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AN INVESTIGATION OF SMARTPHONE ADDICTION AND ITS PERCEIVED EFFECTS ON SLEEP-PATTERN AND ACADEMIC PERFORMANCE AMONG STUDENTS AT SCHOOL OF NURSING IN NORTH CENTRAL NIGERIA

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ABSTRACT

The study aimed at investigating Smartphone addiction, its perceived effect on sleep pattern and academic performance on student nurses in the School Complex, University of Ilorin Teaching Hospital. A descriptive cross-sectional study design was utilized for the study. The study deployed stratified and proportionate sampling method to select students from the three levels of students. The sample size was 121 with a proportion of 41, 33, and 47 for 100L, 200L and 300L students' nurses. A self-administered questionnaire developed by the researchers was used for data collection from the respondents and only 120 were valid for analysis, using SPSS Version 20. The findings revealed that 78% of the participants were highly addicted to their Smartphone's; only 5% were not addicted. However, nearly half of the students indicated that they feel excessively tired and sleepy in class and agreed that their sleep pattern is altered due to excessive Smartphone usage while almost half of the participants missed planned work due to Smartphone usage. Additionally, the study revealed that, there is a significant relationship between age and the level of addiction to Smartphone among students ($p< 0.04$). The study thus shows a high level of Smartphone addiction among the student nurses in the setting. It is therefore, recommended that interventions and awareness programs be created to address excessive Smartphone use and promote healthier sleep habits.

Keywords: Academic, Addiction, Performance, Sleep Pattern, Smartphone, Student-nurses

INTRODUCTION

Smartphones are ever-present electronic devices used by the general public, including students (Justice et al., 2019), with advanced features such as high-resolution touch screen displays, WiFi connectivity, Web browsing capabilities, and the ability to accept sophisticated applications (Noah, 2019). They aid in daily activities such as making calls, texting, sending and receiving emails, sending online job applications, video calling, and many other activities that the human mind can think of (Technorati 2019).Consequently, Smartphone sales and uses have skyrocketed due to exciting features such as accessing emails, biometrics, and social media platforms, among others. Smartphone have become an integral part of everyone's lives in this day and age (Masiu & Chukwuere, 2018). On a global scale, this new and exciting technology has become one of the most important required facilities in their everyday life of people (Noah, 2019; Fawareh and Jusoh, 2017).

Dixon, (2023); Lopez-Fernandez (2017) reported that average person spends approximately 6 hours and 54 minutes per day on the internet. This was consolidated by the 2020 statistics that average person checks their phone about 160 times daily, which equates to approximately once every 9 minutes (Kalal et al., 2023). In class, 49 percent of students use their Smartphone's for distraction. Consequently, 76.19% of lecturers find student Smartphone use in class to be distracting their lecture proceedings. Students who are absorbed in their Smartphone tend to be less aware of their surroundings, as their attention is focused on their devices (Kalal et al., 2023). Thus, the persistent usage which they find difficult to do away results in a phenomenon known as addiction.

The World Health Organization defines addiction as "dependence on something for the sake of relief, comfort, or stimulation, which frequently causes cravings when it is not present" (WHO, 2014).The two main types of addiction are substance addiction (e.g., drug or alcohol addiction) and behavioral addiction (e.g., mobile phone or internet addiction) (Ghosh et al., 2021). Hence, some of the users exhibit withdrawal symptoms, and Smartphone addiction especially late-night usage has been shown to impair sleep quality (Ghosh et al., 2021). Disrupted or insufficient sleep can worsen these effects, leading to concentration difficulties, memory impairment, and fatigue during the day (Seunghye, 2019). Sleep disruptions can cause daytime sleepiness, which is common among students (Seunghye 2019; Curcio et al., 2006). Students who frequently send text messages and check Facebook while working on assignments performed poorly in class. Thus, it has been established that high levels of Smartphone addiction have a negative impact on academic performance (Rathakrishnan et al., 2021).Smartphone dependence also alters sleep patterns, affecting students' learning, focus, memory, and decision-making abilities (Kheyri et al., 2019). University students require adequate, high-quality sleep for optimal academic performance. Students frequently ignore their sleep schedules, despite having a strong understanding of the importance of sleep and how it affects their academic performance (Rafidi 2019).

