West African Journal of Educational Sciences and Practice (WAJESP)
ISSN: 2790-9506 (Print) | 2790-9514 (Online)
Vol. 2, No. 2, 2023
Website: https://journals.jozacpublishers.com/wajesp/

The perceived effect of sleep pattern on the academic achievement among University of Ilorin nursing students, Nigeria

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https://doi.org/10.57040/wajesp.v2i2.314
Received: February 10, 2023 | **Accepted:** April 21, 2023 | **Published:** July 26, 2023

ABSTRACT

This study used correlation-descriptive design to examine perceived effect of sleep pattern on the academic achievement among University of Ilorin Nursing students, Nigeria. A total number of 255 nursing students was selected using proportionate sampling technique from 200 to 500 levels. The instrument for data collection was a researchers-designed questionnaire. The validity of the instrument was ascertained by study objectives and the reliability was determined by test retest involving 20% equivalent of the total students in a different institution with similar characteristics prior to the main study, given 0.78 reliability index. The questionnaire was administered and retrieved from 210 students and analyzed using SPSS computer software version 22. Descriptive statistics was used to analyze research questions while inferential statistics was used to test hypothesis. Results were presented using descriptive table of frequency and percentages. The study revealed 97.2% of nursing students affirmed inadequate sleep has negative effect on their academic achievement, and 91.4% agreed that a person must sleep at least 6 hours for healthy living. This study further identified academic stress (53.3%) and poor accommodation (56.2%) as factors influencing sleep pattern among nursing students in University of Ilorin. This study concluded that there is significant relationship between nursing student sleep pattern and academic achievement with p-value=0.001 < 0.05. Based on conclusion, the authors recommended that students must cultivate the habit of having sufficient daily sleep, fixed bed time and waking time to improve their sleep pattern which will further improve their academic achievements and general physical and psychological wellbeing.

Keywords: Academic achievements, Knowledge about Sleep Pattern, Nursing students, Sleep Quality

1. STUDY BACKGROUD

Sleep is one of the basic physiological needs of human life that play a crucial and significant role in an individual physical, intellectual and emotional wellbeing. A Sleep quality is the measurement of how well an individual fall asleep, which is either for the purpose of refreshing or for restorative. Sleep quality differs from sleep satisfaction which is a subjective judgment of how individual feel about the sleep he/she had. Sleep quality is more complicated to measure than sleep quantity, but it is not entirely subjective. However sleep quality can be measured base on assessment of four items which are; Sleep latency which measure how long it takes one to fall asleep within 30 minutes or less after been on bed which is suggestive of good sleep, another item is Sleep waking which measures how often one wakes up during the night which disrupt one's sleep cycle and reduce your sleep quality and Wakefulness refers to how many minutes one spends awake during the night after one goes to sleep, individual with 20 minutes or less of wakefulness during the night had a good sleep quality. While Sleep efficiency is the amount of time individual spent when actually sleeping while in bed.

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1.1. Literature review

This measurement is normally 85 percent or more for optimal health benefits (Nelson et al., 2022). All these four items influence the quality of one's sleep which also consequently affect mental, physical and intellectual wellbeing of an individual especially among the adolescents. However, sleep pattern is referred to as sleep-wake pattern which is a biological rhythm that guides the body as to when it should sleep and when it should wake. It is one of the body's circadian rhythms and typically follows a 24-hour cycle, controlling the body's schedule for sleeping and waking (Workplace testing, 2020). Berhanu et al. (2018) posited that Sleep pattern is a part of the system called the sleep wake cycle which is observant of 8 hrs of night sleep and 16 hrs of day vigilance controlled by a combination of two internal effects called homeostasis and circadian rhythms. Sleep is also viewed as a critical natural phenomenon that involves interplay between the human physiological and biochemical processes, with environmental, social and cultural aspects that are significant to human existence particularly during the stages of adolescent and young adults (Matricciani et al., 2018). Zahra, et al. (2022) in their study opined that quality of inadequate sleep and stress level can affect the health, capacity of learning, and academic performance of the students. Nursing students in universities often have their sleep distorted due to daily routine activities on campuses. Although general sleep pattern may be affected by students academic and work schedules, clinical rotation and irregular sleep pattern is particularly evidenced among university nursing student population while striving to achieve academic excellence. However, in recent times Dijk and Landolt (2019) observed that persistent lack of sleep is a common situation among adolescents and young university nursing students and they related poor sleep pattern to poor health and clinical outcomes.

