



Sleep quality and academic performance of clinical students at the University of Calabar, Calabar, Cross River State, Nigeria

Ekpenyong NO^{1,2}, Isika AI^{1,2}, Mpama E^{1,2}, Asuquo BJ², Effiom, PE¹, Aniara, GD¹, Ekefre, CE¹, Eboh, E¹

¹University of Calabar, Calabar, Cross River State, Nigeria

²University of Calabar Teaching Hospital, Calabar, Cross River State, Nigeria.

Abstract

Context: Sleep is central to numerous human physiological functions, in particular learning capacity, memory consolidation, neurocognitive functions and mental health. However, the demands and expectations of a high-pressured occupation and course of learning such as medicine and medical studies may place increased strain on time, thereby resulting in varied coping mechanism including cutting back on sleep. This can affect the learning and academic performance of students. This study aims to assess the effect of sleep quality on perceived academic performance of clinical students in a tertiary institution in Nigeria.

Materials and Methods: This study was a descriptive cross-sectional study conducted among 392 clinical students of the University of Calabar, Cross River State, Nigeria selected through simple random sampling technique.

Data collection was by the use of a self-administered semi-structured questionnaire adapted from the standardized Pittsburgh Sleep Quality Index (PSQI). Chi square was used to test for associations between sleep quality and academic performance. Level of significance was set at $P < 0.05$

Results: Respondents had a mean sleep duration of 5.1 ± 1.2 hours, with a range of 2-8 hours, with 67.5% reporting poor sleep quality as measured by PSQI. There was a significant association between poor sleep quality and poor academic performance ($P < 0.006$)

Conclusion: Most respondents in this study had poor sleep quality which was significantly associated with poor academic performance. Findings from this study holds policy implication for decision makers, and school managers to seek ways to encourage better sleep quality amongst clinical students.

KEYWORDS – sleep quality, clinical students, Pittsburgh Sleep Quality Index, Calabar, Nigeria

Introduction

Sleep is a fundamental physiological human need required for normal functioning of the physical, mental and social well-being. Sleep occupies a third of human life^{1,2} with between 7 and 9 hours of sleep daily recommended for adults³. However, the demands and expectations of present-day modern society have placed increased demands on time; people are making up for those demands by cutting back on sleep.

Sleep is central to numerous human physiological functions, in particular learning capacity, memory consolidation, neurocognitive functions and mental health⁴ so, getting the right amount of uninterrupted

Corresponding Author:

Ekpenyong, N.O

University of Calabar, Cross River State, Nigeria

nnekon2015@gmail.com

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sleep at the right time of day is key to one's overall health Sleep quality is a multidimensional construct that reflects how well an individual sleeps, encompassing aspects such as sleep duration, sleep latency, efficiency, and continuity. The National Sleep Foundation defines good sleep quality as falling asleep within 20 minutes, staying asleep

throughout the night with minimal awakenings, and waking feeling rested and restored⁵. Good sleep is essential to good health as it strengthens cognitive capacities such as memory and learning, and reduces the likelihood of making mistakes.³ Good sleep quality is essential for optimal cognitive functioning, emotional regulation, and physical health.^{6,7} Conversely, poor sleep quality has been linked to impairment in various health domains such as mental health, cardio-vascular health, metabolic disorders, neurological disorders, cognitive functions, immune system and inflammation.⁸ Poor sleep quality can also lead to an increase in errors at work and decreased productivity.⁹

