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EFFECT OF SLEEP DEPRIVATION, STRESS AND BURNOUT ON ACADEMIC PERFORMANCE OF UNDERGRADUATES STUDENTS OF BENUE STATE UNIVERSITY

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Abstract

Sleep deprivation, also known as insufficient sleep or sleeplessness, is the condition of not having enough sleep while stress is an individual's response to change in circumstance or to a threatening situation and Burnout is a prolonged response to chronic emotional and interpersonal stressors. It is defined by the three dimensions of exhaustion, cynicism, and inefficacy. This study, therefore, investigated the effect of sleep deprivation, stress and burnout on the academic performance of undergraduate students of Benue State University, Makurdi. The study employed a cross-sectional research design. The population of the study comprise all 18,729 undergraduate students of Benue State University, Makurdi. A total of 384 participants were sampled for the study. The participants were sampled using the multistage sampling technique. The instruments used for data collection were Chronic Sleep Reduction Questionnaire (CSRQ), Students' Stress Rating Scale (SSRS), and Maslach Burnout Inventory – Student Survey (MBI-SS). The data collected were analysed using descriptive statistics of mean and standard deviation and Regression analysis to test the hypotheses at a 0.05 level of significance. The results of the study revealed that: Sleep deprivation has a significant effect on students' academic performance [R^2 = .215, F = 104.402, β = .463, p < .05]; The stress level among the students is generally moderate (105.16). Stress had a significant effect on students' academic performance [R^2 = .185, F = 7.083, β = -.430, p < .05]. The three subscales of burnout, emotional exhaustion, cynicism and academic efficacy all had mean scores of 15.06, 12.03 and 7.93 respectively. There was a high level of burnout among the students. Results available also show that burnout has a significant effect on students' academic performance [R^2 = .123, F = 4.741, β = -.351, P< .05]. Based on the findings of the study, it was concluded that sleep deprivation has a significant positive effect on students' academic performance while stress and burnout both have negative effects on students' academic performance. The study recommended that stakeholders in education should ensure to provide a good academic environment to minimize academic stress and improve students' academic performance.

Key Words: Sleep Deprivation, Stress, Burnout, Academic Performance, Undergraduates.

Introduction

Sleep is a naturally recurring state of mind and body, characterized by altered consciousness, relatively inhibited sensory activity, reduced muscle activity and inhibition of nearly all voluntary muscles during rapid eye movement (REM) sleep (Ferri, Manconi, Plazzi, Bruni, Vandi, Montagna, & Zucconi, 2008). The reasons for student sleep deprivation are many, including a wide range of social, cultural, environmental, and biological factors. Many daily living conditions can disrupt sleep. In disadvantaged neighbourhoods, for example, local violence causes individuals to fear for their safety. This can lead to hyperarousal,
which makes it harder to fall asleep and reduces sleep quantity and quality (Bagley, Tu, Buckhalt &

El-Sheikh, 2016). The many pressures and commitments that teenagers and college students must manage during school are likely strong contributors to sleep deprivation. Whatever their motivation and capabilities, school assignments, schedules, and accountabilities can be highly demanding and lead to making adequate sleep a lower priority. Involvement in extracurricular activities can compound the situation. So can excessive competitive pressures. Students may stay up late to finish an assignment (and be less alert during the school day). And the problem can become cyclical, with students increasing their sleep debt falling more and more behind in school (Dement, 2019).

Sleep deprivation can result in depressive and oppositional behaviour, irritability, poor impulse control and/or overactivity – all of which are some characteristics of common learning disorders. Research has shown that relationships exist between inadequate sleep and developing Sleep Disordered Breathing (SDB), Periodic Limb Movement Disorder (PLMD), and Attention-Deficit/Hyperactivity Disorder (ADHD) (Ivanenko, 2010). These syndromes can make simple tasks involved with learning, difficult for those who suffer from it.

Beyond the effects of sleep on memory consolidation, lack of sleep has been linked to poor attention and cognition. Well-controlled sleep deprivation studies have shown that lack of sleep not only increases fatigue and sleepiness but also worsens cognitive performance (Lim & Dinges, 2010). In fact, according to Dawson and Reid (2017), the cognitive performance of an individual who has been awake for 17 h is equivalent to that exhibited by one who has a blood alcohol concentration of 0.05%. Outside of a laboratory setting, studies examining sleep in the comfort of peoples' own homes via self-report surveys have found that persistently poor sleepers experience significantly more daytime difficulties in regards to fatigue, sleepiness, and poor cognition compared with persistently good sleepers.