Sleep quality has a significant impact on cognitive ability and physical strength; the consequences of poor sleep quality include depression, impaired work performance, and a poor overall quality of life. (Kalal et al., 2023; Buysse et al., 2008). Students spend more time on their Smartphone's browsing, social media and gaming apps, resulting in excessive Smartphone use, time spent on the device other than for studying, and low academic achievement (Muhammad et al., 2019). It is on this background that the researcher sought to investigate the level of Smartphone addiction and its perceived effects on sleep pattern and academic performance among student nurses at School of Nursing, UITH, Ilorin,

Kwara State. Two hypotheses were setup to guide this study, namely;
Hypothesis I (H0) There is no significant relationship between gender and Smartphone usage on sleep pattern.
Hypothesis II (H0) There is no significant relationship between age and the level of Smartphone addition with academic performance.

MATERIALS AND METHODS

Design

A descriptive cross-sectional study design was utilized for the study investigate Smartphone addiction and its perceived effects on sleep-pattern and academic performance among students at School of nursing University of Ilorin Teaching Hospital.

Research Location

This study was conducted at the School of Nursing, University of Ilorin Teaching Hospital (UITH), an institution founded in 2012. The school is located within the UITH School Complex in Amilegbe, about two kilometers from the Post Office in Ilorin East Local Government Area, Kwara State, which lies in Nigeria's North Central geopolitical zone (Middle Belt). The institution has a total of 19 academic staff members across various departments and nursing specialties, along with 6 non-academic staff (Anyebe et al., 2022). It consists of three levels known as 100L, 200L, and 300L,

Study Population

The target population of the study comprises all the three level of basic nursing students. A total of 152 make up the target population. Inclusion criteria student nurses, who are present at the site of study, are willing to participate and who give their consent while the exclusion criteria include student nurses who are absent at the site of study and are unwilling to participate in the study.

Sampling size

Sample size was determined using TaroYamane (1967) formula=N/(1+N[e])2 Where;
N = proposed study population =sample size
e=0.05 (margin error)
n = 152/1+152(0.05)2n=152/1+152(0.0025)n =152/1+0.38
n=152/1.38n =110
Attrition10% of sample=11, Total=110 +11=121
Therefore, the sample size for this study is 121

Table 1: Proportional Table for Sample Size

S/N	Class	Calculation	Sample
	Year one	51/152×121	41
	Year two	42/152×121	33
	Year three	59/142×121	47
	Total		121

Sampling technique

The study deployed stratified random sampling method to recruit the representative participants of 121 drawn from 100L, 200L, and 300L students' nurses with a proportion of 41, 33, and 47 been allotted to three strata respectively.

Instrument for Data Collection

A self-structured questionnaire on smartphone addiction and its perceived effects on sleep pattern and academic performance among student nurses in School of Nursing UITH, Ilorin Kwara State were used. The questionnaire consists of four sections; sections A, B, C and D, with the four sections containing twenty-four (24) questions in total. Section A comprises of four items that elicit information on socio-demographic profile of the respondents. Section B comprises of six items that assessed the level of addiction to Smartphone among student nurses. Section C: comprises of seven items that elicit information on the perceived effects of Smartphone addiction on sleep pattern among student nurses. Section D comprises of seven items that elicit information on the perceived effects of Smartphone addiction on academic performance among student nurses.

Method of data collection

Data collection was done using self-administered questionnaires used to elicit responses from respondents based on the objectives of the study. The researcher walked into classrooms before and after lectures for the duration of one week to administer the questionnaire to basic student nurses at the School of Nursing, University of Ilorin Teaching Hospital. Adequate time was given to the participants to fill the questionnaire before collection. All questionnaire administered were returned and properly completed except one.

Method of data analysis

The data collected was checked for consistencies, filtered and arranged. Data was analyzed using the SPSS version 21. Descriptive statistics such as frequency counts, percentages mean, pie chart, and mean was used to summarize and present findings and inferential statistical analysis was used in testing the hypothesis at 0.05 level of significance.

Ethical consideration

Ethical approval was obtained from the research ethics committee of the University of Ilorin Teaching Hospital, Ilorin. An informed consent was sought from the respondents for voluntary participation in the study in line with Helsinki Declaration.

RESULTS AND DISCUSSION

Socio-demographic variables of respondents

Table 2: The Socio-Demographic Data (n=120)

Age	Frequency	Percentage(%)
21-30Years	102	85.0
31-40Years	15	12.5
41-50Years	2	1.7
51-60Years	1	0.8

Gender		
Male	19	15.8
Female	101	84.2
Marital Status		
Single	112	93.4
Married	7	5.8
Divorced	1	0.8
Class Level		
100	40	32.3
200	33	27.5
300	47	39.2

From the Table 2, the result obtained shows that majority of the respondents are within the age range of 18-25 (n=135; 75%) and females (n=101; 84.2%).Nearly all 111(92.5%) are single while more than one-third 46(37.4%) are in 300 level.