Medical students especially those in their clinical years are a subset of the population that are more liable to develop sleep disorders and sleep deprivation¹⁰ This is likely attributed to long intensive study, clinical tasks and high academic loads.¹¹ For students, particularly those in demanding academic programs, sleep quality plays a critical role in learning and performance. Adequate sleep enhances memory consolidation and problem-solving skills, while sleep deprivation impairs concentration, decision-making, and academic achievement. Clinical students face unique challenges, including long study hours, irregular schedules, and night shifts during clinical rotations, all of which can disrupt sleep patterns. Poor sleep in this group not only affects academic outcomes but also clinical judgment and patient safety^{12,13}, making sleep quality a vital area of concern. For clinical students, whose academic success and clinical competence directly influence patient care, maintaining adequate sleep is particularly important. However, the demanding nature of clinical training—characterized by long study hours, irregular schedules, and night shifts—often compromises sleep quality. Evidence suggests that poor sleep is associated with impaired concentration, reduced memory consolidation, and diminished academic performance.^{14,15} Sleep disorders affect students' quality of life, their general health and academic performance, consequently it is important to detect these disorders before the worsening of the problem.¹⁶

Globally the prevalence of poor sleep quality among medical students is 30%¹⁷ with studies showing variations based on location and the study

instrument used. In Nigeria, several studies reported poor sleep quality among medical students^{18,19} Neglected sleep problems can lead to decreased attention, poor academic performance, reduced general health and social relationships problems.²⁰ Poor sleep quality impairs academic performance and is associated with high risk of psychological morbidity and burnout. However, research on sleep quality among clinical students in Nigeria is scanty,²¹ and more especially its relationship academic performance.

Despite the growing recognition of sleep's importance, limited research has examined the relationship between sleep quality and academic performance specifically among clinical students in University of Calabar This gap in knowledge hinders the development of targeted interventions to support student well-being and optimize learning outcomes. Therefore, this study seeks to investigate the relationship between sleep quality and academic performance among clinical students, aiming to provide evidence that can inform educational policies and student support programs. This study seeks to examine the relationship between sleep quality and academic performance among clinical students in the University of Calabar.

Materials and Methods

Study location - University of Calabar, the site for this study is located in Calabar, Southern senatorial district of the state²² and also serves as the capital of Cross River State with an estimated population of 4.2million people²³ The University of Calabar has 3 colleges, 28 faculties and several departments with clinical medical students found only in the faculty of Clinical sciences.

The institution offers a rigorous medical training program that spans six years, first 3 years in the pre-clinical phase and the last the final three years devoted to intensive clinical rotations – clinical phase. During this period, students are required to balance classroom learning, laboratory work, and direct patient care responsibilities. Their schedules often include early morning lectures, extended study hours, and overnight clinical duties, all of which can disrupt normal sleep patterns.

Study participants - The participants in this study were drawn from medical students currently in their clinical year of study (Year 4,5,6). Most students

reside either in campus hostels or private accommodations near the teaching hospital, with some residing up to 8 miles farther away from the university. Academic performance is assessed through a combination of continuous coursework, practical examinations, and end-of-semester written tests. Clinical evaluations also contribute significantly to their academic standing, reflecting both theoretical knowledge and applied skills in patient care.

The student environment is characterized by high academic demands, frequent examinations, and exposure to emotionally taxing clinical experiences. These factors, combined with irregular schedules and night shifts, create a unique setting where sleep quality may be compromised. Understanding this context is essential, as poor sleep among clinical students may not only affect their academic outcomes but may also impair clinical judgment, thereby influencing patient safety.

Study design - This study was a cross-sectional comparative study conducted among clinical students (year 4, 5 and 6) of the University of Calabar, Cross River State, Nigeria.

Sample size - Using the Cochran formula, the minimum sample size calculated for this study was 392 participants.

Sampling technique - Stratified random sampling was used to recruit participants into study.

Eligibility criteria - All clinical students of the faculty of clinical sciences, University of Calabar were eligible as participants, however, students who were critically ill or did not give consent were excluded from the study.

Data collection - was carried out using a pre-tested, self-administered, semi-structured questionnaire adapted from the standardized Pittsburgh Sleep Quality Index (PSQI). The PSQI has good psychometric properties and has been validated among student populations in Nigeria²⁴. A set of 9 questions were asked each having a score of 0-3 and a total of 27. A total score of 5 and above was interpreted as poor sleep and below 5 as good sleep.