Stress is an individual's response to change in circumstance or to a threatening situation. It can be viewed as a personal reaction to an external event/demand like writing an exam or to an internal state of mind like worrying about an exam. In psychological sciences, stress is a feeling of mental press and tension. Stress may be understood as a state of tension experienced by individuals facing extraordinary demands, constraints or opportunities. The pressures of modern life, coupled with the demands of a job, can lead to emotional imbalances that are collectively labelled 'Stress' (Rao, 2015). Among students, stress can be caused by so many factors such as academic pressure, social problem, family stress, financial burden, poor management skills, unconducive school environment, adjustment to a new environment among others (Akunne & Nnadi, 2021). Although an optimal level of stress can enhance ability, too much stress can cause physical and mental health problems, reduce self-esteem and may affect the academic performance of the students (Rafidah, Azizah, Norzaidi, Chong & Salwani, 2019). When a student is stressed and preoccupied, it takes over their ability to focus during lectures or studying. Stress may even cause students to drop out of school or drop classes. American College Health Association (2010) reported more than 25 per cent of students affirmed that stress lowered their grades or ability to finish a course.

Burnout is a prolonged response to chronic emotional and interpersonal stressors. It is defined by the three dimensions of exhaustion, cynicism, and inefficacy. It occurs when you feel overwhelmed, emotionally drained, and unable to meet constant demands. As the stress continues, you begin to lose the interest and motivation that led you to take on a certain role in the first place. People who are facing burnout problems are more likely to engage in absenteeism, have less self-confidence, low satisfaction with their work and turnover intentions (Tsigilis, Zournatzi & Koustelios, 2011). So, burnout syndrome has become a critical issue for students and institutes because it directly affects the well-being of students and then it reduces their academic performance. Among students, burnout can be triggered by a variety of factors, but it's most often caused by overwhelming work demands and prolonged levels of intense stress (Epps, 2021). Epps further stated that there are other lesser-known factors as well such as

having the wrong friends, the wrong level of support, the wrong major, the wrong goals, etc., which will rather quickly lead to burnout, even when another functioning is adequate.

Academic burnout is a significant factor behind students' academic performance and turnover intention. Academic burnout is manifested by emotional exhaustion, cynicism, reduced self-efficacy, reluctance to do homework, depression, anxiety, aggression, physical and psychological burn-out, despair, and frustration (Shih, 2015; Lee, Choi & Chae, 2017). Academic burnout can also result in academic procrastination, poor academic performance, poor learning outcomes, inability to complete academic courses, the tendency toward neglecting academic activities (Balkis, 2013).

Academic performance is the extent to which a student, teacher or institution has attained their short or long-term educational goals. Completion of educational benchmarks such as secondary school, diplomas and bachelor's degrees represent academic achievement. Academic performance is defined by Narad and Abdullah (2016) as the knowledge gained which is assessed by marks, or the educational goals set by students and educational institutions to be achieved over a specific time. Student's academic performance has become an area of concern for education stakeholders and institutions. Investigating the factors that are related to student's academic performance is paramount in the educational sector. Many stakeholders in the educational sector often complain of the deteriorating quality of education in Nigeria's educational system and the attendant effect of poor academic performance of students. Many stakeholders insist that the students are to blame for this apparent decline in quality of education and moral values, the majority lay the blame on the teachers while the teachers shift the blame on the children and parental attitudes to children's education (Arong & Ogbadu, 2010). Others blame the government for the unattractive condition of service and poor physical facilities (Jekayinfa, 2010). Nevertheless, it is essential to note that a wide range of ongoing normative stressors, such as sleep deprivation, stress, and burnout as a result of normal day to day hassles of ongoing academic demands also affect students' academic performance.

Numerous studies have investigated the relationship between sleep and students' academic performance, stress and academic performance and burnout and academic performance, few studies have looked at the combined effect of these normative stressors on academic performance. It is within this purview that this study is timely and needed in Benue State University. While studies outside of Benue State and Nigeria have investigated the effects of these normative stressors on academic performance, these cannot be assumed to apply within the context as the university culture and academic environment are different and as such calls for an investigation of these stressors in the area.

Research Questions

1. What effect does sleep deprivation have on the academic performance of undergraduate students of Benue State University, Makurdi?
2. What effect does stress have on the academic performance of undergraduate students of Benue State University, Makurdi?
3. What effect does burnout have on the academic performance of undergraduate students of Benue State University, Makurdi?

Research Hypotheses

The following hypotheses were postulated to be tested in the study.

