Correlation			-.518(**)
	Sig. (2-tailed)			.000
	N			308
academic performance	Pearson Correlation	.769(**)	-.518(**)	
	Sig. (2-tailed)	.000	.000	
	N	308	308	

** Correlation is significant at the 0.01 level (2-tailed).

The table above shows that both inadequate and adequate sleep pattern are significantly related to academic performance (P > 0.01 level of significance). The positive Pearson correlation of 0.769 between adequate sleep and academic performance shows that the more students had adequate sleep the better is their academic performance while the negative correlation value of – 0.518 indicates that the more student had inadequate sleep the poorer they tend to perform academically. This result implies that both lack of sleep and adequate sleep can affect students' academic performance. The study specifically looked at how adequate/inadequate sleeps contribute to the academic performance based on the students' CGPA. The table below show the cross tabulated percentages of students who indicated they have adequate sleep and those that indicated not having adequate sleep.

Table 2: Percentages of Adequate /Inadequate Sleep and Academic Performance

	Poor Academic performance below 2.5	Average Academic performance 2.49 to 3.49	Good Academic performance 3.5 to 4.49	Excellent Academic performance above 4.5
Adequate Sleep	3(0.97%)	24(7.79%)	97(31.49%)	30(9.74%)
Inadequate Sleep	64(20.78%)	53(17.21%)	25(8.11%)	12(3.90%)

In the table above it is obvious that on one hand majority of students (31.5%) who indicated they have adequate sleep have CGPA of between 3.5 and 4.49 which is referred to as good academic performance while 0.97% of those who indicated adequate sleep score less than 2.5 CGPA. On the other hand 20.8% of the students who indicated inadequate sleep (which is the highest) fall below 2.5 CGPA – poor academic performance. This is an indication that students with adequate sleep perform better academically while those who don't sleep well may not perform well academically.

Table 3: Summary of Regression Analysis between

Multiple R = 0.779(a)
Multiple R^2 = 0.607
Multiple R^2(Adjusted) =0.605
Standard Error of Estimate = 0.26253

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	32.521	2	16.261	235.930	.000(a)
	Residual	21.021	305	.069		
	Total	53.542	307			

a Predictors: (Constant), adequate, inadequate
b Dependent Variable: academic performance

Table 1 shows significant relationship between independent variables (adequate and inadequate sleep pattern) and dependent variable – academic performance (R=0.779, P<.05).The independent variables accounted for 60.5% (adjustedR^2=0.605) of the total variance in the academic performance. The analyses of variance of the multiple regressin yielded an F-ratio value which was found to be significant at 0.05, Alpha level F (2, 305) = 235.930, P<0.05.

Table 4: Correlation between Inadequate/Adequate Sleep and Academic Performance

Variabl		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t B	Sig. Std. Error
1	(Constant)	.677	.130		5.192	.000
	inadequatesleep	-.010	.003	-.150	-3.542	.000
	Adequate sleep	.144	.009	.689	16.237	.000

a Dependent Variable: academic performance

The positive beta value of 0.689 for adequate sleep shows that the more students had adequate sleep the better they perform academically while the negative beta value of – 0.150 indicates that the more students had inadequate sleep the lower they tend to perform academically.

Discussion

The result of this study shows that both inadequate and adequate sleep pattern are significantly related to academic performance. This is supported by Perez-Chada, Perez-Lloret, Videla, Cardinali, Bergna, Fernández-Acquier, Larrateguy, Zabert & Drake (2007) who observed that sleep and academic performance are related. Inadequate sleep observed in this study gave credence to Carskadon, Harvey , Dement (1981); Randazzo, Muehlbach, Schweitzer, Walsh, (1998) who posits that low school performance may result from reduction of nighttime sleep.

The findings also revealed that students who indicated they have adequate sleep perform better academically this may be related to the result of a physiological studies that confirmed that adequate sleep may be important for the consolidation of memory which could have important implications for school success in adolescence (Carskadon, Acebo & Jenni, 2004; Stickgold, 2005). This implies that the amount of sleep a person gets per night affects the individual's ability to learn. This again supports the findings of Hackethal (2013) that sleep deprivation might affect certain parts of the brain, especially the frontal lobes. The frontal lobes control executive function, which is the ability to make decisions, form memories, plan for the future and inhibit socially undesirable behaviour and therefore concluded that children who have trouble sleeping tend to do worse in school than their peers who get a good night's sleep. Curcio, Ferara & DeGennaro (2006) suggested that students adopt healthy sleep schedules, such as fixed bedtimes and waking times, fixed school starting times, and limit psychosocial and environmental pressure that may adversely affect academic performance.

Conclusion

It can be concluded based on the findings of this study that adequate or inadequate sleep plays significant roles in academic achievement of students, thus, students should adopt a healthy sleep pattern to enhance their academic performance.

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