Academic performance was subjectively assessed by asking participants about their grades for the last session prior to the study period. In the University studied, clinical students' scores are graded as distinction (70% and above), pass (50% - 69.9%) or fail (<50%). Participants with distinctions were

classified as being very good, pass as being good, and those with fail as being poor.

Bivariate analysis was carried out using Chi-square to test for associations between Sleep quality (Independent variable) and academic performance (Dependent variable). P value was set at 5%. Ethical approval for the conduct of the study was obtained from the Research and Ethics Committee, University of Calabar Teaching Hospital. An informed written consent was attached to the first page of the questionnaire and signed by every participant of the study. Confidentiality was maintained throughout the study.

Results

A total of 392 questionnaires were administered among the clinical students and 373 were returned giving a response rate of 95.1%.

Table 1 shows that the overall mean age of respondents in this study was 24.3 ± 4.4 years, with more of the respondents (217, 58.2%) within the age range of 18-24 years. The respondents were mostly females (221, 52.9%), Christians (354, 96.7%), single (359, 96.2%) and stayed in the hostel (227, 60.9%).

Table 1: Socio-demographic characteristics of Clinical students in University of Calabar

Variable	Frequency (N=373)	Percentage (%)
Age (Years)		
<18	0	
18-24	217	58.2
25-31	139	37.3
32-38		13
39-45	2	0.5
>45	2	0.5
Mean $\pm$ standard deviation	24.3 ± 4.4	
Sex		
Male	152	40.8
Female	221	59.2
Tribe		
Efik	50	13.4
Ekoi	19	5.1
Annang	22	5.9
Ibibio	54	14.5
Others (Igbo, Yoruba etc)	228	61.1
Religion		
Christianity	354	96.8
Islam	2	0.5
Traditional worshippers	0	0
Others	10	2.7
Marital Status		
Single	359	96.2
Married	13	3.5
Separated	1	0.3
Residence		
Hostel	227	60.9
Off-Campus	146	39.1

Average Sleep Duration among Clinical Students

Fig 1 shows that the students reported sleep duration ranging from 2-8 hours with a mean sleep duration of 5.1 ± 1.2 hours and a greater proportion, 112 (30.1%) students, reporting 5 hours of sleep per night, this was followed by 107 (28.7%) students who sleep for 6 hours per night. Also, 112 (30.1%) students reported sleeping for ≤ 4 hours per night and only 42 (11.2%) sleep for the recommended 7-8 hours per night.

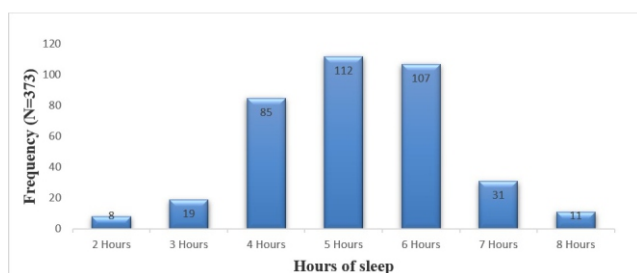


Figure 1: Sleep pattern of clinical students at University of Calabar

Assessment of sleep quality of Clinical Students

Sleep quality was assessed using the Pittsburgh Sleep Quality Index. The range of the PSQI score of our respondents was 1-17 with a mean of 7.2 ± 3.1 . The total PSQI scores of the clinical students at the University of Calabar are seen in Table 2 below.

A global score of ≤ 5 indicative of good sleep quality was seen in 122 (32.5%) of the clinical students and a score of > 5 indicative of poor sleep quality was seen in 251 (67.5%) of the clinical students. This is represented in Figure 2 below.