$H0_1$ Sleep deprivation has no significant effect on the academic performance of undergraduate students of Benue State University, Makurdi.

$H0_2$ Stress has no significant effect on the academic performance of undergraduate students of Benue State University, Makurdi.

$H0_3$ Burnout has no significant effect on the academic performance of undergraduate students of Benue State University, Makurdi.

Material and Methods

The research design for this study was a cross-sectional survey design. The population of the study comprised all 18,729 undergraduate students of Benue State University, Makurdi. A total of 384 participants were sampled for the study using the multistage sampling technique.

Stage 1: In the initial stage, the study area was stratified based on the number of faculties in the university. This gave a total of 8 clusters representing the 8 faculties in the university.

Stage 2: In the second stage, two (2) departments were selected from each faculty using simple random sampling, giving a total of 16 departments.

Stage 3: In stage three, a proportionate sampling technique was used to select participants from each department based on their population. A total of 384 participants were selected from the 16 departments. To select participants, the formula propounded by Taro Yamane (1967) was used. Applying the Yamane formula;

$$n = \frac{N}{1 + N(e)^2}$$

Where n = sample size

N = total population of the study area

e = margin or error which research is ready to allow

the total population of the study = N = 18,729.

Error allowed = 0.05

$$n = \frac{18{,}729}{1 + 18{,}729(0.05)^2}$$

n = 384.468

The sample contained both male and female undergraduate students. The participants were then randomly issued with a questionnaire until the number specified for each department was attained.

The instruments that were used for data collection in the study include the Chronic Sleep Reduction Questionnaire (CSRQ) designed by Meijer (2008) to measure the level of sleep deprivation among students, the Students' Stress Rating Scale (SSRS) designed by Balamurugan and Kumaran (2005) to measure the students' stress level, the Maslach Burnout Inventory – Student Survey (MBI-SS) designed by Maslach, Jackson and Leiter (1996) to measure the level of burnout among students and a self-reported Cumulative Grade Point Average (CGPA) as a measure of their academic performance.

Data for this research was obtained through the administration of the questionnaire on respondents selected from the various departments of Benue State University, Makurdi. The hand delivery method was used for both the distribution and collection of the questionnaires. The researcher moved from one department to another seeking permission of the respondents in participating in the study. The respondents were required to fill the questionnaire and return the completed copies to the researcher or his assistant who in turn passed them to the researcher. This was done to minimise the time to retrieve the questionnaires at a later date.

The data collected through the use of a questionnaire were analysed using mean and standard deviation to answer the research questions. For sleep deprivation, a mean range of 0.00 – 13.30 was set for mild deprivation, 13.31 – 26.6 for moderate deprivation and 26.61 – 40.00 for severe sleep deprivation. For stress, a mean range of 0.00 – 70.00 was set for mild stress, 70.01 – 140.00 for moderate stress and 140.01 – 210.00 for severe stress. Burnout was viewed in terms of Emotional Exhaustion, Cynicism, and Academic Efficacy. High scores on Emotional Exhaustion, Cynicism, and low scores on Academic Efficacy are indicative of burnout. Simple Linear Regression analysis was used to test the hypotheses at a 0.05 level of significance. The Statistical Package for Social Sciences (SPSS) was used in coding and analysing the data to avoid any human errors imminent in manual analysis.

Results and Discussion

Mean Analysis of the Variables

Table 1: Mean Analysis of the Variables

Variable	Mean	Standard Deviation
CGPA	2.580	0.886
Sleep Hours	2.270(4 – 6 hrs)	1.080
Sleep Deprivation	22.705	7.704
Mild	9.158	
Moderate	24.325	
Severe	34.632	
Stress	105.156	10.167
Mild	42.836	
Moderate	113.991	
Severe	158.641	
Burnout	65.000	7.036
Emotional Exhaustion	25.059	4.156
Cynicism	22.028	3.504
Academic Efficacy	7.927	4.450

n=384

Results available in Table 1 indicate that students had an average sleep duration of 4 – 6 hours per night. The average sleep deprivation score was 22.71 which indicates that the majority of the students have moderate sleep deprivation. The results of the study also revealed that the students had a mean stress score of 105.16. This indicates that the stress level among the students is generally moderate. The study revealed that students had an average burnout score of 35.00. The three subscales of burnout, emotional exhaustion, cynicism and academic efficacy all had mean scores of 15.06, 12.03 and 7.93 respectively. Since there are high scores of emotional exhaustion (15.06) and cynicism (12.03) and low scores of academic efficacy (7.93), this indicates that there is a high level of burnout among the students.