There are several reasons why nursing students may have sleep quality problems, but prominent among them is behavioural habits which seems to have impact on the academic performance of students, but rigorous coursework for many university nursing students often leads to a decreased amount of sleep qualities (Mesquita & Reimão, 2017). Nursing students, in particular, have intense academic demand that often lead to students forgoing the needed amount of sleep in order to stay awake and up to date on coursework this consequently undermine the need to take good care of themselves, which negatively affect their academic success as well as patient care (Mesquita & Reimão, 2017). While Maheshwari (2019) and Lawson et al. (2019) observed further that lack of sleep which is common among the nursing students often affects their mental functioning such as short attention span, poor retention of subject learnt, and poor academic achievement respectively.

1.2. Statement of the problem

Poor sleep pattern complaints are increasingly prevalent among University of Ilorin nursing students, the complaints were most commonly reported when the authors interacted with the nursing students during the lecture and clinical sessions. Their complaints centered on difficulty in falling asleep, inability in maintaining regular sleep, early morning awakenings and poor sleep pattern respectively. It is against this background that the authors attempted to investigate into whether sleep pattern will affect the academic achievement of undergraduate nursing students of University of Ilorin.

1.3. The study research questions answered

1. What is the knowledge level of the undergraduate nursing students about sleep quality in university of Ilorin?
2. How many hours of sleep do the undergraduate of department of nursing science, university of Ilorin, observe per day?
3. What are the determinants of sleep pattern among undergraduate of department of nursing science, university of Ilorin?
4. Will undergraduate nursing students of department of nursing science sleep pattern affect their academic achievement in university of Ilorin?

1.4. Research hypotheses

1. There is no significant relationship between knowledge of perceived sleep pattern and sleep quality among undergraduate of department of nursing science, University of Ilorin.
2. There is no significant relationship between perceived sleep pattern and academic achievement among the undergraduate of nursing department, University of Ilorin

2. RESEARCH METHOD

Research design: This study is a correlation descriptive research, designed to examine the perceived effect of sleep pattern on the academic achievement of nursing students, department of nursing sciences, university of Ilorin. The total population for this study was 255 undergraduate nursing students who were in their 200,300, 400 and 500 levels respectively. A study population of 210 was sampled using proportionate sampling technique. That is, 70 students were sampled from 200 level, 62 from 300 level, 37 from 400 level and 41 were from 500 level given a sampled population of 210 students respectively.

Data collection procedure: Researchers-designed instrument used for data collection was validated based on the face

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and content related to research questions and the reliability was determined by test retest of instrument which involves the administration of questionnaires to 20% of nursing students in a different institution with similar characteristics prior to the main study.

3. DATA ANALYSIS

The collected data was analyzed using Cronbach's reliability index of 0.78 which shows that the instrument was reliable. Ethical approval was obtained from the research and ethical committee of the College of health sciences while informed consent was sought from the nursing students before administering the questionnaires. The questionnaire was administered to 225 undergraduate nursing students at each level after their lectures and collected immediately upon completion through the help of trained research assistants to ensure a complete retrieval from the nursing students. The data for analysis was based on 210 questionnaires correctly completed by the respondents and was sorted and imputed into the computer software for analysis. Descriptive and inferential statistics was used to analyzed data collected using statistical product service solution (SPSS) version 22. Results were presented on descriptive statistics table of frequency/ percentage for research questions and inferential statistics of Chi-square was used for testing hypotheses respectively.

