

Prevalence and Effect of Social Media on Sleep among Students of Higher Institutions in Sokoto Metropolis, Sokoto State Nigeria

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Abstract

Background: Social media use is a very popular leisure activity that is common amongst young people globally. There is increasing evidence that students spend several hours daily on social media with affectation of sleep duration. Sleep duration of 7 to 9 hours daily is needed for normal healthy function of the human body. This study was conducted to determine the effect of social media on sleep pattern among students of higher institutions in Sokoto metropolis, Sokoto State. **Methods:** This was a cross sectional descriptive study carried out among 381 students of higher institutions in Sokoto metropolis using multistage sampling technique. Frequencies of the various variables were tabulated and chi-square tests were done as appropriate. **Results:** About 67.4% of the respondents were within the age group 20-24 years. A total of 97.9% of the respondents used social media with WhatsApp ((84.9%) and Facebook ((81.7%) being the commonly used platforms. More than a quarter ((27.4%) used social media for more than 3 hours in a day. About 92% of the respondents used social media at night. Almost half of the respondents who used social media at night have their sleep duration affected by its use. Those using it for more than 2 hours at night were 5 times more likely to have sleep affectation ((AOR=2.9 – 7.3, $p < 0.000$). **Conclusion:** The study demonstrated high prevalence of social media use amongst students of higher institutions in Sokoto with a significant proportion of them having sleep duration shortened. Schools and the general public should be made to create awareness on the negative impact of using social media among students especially at night.

Keywords: Social media; Social network sites; Students; Sleep; Higher institutions

Introduction

Social media usage has become a part of everyday life for most young people the world over in the 21st century.^[1] It is currently one of the most popular leisure activities among young people. Social media provides a platform for interactions among people in which they create, share, and exchange information and ideas in virtual communities and networks^[2,3] in ways that only a few years earlier seemed unthinkable to even the most advanced scientists. Yet now it has more influence on our lives than we could possibly imagine. Social media provides us with a forecast in ten seconds or less, internet banking, and most importantly, social media such as Facebook, Instagram, twitter etc., has taken the technology world to a new level through social networking.^[4] Social networking is an internet based application; its usage begins with the creation of a unique account or profile which links people or organizations to share knowledge with others within the site across several countries. Example of social networks includes Facebook, Twitter, Instagram, WhatsApp, 2go, Viber, WeChat, and many others.^[4]

Over the years, social networkers have increased from a few thousands to billions of users. Higher institutions have also appreciated the importance of social networking and were also involved in disclosing information about online social networking involvement to their students.^[1] Social networks today are being used by teachers, lecturers and students as communication tool.^[5] However the growth and popularity of social networking sites coupled with their addiction by its

usage is a growing problem among young people and students in general.^[6] In Nigeria, the number of social network users is on the rise. The long hours used for social networking causes problems for students ranging from altered sleep pattern, lack of concentration and poor academic performance.^[7] Facebook users in the UK cumulatively spend a week on the average each year on social media sites whilst in bed thereby increasing the risk of suffering from a sleep disorder such as insomnia.^[8] Another study conducted among university students showed that up to 95% of respondents use social media every night before going to sleep.^[1]

Social media is a convenient method of communication providing the user the ability to stay connected with friends and family at the discretion of the users' own rate and time.^[9] Social media are highly efficient because they are one of many methods of communication that allow users to quickly and widely disseminate information. Duggan and Brenner observed that 83% of 18-29 year olds disseminate information via social networking sites.^[10]

Research has shown that exposure to bright light from computer

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and mobile phone screens are known to delay the ability of the brain and body to initiate sleep thereby reducing total sleep time.^[8] Many users of social media also leave their mobile phones switched on at night with a significant proportion of them being woken up by smart phone alerts from the different networking sites they have subscribed to thereby disrupting their sleep at night with its attendant effect on the following day's activities i.e., missing morning classes, poor concentration in class, impaired cognition and subsequently poor academic performance among students.^[3,7,8]

Good sleep plays a very important role in promoting good health^[11] as it is recommended that adolescents and young people obtain 7–9 hours of sleep per night but in reality almost half of American adults report getting less than 7 hours of sleep per night on weeknights.^[8] Another study has also shown that adequate sleep is important for the consolidation of memory which has important implications for school success in adolescents and poor sleepers with the risk of failing one or more years at school being doubled than that of normal controls.^[12]

For example, insufficient sleep negatively affects cognitive performance, mood, immune function, cardiovascular risk, weight, and metabolism.^[13-15]

A study carried out among school children revealed that students with lower grades had later bedtimes both on weeknights and on weekends.^[16] In the light of this, we carried out this study to determine the prevalence and pattern of social media usage and its effect on sleep pattern among undergraduate students in institutions of higher learning in Sokoto metropolis of Sokoto State Nigeria. In addition, it is hoped that findings from this study will add to the body of knowledge about social media usage as there appears to be paucity of local literature/research on the subject matter especially in the study area.