Sleep Deprivation and Academic Performance

Table 2: Regression Results for the Effect of Sleep Deprivation on Academic Performance

Variable	N	Mean	SD	R^2	F	β	t	P
Constant				0.215	104.402	0. 463	10.218	.004
Sleep Deprivation								
Mild	81	9.158				0.410	8.784	.101
Moderate	181	24.325				0.528	12.153	.022
Severe	122	34.632				0.467	10.309	.001
Total	384	22.705						

$R^2 = .215$, $F = 104.402$, $\beta = .463$, $p < .05$

Overall, sleep deprivation has a significant effect on students' academic performance [$R^2 = .215$, $F = 104.402$, $\beta = .463$, $p < .05$] (Table 2). This means that sleep deprivation contributes 21.5% of changes in students' academic performance. Since $P<0.05$, it, therefore, implies that sleep deprivation has a significant effect on the academic performance of undergraduate students of Benue State University. Since ($\beta = .463$) is positive, this means that sleep deprivation has a positive effect on students' academic performance. Students with higher sleep deprivation perform better academically than students with lower scores of sleep deprivation. The results of the regression analysis show that out of the three levels of sleep deprivation, the effect of moderate and severe sleep deprivation were significant ($\beta = 0.528$, $p= 0.022$) and ($\beta = 467$, $p=0.001$) respectively. The effect of mild sleep deprivation on academic performance was not statistically significant ($\beta = 0.410$, $p = 0.101$).

Stress and Academic Performance

Table 3: Regression Results for the Effect of Stress on Academic Performance

Variable	N	Mean	SD	R^2	F	β	t	P
Constant				0. 185	7.083	-0. 430	-2.661	.008
Stress								
Mild	75	42.836				0.241	1.461	0.000
Moderate	161	113.991				-0.484	-2.942	0.002
Severe	148	158.641				-0.493	-2.954	0.000
Total	384	105.156						

$R = .430$, $R^2 = .185$, $F = 7.083$, $\beta = -.430$, $p < .05$.

Overall, stress had a significant effect on students' academic performance [$R^2 = .185$, $F = 7.083$, $\beta = -.430$, $p < .05$] (Table 3). This means that stress contributes 18.5% of changes in students' academic performance. Since $P< 0.05$, it, therefore, implies that sleep deprivation has a significant effect on the academic performance of undergraduate students of Benue State University. Since ($\beta = -.430$) is negative, this means that sleep deprivation has a negative effect on students' academic performance. Students with higher stress levels perform poorly academically than students with lower stress levels. The results also revealed that mild stress had a positive effect on students' academic performance ($\beta =$

0.241, p<0.05). However, moderate (β = -0.484, p<0.05) and severe stress (β = -0.493, p<0.05) levels had negative effects on students' academic performance.

Burnout and Academic Performance

Table 4: Regression Results for the Effect of Burnout on Academic Performance

Variable	N	Mean	SD	R^2	F	β	t	P
Constant				0. 123	4.741	-0. 351	-2.177	.0300
Burnout								
Emotional Exhaustion		15.06				-0.552	-1.073	0.000
Cynicism		12.03				-0.283	-1.546	0.000
Academic Efficacy		7.93				-0.105	-2.058	0.040
Total		35.00						

$R = .351$, $R^2 = .123$, $F = 4.741$, $\beta = -.351$, $P < .05$.

Results available also show that burnout has a significant effect on students' academic performance [$R^2 = .123$, $F = 4.741$, $\beta = -.351$, $P < .05$] (Table 4). This means that burnout contributes 12.3% of changes in students' academic performance. Since P<0.05, it, therefore, implies that sleep deprivation has a significant effect on the academic performance of undergraduate students of Benue State University. Since (β = -.351) is negative, this means that burnout has a negative effect on students' academic performance. Students with higher burnout perform poorly academically than students with lower burnout.