4. FINDINGS AND DISCUSSION

4.1. Results

The result of this study based on analyzed data shows that majority of the nursing students (94.8%) were females and 78.6% were from Yoruba ethnic group being the predominantly speaking language in the study setting. The nursing students mean age was 22 years with 54.3% of them living on campus and more than half of the nursing students (57.6%) had a current GPA of 3.5-4.49, higher than others.

Table 1: Knowledge about Sleep Quality among Nursing Students (n-210)

Variable	Strongly agree Freq/%	Agreed Freq/%	Undecided Freq/%	Disagree Freq/%	Total
Lack of sleep has negative effect on academic performance	90(42.9)	114(54.3)	4(1.9)	2(1.0)	210(100)
A healthy person is required to sleep at least 6hours at night	71(33.8)	121(57.6)	8(3.8)	10(4.8)	210(100)
Long sleep hour refreshing Individual	58(27.6)	34(63.8)	14(6.7)	4(1.9)	210(100)
Inadequate sleep has adverse effect on the health	83(39.5)	117(55.7)	6(2.9)	4(1.9)	210(100)

Source: Study result (2023)

Table 1 above revealed that majority (97.2%) of nursing students claimed that lack of sleep has negative effect on their academic performance, as 91.4% agreed that an healthy person is required to sleep at least 6 hours at night and equal number were of the opinion that long sleep hours is refreshing. But consequently inadequate sleep has adverse effect on the health of an individual respectively.

Research Question 2: How many hours of sleep do the undergraduate nursing students of department of nursing science, university of Ilorin, observe per day?

Table 2: Nursing students Sleep Pattern (n-210)

Variable	Responses	Frequency	Percentage
How many hours of sleep do you have in a day before examination?	1-2 hrs	52	24.8
	3-4 hrs	6	2.9
	5-6 hrs	133	63.3
	7-8 hrs	19	9.0
	Total	210	100.0
How many hours of sleep do you have in a day during examination?	1-2 hrs	69	32.9
	3-4 hrs	116	55.2
	5-6 hrs	9	4.3

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	7-8 hrs	16	7.6
	Total	210	100.0
What are your sleeping time/ hours during weekend or vacation?	In the morning: 12-3am/4-6am	65	31.0
	In the afternoon: 2-4 pm	77	36.7
	In the evening:5-7pm/8-10pm	29	13.8
	At night:10pm–12 am	39	18.6
	Total	210	100.0

Source: study result (2023)

Table 2 shows 63.3% of nursing students slept for 5-6 hours in a day before examination, as 55.2% had sleep 3-4hrs per day during the exams and only 36.7% slept for 2 hours at night on weekends during examination. These implies that most students do not sleep adequately enough during their examination periods.

Research Question 3: What are the determinants of sleep pattern among undergraduate of department of nursing science, university of Ilorin?

Table 3: Determinants of sleep pattern of student nurses

The following conditions do affect Response your sleep quality?	**Strongly agree. Freq/%**	**Agree Freq/%**	**Undecided Freq/%**	**Disagree Freq/%**	**Total**
Stress due to continuous reading	82(39.0)	112(53.3)	11(5.2)	5(2.4)	210(100)
Daily physical activity	77(36.7)	103(49.0)	18 (8.6)	12(5.8)	210(100)
Used of academic performance enhance drugs	65(31.0)	88(41.9)	24(11.4)	33(15.8)	210(100)
Poor accommodation	59(28.1)	118(56.2)	14 **(**6.7**)**	19(9.1)	210(100)
Fear of Failure	60(28.6)	116(55.2)	24(11.4)	10(4.7)	210(100)

Source: Study result (2023)

Table 3 shows factors that influenced sleep quality among nursing students, principal among the factors are stress (92.3%) due to continuous reading; daily physical activity (85.7%) and use of academic performance enhance drugs (72.9%), while equal number (73.6%) of nursing students identified use of illicit substances.

Research Question 4: Would sleep pattern affect academic performances of undergraduate nursing students of department of nursing science, university of Ilorin?