Level of Smartphone addiction

Figure1 reveals that majority (78%) of the participants were highly addicted to their Smartphone and (17%) of them were slightly addicted only (5%) were not addicted. This implies that the most of the student nurses are extremely addicted to their Smartphone.

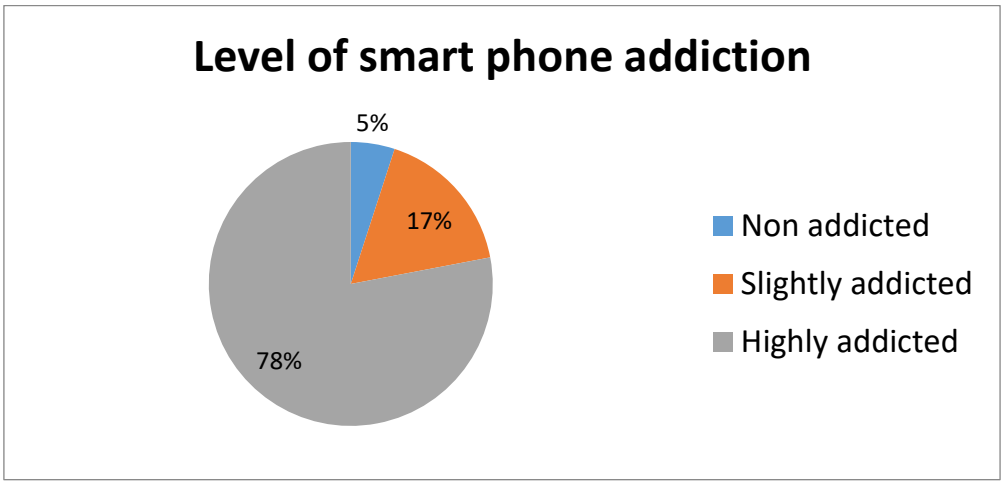

Figure 1: Level of Smartphone addiction

Perceived effects of Smartphone addiction on sleep pattern among participants

As indicated in Table 3, one-fifths of the participants (38.3%) reported feeling excessively tired and sleepy in class, and often experiencing insomnia while (47.5%) of them lose sleep due to late night log-ins. Regarding the sleep pattern, (45.8%) agreed that their sleep pattern has been altered due to excessive Smartphone usage.

Table 3: Perceived effects of Smartphone addiction on sleep pattern among participants (n=120).

Variables	R	O	F	O	A	Mean
Lose sleep due to late night log-ins	22(18.3%)	57(47.5%)	19(15.8%)	16(13.3%)	16(13.3%)	3.3917
Fall asleep immediately I stop pressing my phone	28(23.3%)	57(47.5%)	11(9.2%)	19(15.8%)	19(15.8%)	4.3000
My sleep pattern is altered due to excessive Smartphone usage	22(18.3%)	55(45.8%)	12(10%)	19(15.8%)	19(15.8%)	4.5417
Feel excessively tired and sleepy in class	9(7.5%)	29(24.2%)	15(12.5%)	46(38.3%)	46(38.3%)	4.3417
Feel depressed, moody, or nervous when off line, which goes away once back online	6(5%)	38(31.7%)	25(20.8%)	38(31.7%)	13(10.8%)	3.1167
Often experience insomnia	5(4.2%)	31(25.8%)	20(16.7%)	46(38.3%)	18(15%)	2.9417
Often experience inadequate sleep every night	7(5.8%)	54(45%)	17(14.2%)	30(25%)	12(10%)	2.8833

Perceived effects of Smartphone addiction on academic performance

The results of the perceived effects of Smartphone addiction on the participant's academic performance (Table 4) revealed that almost half of the participants missed planned work due to Smartphone use (40%), find it hard concentrating while doing assignments as a result of Smartphone use 34.2%, experience poor performance in school as a result of excessive use of Smartphone as "frequent" effects.