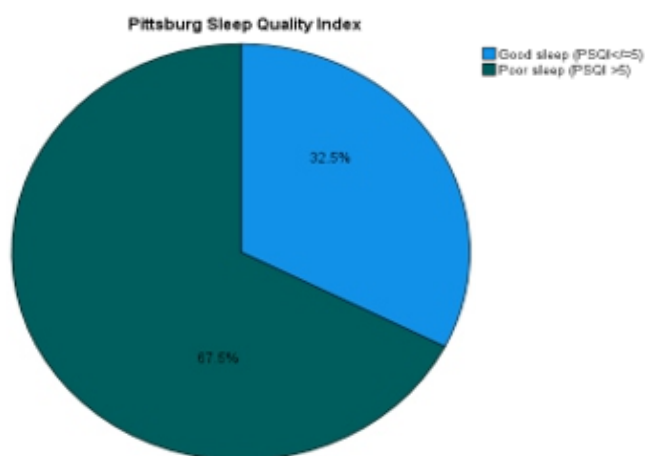


Figure 2: Sleep Quality of Clinical Students of the University of Calabar

Association between sleep quality and self-reported academic performance

Table 2 shows the relationship between sleep quality and academic performance (P-value = 0.006)

Table 2: Association between sleep quality (Using the global PSQI score) and Academic performance of Clinical students of University of Calabar

Variable	Academic performance		Chi-square	P-value
	Good	Poor		
Sleep quality				
Good sleep quality	68(75.6%)	22(24.4%)	12.427	0.006
Poor sleep quality	114(55.3%)	92(44.7%)		

Discussion

This study was carried out to assess the sleep quality and its relationship with the academic performance of clinical student of the University of Calabar, Cross River, Nigeria. Socio-demographic characteristics of respondents in this study showed the overall mean age of respondents in this study was 24.3 ± 4.4 years, with more of the respondents being Christians, single and stayed in the university hostel. This is comparable with studies done in the same study population and location^{25,26}.

In this study, the mean sleep duration was 5.1 ± 1.2 hours which was comparable to other studies²⁷. Only 3% of our respondents reported sleeping for the recommended adult sleep duration of 7-8 hours daily, which is far below average when compared to a study in Malaysia where 51.2% of its clinical students admitted to sleeping for the recommended 7 hours and more²⁸.

More than six out of ten of Clinical students, (67.5%), from this study, were revealed to have poor sleep quality and this was comparable to a studies done in India and Saudi Arabia revealed a similar pattern of poor sleep quality (64.2%)²⁹ and (73.7%)³⁰ respectively. A stressful learning environment and academic workload might be responsible for this poor sleep quality. In contrast, a study done in a private university, in Nigeria showed that 32.5% of students in their sixth year of study had poor sleep quality,²¹ this may be due to an improved learning environment and a good standard of living in the private school. Also, a study in Osun state revealed a poor sleep quality of 49.5%³¹, which is lower than the present study.

The need for good academic performance for

progress in medical school can't be overemphasized. Sleep is a very important physiologic process for proper cognitive function and academic performance. Our study revealed a significant association between poor sleep quality and poor academic performance, as 44.7% of our respondents with poor sleep quality had self-reported poor academic performance as against 24.4% of students with good sleep quality ($p=0.006$). This is comparable to a Ghana study, where it was observed that 33.7% of students with poor sleep quality had poor academic performance³².

This study revealed that clinical students had a mean sleep duration of only 5.1 ± 1.2 hours per night, far below the recommended 7–9 hours. Furthermore, 67.5% of the participants were classified as having poor sleep quality. Importantly, a statistically significant relationship was found between poor sleep quality and poor academic performance. These findings underscore the critical role of adequate and restorative sleep in supporting concentration, memory consolidation, and overall academic success. Clinical students and their faculty should comprehend the negative effects of sleep deprivation on student academics and institute in place adequate measures as to improve the sleep quality of students. Moreso, it is therefore imperative to conduct additional research to examine potential causes of poor sleep among this study population.

Conflicts of interests- The authors declared they have no conflicts of interest.

Authors' contributions – NOE conceived, designed, and implemented the study. NOE and AI guided and supervised the design and implementation. PEE, GDA, CEE, and EE carried out the data collection. NOE, AII, ME and BJA analysed the data. PEE, GDA, CEE, and EE wrote the first draft of the manuscript under the guidance of NOE and ME. All authors reviewed and edited the manuscript and approved the final version of the manuscript.

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