Discussion

This section presents the discussion of the findings. The first finding of the study revealed that sleep deprivation has a significant effect on students' academic performance. Students with higher sleep deprivation perform better academically than students with lower scores of sleep deprivation. This could be because students deprive themselves of sleep to study at night especially during tests and examinations. Students may also deprive themselves of sleep to do assignments and homework as part of their course work. This gives them higher scores in tests and examinations and consequently, a higher academic performance. This finding is in line with that of Ella, Lukpata and Bassey (2019) who carried out a study titled sleep deprivation and academic performance of nursing students in a tertiary institution in Cross River State, Nigeria. They found a significant positive relationship between sleep deprivation and academic performance of nursing students (r = 0.382; p = 0.00). Students who deprived themselves of sleep by sleeping for 1–3 hours a night, especially during examination had higher examination scores than those that sleep for 4–6 hours and 7–9 hours respectively; implying that the more a student deprived his or herself of sleep to read, the better the academic performance. However, the findings disagree with that of Kim (2019) who investigated the effects of sleep deprivation on the academic performance of college students in North Texas and found that as sleep time increased, there was a general decrease in daytime sleepiness and better sleep quality, showing that there is a correlation between total sleep time, drowsiness during the day, and sleep quality. The results suggest that people who get more sleep per night tended to have a higher GPA, and thus, performed better academically. Hampton (2005) also disagrees with this finding when he investigated the impact of the lack of sleep on academic performance in college students at Rowan University in southern New Jersey. The findings of the study revealed that the more sleep that the student receives, the higher their GPA will be. The difference in

the findings between the studies from Nigeria and the other studies could be due to differences in the population characteristics. Given the social, economic, political and academic environment differences between these populations, it is expected that sleep deprivation would act differently on their academic performance.

The second finding of the study revealed that stress has a significant effect on students' academic performance. This shows that higher levels of stress result in poor academic performance. This could be because students today experience high levels of stress in many areas of life. Study schedules, especially in Nigerian universities, are very challenging. The act of combining a busy life along with academics is stressful. Undergraduate students are prone to episodic stress. This happens when exams are around the corner, students experience a lack of concentration. Stress in college students can affect their ability to concentrate and this has a negative effect on their academic performance. This finding is in congruence with that of Oketch-Oboth (2018) who investigated the relationship between stress level, academic performance and psychosocial adjustment among University of Nairobi students. The study found that students who reported experiencing moderate to high-stress levels scored lower grades than those who had low-stress levels. Ogbogu (2017) also investigated the impact of academic stress on academic performance among university students of Enugu State University of Science and Technology Enugu Nigeria. The study revealed that stress reduces students work rate, reduces the ability to learn in class, and causes a lack of concentration in class. This in turn leads to producing poor quality work and reduces academic performance. The finding also echoes that of Elias, Ping and Abdullah (2011) who carried out a study titled stress and academic achievement among undergraduate students in Universiti Putra Malaysia. The results of the study indicated a significant negative correlation between stress level and academic achievement.

The third finding of the study revealed that burnout has a significant effect on students' academic performance. Students who feel less exhausted perform better academically while students who are more exhausted have the least academic performance. When students are highly stressed from their academic work or other social and environmental factors, they tend to develop ineffective study strategies, worries about their scores, ineffective academic struggles among others. This gives them a feeling of exhaustion because of study demands, a cynical and detached attitude towards schoolwork, and a feeling of incompetence as a student. They lose confidence in their academic capabilities. If this happens often, the students finally may develop a cynical attitude towards school and stop trying to excel in their school life. This in turn negatively affects their academic performance. This finding is in agreement with that of Naderi, Bakhtiari, Momennasab, Abootalebi and Mirzaei (2018) who carried out a study titled prediction of academic burnout and academic performance based on the need for cognition and general self-efficacy. The study found a significant inverse correlation of academic burnout with the need for cognition, general self-efficacy, and academic performance. Duru, Duru and Balkis (2014) also carried out an analysis of relationships among burnout, academic achievement, and self-regulation. The results also confirmed that cynicism fully mediated the effect of emotional exhaustion on academic efficacy and reduce academic achievement. The results of the study also correlated with that of Rana (2016) who investigated the impact of student's burnout on academic performance/achievement. The study revealed a significant and negative relationship of emotional exhaustion and cynicism with student's performance.

Conclusion

The study investigated the effect of sleep deprivation, stress and burnout on the academic performance of undergraduate students of Benue State University, Makurdi. Based on the findings of the study, it was concluded that sleep deprivation has a significant positive effect on students' academic performance. Students deprive themselves of sleep to study at night especially during tests and

examinations, to do assignments and homework as part of their course work which gives them higher scores in tests and examinations and consequently, a higher academic performance. Stress and burnout both have negative effects on students' academic performance; the higher the level of stress and burnout, the poorer the academic performance.

Recommendations

Stakeholders in education should ensure to provide a good academic environment for the students and ensure that measures, such as appropriate course load, appropriate working hours, non-congested lecture halls, conducive lecture halls, proper lighting in lecture halls, and proper lecture schedule, to minimize academic stress are put in place.

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