Table 4: Effect of Sleep Pattern on Academic Performance

Variable	**Responses**	**Frequency**	**Percentage**
Have you attended examination without getting enough sleep?	Yes	140	66.7
	No	70	33.3
	Total	210	100.0
If yes, how was your performances in the last session examination?	Very good	53	37.9
	Good	80	57.1
	Poor	7	5.0
	Total	140	100.0
Did inadequate sleep affect your academic performance?	Very much	72	34.3
	Averagely	106	50.5
	Not much	32	15.2
	Total	210	100.0
What is your cumulative GPA?	3.68-4.00	138	65.7
	3.01- 3.33	2	1.0
	2.68-3.00	70	33.3
	Total	210	100.0

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	>10	6	2.9
	<10	85	40.5
	10	119	56.7
How many credits (total number of courses) di.d you take last semester?	22	2	1.0
	32	3	1.4
	Total	210	100.0
	3.68-4.00	136	64.8
What was your GPA last semester?	2.68-3.00	74	35.2
	Total	210	100.0

Source: Study result (2023)

Table 4 above shows 66.7% of nursing students attended previous examination without getting enough sleep out of which only 37.9% claimed to have performed very well in examination. About 89% agreed that inadequate sleep affect their academic performance. Majority (64.8%) of nursing students had 3.68-4.00 GPA last semester, while 35.2% had 2.68-3.00 GPA. Majority of nursing students (85.3%) think they will perform very well in their subsequent examinations if they have adequate sleep.

4.2. Hypotheses

H_{01}: There is no significant relationship between knowledge of perceived sleep pattern and sleep quality among undergraduate of department of nursing science, University of Ilorin.

Table 5: Relationship between knowledge about sleep pattern and sleep quality among the undergraduate nursing students of nursing department (n=210)

Hours of sleep by nursing students		**Knowledge level of nursing students**		**Total**	**Chi-Square X^2**	**Df**	**P-Value**	**Remark**
		High **(n-185)**	Low **(n-25)**					
	1-2 hrs	47	5	52	39.786[a]	3	0.014	Significant
Number of hour sleep in	3-4 hrs	6	0	6				H_o rejected
a day before examination	5-6 hrs	120	13	133				
	7-8 hrs	11	8	19				
Total		185	25	210				
	1-2 hrs	64	5	69	30.534[a]	3	0.022	Significant
Number of hour sleep in	3-4 hrs	113	3	116				H_o rejected
a day during examination	5-6 hrs	4	5	9				
	7-8 hrs	4	12	16				
Total		185	25	210				

Source: Study result (2023)

Table 5 shows that significant relationship exist between knowledge about sleep quality and sleep pattern among the undergraduate nursing students of nursing department university of Ilorin with p-values < 0.05, this implies that nursing students who slept more hours before examination and sleep lesser hour during examination had good knowledge about quality of sleep compared to those whose sleep pattern does not change.

H_{02}: There is no significant relationship between perceived sleep pattern and academic achievement among the undergraduate of nursing department, University of Ilorin

Table 6: Statistical illustration of relationship between sleep pattern and academic achievement among the undergraduate nursing students of nursing department (n=210)

Variable	**Responses**	**Academic performance**			**Total**	**Chi-Square**	**X^2**	**Df**	**P-Value**	**Remark**
		1.5-2.49	2.5-3.49	3.5-4.49						
Number of hour sleep in	1-2 hrs	1	10	58	69	41.534[a]		3	0.001	Significant

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a day during examination	3-4 hrs	1	54	61	116	H_o rejected
	5-6 hrs	2	5	2	9	
	7-8 hrs	3	13	0	16	
Total		**7**	**82**	**121**	**210**	

Source: Study result (2023)

Table 6 above revealed that there is a significant relationship between sleep quality and academic performance among the undergraduate nursing students of nursing department, university of Ilorin with p-value=0.001 < 0.05, there by rejecting the null hypothesis. This means that number of hours student sleep in a day during examination affect their academic performance.