Table 4: Perceived effects of Smartphone addiction on academic performance of participants (n=120)

Variables	R	O	F	O	A	Mean
Have a hard time concentrating in class while working due to Smartphone use	18(15%)	46(38.3%)	10(8.3%)	36(30%)	10(8.3%)	1.7833
Find it hard concentrating while doing assignment as a result of Smartphone use	10(8.3%)	41(34.2%)	41(34.2%)	14(11.7%)	42(35%)	2.0583
Accomplish what i should when at school as a result of Smartphone use	10(8.3%)	33(27.5%)	21(17.5%)	44(36.7%)	12(10%)	2.1250
Miss planned work due to Smartphone use	6(5%)	27(22.5%)	15(12.5%)	48(40%)	24(20%)	2.4750
Using Smartphone for unintended purposes	13(10.8%)	44(36.7%)	21(17.5%)	29(24.2%)	13(10.8%)	1.8750
Feel life is boring and in complete without the use of Smartphone	23(19.2%)	50(41.7%)	16(13.3%)	15(12.5%)	16(13.3%)	1.5917
Experience poor performance in school as a result of excessive use of Smartphone	10(8.3%)	21(17.5%)	15(12.5%)	37(30.8%)	37(30.8%)	2.5833

Table 5: Correlation analysis of some selected variables

Variables	$\chi 2$	P
Gender and the Smartphone usage on sleep pattern.	13.320	0.06
Age and the level of addition to Smartphone addition with academic performance	15.051	0.04

Participants' relationship between Smartphone addictions was significant with age and genders the level of addiction to Smartphone. Table 5 shows significant relationship between age and the level of addition to Smartphone among students ($p< 0.04$) and gender and the perceived effects of Smartphone addiction on sleep pattern ($p< 0.06$).

Discussion

The study provides the information about Smartphone addiction and its effects on sleep patterns and academic performance among students' nurses at a School of Nursing, Socio-demographic profile of the students indicate a predominantly unmarried young female student population at the three levels of training. The participants' level of addiction to their Smartphone was quite high, implying that the study participants are extremely addicted to their Smartphone, as previously reported by Lopez-Fernandez (2017), who asserted that average person spends 6 hours and 54 minutes on the internet, and that 49 percent of student's use their Smartphone's as a distraction. These was further established by Kalal et al., (2023) where is corroborated that average person checks their phone about 160 times daily, which equates to approximately once every 9 minutes. These findings show similar high Smartphone addiction among similar group but not nursing students.

In addition, the findings of this study revealed similar effects of high addiction to Smartphone's as reported by Seunghye (2019) and Curcio et al., (2006) when they stated that, sleep disruptions can cause daytime sleepiness. Similarly, the findings show that (45.8%) had altered sleep pattern due to excessive Smartphone usage. This in agreement with Ghosh et al., (2021) who depict that late-night Smartphone use, has negatively influenced sleep quality. This was established by Seunghye (2019) who also stated that Smartphone addiction exacerbated disturbed or inadequate sleep pattern. In the same vein Kheyri et al., (2019) also reiterated that Smartphone dependence altered sleep patterns, affecting students' learning, focus, memory, and decision-making abilities.

In relation to the items on perceived effects of Smartphone addiction on the participant's academic performance, almost half of the participants missed planned work due to Smartphone use (40%),find it hard concentrating while doing assignments as a result of Smartphone use. The finding corroborates the report of Rathakrishnan et al., (2021) who established that, students who frequently send text messages and check Face book while working on assignments performed poorly in class. Further discoveries from this study also revealed that 34.2%, experience poor performance in school as a result of excessive use of Smartphone. Rathakrishnan et al., (2021) established that high levels of Smartphone addiction have a negative impact on academic performance. This was affirmed by Muhammad et al., (2019) that time spent on the device other than for studying lead to low academic achievement.

CONCLUSION

In conclusion, the study provided new insights into the Smartphone addiction and its perceived effect on sleep pattern and academic performance among students' nurses, a population that has not been previously studies in this setting. The study concludes that there is high level of Smartphone addiction among the student nurses, with significantly reported altered sleep pattern, and daytime sleepiness in class. Notably, this study has highlighted the negative effect of the addiction on academic performance of the student nurses, with many missed academic tasks by the students. Hence, the need for interventions by creating awareness programs to address excessive Smartphone use and promote healthier sleep habits.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations are made:

Awareness Programs: Implement educational initiatives to raise awareness about the negative consequences of Smartphone addiction on sleep and academic performance.

Counseling Services: Offer counseling services for students struggling with Smartphone addiction to provide support and strategies for managing their device usage.

Sleep Hygiene Workshops: Conduct workshops on sleep hygiene to educate students about the importance of a good night's sleep and provide tips for improving sleep quality.

Parental Involvement: Encourage parental involvement in monitoring and regulating their children's Smartphone usage, especially during study hours and bedtime.

Institutional Policies: Develop and enforce institutional policies regarding the use of Smartphone's during class hours and study sessions.

Research Continuation: Continue monitoring and researching the relationship between Smartphone addictions, sleep patterns, and academic performance to adapt interventions based on evolving trends and technologies.

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