5. DISCUSSION

This study was conducted among 225 students of the department of nursing sciences, university of Ilorin with response rate of 93% based on 210 properly filled questionnaires retrieved and subsequently analyzed. This study revealed that majority of students was females which explained the female dominated nature of nursing profession. Most (73%) nursing students were Yoruba speaking tribe probably due to the location of the research setting which is in Ilorin, Kwara State. The students mean age in this study was 22 years with little above average (54.3%) that stays on campus against 45.7% who lives off campus. This finding is similar to Bhagwant in 2020 study on the relationship between quality of sleep and academic performance among nursing students in a college of nursing.

5.1. The Nursing students Knowledge about Sleep pattern

In this study, majority (97.2%) of nursing students have adequate knowledge about effect of sleep pattern on academic achievement and they claimed that inadequate sleep have negative effect on academic achievement, and 91.4% opinioned that an healthy person is required to sleep at least 6 hours at night to refreshed his/her health respectively. Consequently, 95.2% of nursing students in this study affirmed that inadequate sleep would have adverse effect on the health of the individual. This present findings implied that majority of nursing students have adequate knowledge about effect of sleep quality on the general health and well-being of individuals and agreed that inadequate or irregular sleep pattern will affect the mental, physical well-being and academic achievement of students in schools. This current finding corroborate with findings from Okano et al. (2019) whose study revealed that adequate sleep, longer sleep length, and greater sleep consistency was associated with better grades. The study by Pietrangelo and Watson (2017) also agreed with findings of this present study, that sleep is an important physiological process that is essential for human survival and most importantly is the functions adequate sleep that enhances optimal cognitive functioning.

5.2. The Nursing students Sleeping Pattern

This study found that 63.3% of nursing students sleeping pattern varied from 5-6 hours in a day before examination and 2.9% slept for 3-4 hours respectively, this variation in sleeping pattern in this present study might be due to nursing students' engagement on academic preparation for the continuous assessment and subsequent examination respectively. The students sleep pattern in this study is similar to study conducted by Alhusseini et al. (2022) at Alfaisal University, S. Arabia which revealed that about 76% of students suffered poor sleep quality (PSQI > 5). Quite proportion (55.2%) of nursing students in this present study slept for 3-4 hours in a day during examination or even less (2-3hours) as against (4.3%) who slept for 5-6 hours, this was a reflection of nursing students attempt to cover their curricula content taught for the purpose of passing their examinations against only 31 % who had 6 hours sleep from 12am-6am and 37% observed afternoon 2 hours naps during the holidays. These implies that most student do skip hours of sleep even more during the examination periods than periods of lectures and examination respectively.

This present study is contrary to findings of Adeyemi and Sulaiman, (2021) study which posited that most Library and information science undergraduates students (85.6%) had good sleep quality during the examination period compared to when not having examination (14.1%), which shows that there was a statistically significant effect of levels of study on students' sleep duration (p-value = 0.02. Furthermore, Mesquita and Reimão (2017) study corroborate this study findings that nursing students, rigorous coursework often leads to a decreased amount of sleep and that nursing students, in particular, have intense academic demands. They further noted that the student extra academic demands often lead to nursing students forgoing the needed amount of sleep in order to stay up to date on coursework which in this present study opposed the recommendation of National Sleep Foundation (2015) of new sleep duration 7-9 hours recommended as the normal duration for sleep in a young adult which implies that continual sleep inadequate will definitely affect negatively the health of an individual.

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5.3. Determinants of nursing students sleep pattern

This study revealed various factors responsible for nursing students poor sleep pattern, principal among them was stress due to continuous reading (53.3%), 49.0% of them affirmed that daily physical activity affects their sleep quality, while some (56.2%) nursing students opined that use of academic enhance performance drugs, poor accommodation and fear of failing the examination affects their sleep quality in University of Ilorin respectively. Most (66.7%) nursing students in this study observed that having attended previous examination without getting enough sleep was one of the factors responsible for their poor performances in the last examination. In this study, it implies that student nurses have been facing challenges of inadequate sleep during examinations but trying to cope with it for the purpose of passing examination at the expense of their health status. This present study finding supports Rostam et al. (2021), study that no significant difference exist between nursing students with high grades and those with low grades. However, there were moderate and sometimes severe sleep disturbances in both groups.

5.4. The effect of students nurses sleep pattern on the academic achievement

In this current study, proportion of 52% nursing students claimed that poor and inadequate sleep affect their academic performance, this assertion may probably be due to nursing students' adjustment to sleep inadequacy over time. Similar to this present study was study by Alhusseini, et al. (2022) which concluded that quality of sleep among medical students is poor, contrary to another study by Bhagwant et al. (2020) which revealed that students had good quality sleep and good academic performance hence, their study showed no significant relationship between quality of sleep and academic performance. In addition to the current finding, study by Tomás and Jose (2021) also concluded that about 1/3 of the nursing students in their study were identified as having bad sleep habits, and these was characterized by an evening chronotype and a short sleep pattern. A short sleep pattern, bad sleep habits, and age < 25 years, were independently found to be associated with a higher risk of poor academic performance respectively.

However, in this study even though most (65.7%) nursing students have cumulative GPA of 3.68-4.00 in the last session examination which constitute only1.0%, while 33.3% of nursing students have cumulative GPA of 2.68-3.00 after last examination, the student GPA result implied that nursing students have been coping with effect of inadequate sleep quality but some did fell sick shortly after each examination probably because of the stress and effect of their improper coping strategy to poor sleeping pattern. A little above average (54.3%) of nursing students had 10 credits course last semester, while larger proportion (64.8%) had 3.68-4.00 GPA last semester and 35.2% had 2.68-3.00 respectively, this mean that there was a slightly difference in nursing students cumulative GPA from the previous session examination result. This indicated that, the lesser the hour of sleep the lower their academic performance. This study finding agreed with Maheshwari et al. (2019) and Lawson et al. (2019) studies who observed that sleep inadequacy affects the students' attention span, memory, mood, and academic performance respectively.

6. IMPLICATION FOR NURSING AND HEALTH EDUCATION PRACTICE

1. This study on nursing student adequate knowledge about sleep quality, sleep pattern and factors predicting sleep quality as it affect nursing students academic performance, will give the school health nurse and health educators opportunity to encourage student nurses to adjust their academic programme especially on their study periods to accommodate enough sleeping time.
2. This study will also helpful to schools to adjust their academic programme to give nursing students opportunity to have adequate rest after a rigorous academic exercise and it will further increase nursing students knowledge of comprehension about the courses been taught.
3. This study will be useful to nurses and health educators in educating nursing students on the significance of adequate sleep to their academic achievement and their wellbeing.

7. RECOMMENDATIONS

Based on this study conclusion, authors suggested that;

1. University nursing students should be enlightened on the significance of adequate sleep to enhance their academic performance and achievement.
2. Nursing students should cultivate the habit of having sufficient daily sleep pattern for their general physical and psychological wellbeing.
3. University nursing students should be encouraged fix bed times and waking times, and to limit psychosocial and environmental pressure that may adversely affect their academic achievement.
4. University nursing students should be given appropriate sleep pattern orientation to help the nursing students identify the physical and psychological symptoms of stress as early as possible.
5. The schools and university management should develop a curriculum that take cognizance of student extracurricular active and create time for nursing students' relaxation.

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8. CONCLUSION

Most student nurses in this study could not sleep well especially during examination period because of their academic work load which subsequently affected their health as well as academic performance. This study base on the findings concludes that significant relationship exist between knowledge level about sleep pattern and sleep quality among the undergraduate nursing students of nursing department university of Ilorin with p-values < 0.05, which implies that nursing students who slept more hours before examination and sleep lesser hour during examination had good knowledge about quality of sleep compared to those whose sleep pattern does not change. Furthermore in this study showed a significant relationship between sleep pattern and academic achievement among the undergraduate of nursing department, university of Ilorin with p-value=0.001 < 0.05, respectively. This means that number of hours student sleep in a day during examination affect their academic performance.

Authors copy write

The author of this article All agreed that the submitted manuscript is original, not a duplicated manuscript, not under consideration in any journal or previously published, and not plagiarized. This manuscript submitted to WAJESP is not under review in any other journal at the time of submission.

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