Materials and Methods

Study area

This study was carried out in Sokoto metropolis of Sokoto state. Sokoto State has a projected population of 4.2 million in 2018 out of which about 269,525 (7.9%) live within the state capital. The state is made up of predominantly two ethnic groups namely Hausa and Fulani. It is bordered in the North by Niger Republic, Zamfara State to the East and Kebbi State to the South and West borders. Sokoto metropolis has a total of 6 tertiary institutions namely; Usmanu Danfodiyo University, Sokoto State University, Shehu Shagari College of Education, Sokoto State Polytechnic, Sokoto State College of Nursing and Midwifery and Usmanu Danfodiyo University Teaching Hospital Sokoto. Students of higher institutions in Sokoto metropolis get access to social media through their phones, tablets and personal computers. Access to the Internet ((social media) has been made even easier because of the enticing, very cheap and user-friendly data subscriptions provided by the popular GSM networks ((MTN, GLO, Airtel, Etisalat). Some of the network providers have special types of data plans for campuses which are student friendly especially at night ((12am to 5am) when students enjoy relatively free subscriptions. In

addition some institutions provide free wifi while some students make use of institutional designated computer laboratories.

Study population

This was a cross-sectional descriptive study involving undergraduate students of higher institutions in Sokoto metropolis who have been full time students ((inclusion criteria). All students who have spent less than three months in the campuses prior to the commencement of the study were excluded.

Sample size determination

Using the sample size formula for a descriptive study for a population greater than 100,000 (($n = Z\alpha^2 pq/d^2$) and allowing for 10% non-response rate, a sample size of 381 was obtained.

Sampling method

A multistage sampling technique was employed in recruiting the study participants.

Stage 1: Out of the six higher institutions in the metropolis, two were randomly selected by simple random sampling by balloting ((Usmanu Danfodiyo University and the Umaru Shinkafi Polytechnic).

Stage 2: The University was stratified into faculties and the Polytechnic into colleges. Using simple random sampling by balloting, two faculties and colleges respectively were selected.

Stage 3: From the faculties and colleges two departments each were selected by simple random sampling using balloting. Same procedure was carried out to select the levels of studies from the four departments.

The populations of the four departments selected were gotten from the various heads of the departments of the two institutions and proportional to size allocation was done for each department.

Stage 4: Following the line listing of the selected departments, systematic sampling method was used to select 1 in 2, 1 in four 1 in five and 1 in two respectively until the deserved sample size was obtained.

Instrument and method of data collection

Data were revised, coded, entered, analyzed, and tabulated using SPSS version 23. Frequency, percentage, and Chi-Square test were used to figure out the variances and correlations among the study variables.

A standardized self-administered semi structured questionnaire consisting of both open and close-ended questions was used. The questionnaire was adapted from previously validated instruments used in previous studies.^[1,3,5] Four Resident Doctors were trained for two days by the principal researcher on the objectives of the research study, instrument of data collection and interpersonal communication. Data was collected for four days and the data collected was checked each day to exclude wrong entries and missing data. Data collected was entered into and analyzed using the IBM SPSS version 22 computer software. Frequencies of the various variables were determined and tabulated. Chi-square test was used to test significance of

the associations between variables. Confidence level was set at 95%, i.e., $\alpha=0.05$ significance level.

Ethical clearance

Ethical clearance was obtained from Ethics and Research Committee of the Usmanu Danfodiyo University Teaching Hospital, Sokoto. Written permission was sought and gotten from the authorities of the two institutions while Verbal informed consent was obtained from the respondents after explaining the objectives of the study to them and were given the option to opt out at any stage of the study.

Results

A total of 381 questionnaires were sent out to be administered to the respondents and all were retrieved giving a response rate of 100%.

The mean age of the respondents was 22.07 ± 2.80 years and most 257 (67.4%) were within the age group 20-24 years. There were more male respondents 284 (74.5%) and majority 370 (97.1%) were single [Table 1]. Majority of the respondents 373 (97.9%) were currently using social media. Amongst those using the social media, WhatsApp 321 (84.9%) and Facebook 308 (81.7%) were the most commonly used [Table 2]. All the respondents accessed social network sites using smart phones.

More than half 210 (55.7%) of the respondents had used social media for 2-5 years while only 26 (6.9%) used it for 10 years or more. Some 71 (18.0%) of the respondents used social media for at least one hour daily. More than a third, 114 (37.1%) used social media more often at night while 189 (50.1%) of the respondents used it a lot anytime of the day [Table 3]. Most of the respondents used social media mainly for learning new things 252 (66.8%) and also to get latest/current news 231 (61.3%). About two thirds of the respondents 255 (68.7%) said their internet access to social media was quite fast [Table 4]. On the duration of use of social media at night, most 110 (29.0%), were on it for at least one hour while only 38 (11.0%) of the respondents used it for more than three hours [Table 5]. Social media use at night affected sleep time/duration among 158 (46.1%) of the respondents. Difficulty in waking up 58 (31.7%) and shortened sleep time 39 (21.3%) were the main effects of social media use on sleep duration. The main effects of disrupted sleep on daytime activities were sleepiness during the day 65 (30.4%), fatigue 51 (23.8%) and learning difficulties 51 (23.8%) [Table 5]. The more time respondents spent using social media at night the more likely they were to have their sleep duration affected by social media use ($p<0.000$). Respondents' who spent at least 2 hours every night on social media were about 5 times more likely to have their sleep duration shortened than those who did not ((AOR=2.9 – 7.3, $p<0.000$) [Table 6].

Discussion

In the few years there has been a tremendous increase in the usage of smart phones, handheld devices, and computers to access social network sites ((SNS). Social media use and its apparent addiction is increasing at an alarming rate especially

Table 1: Socio-demographic characteristics of the respondents.

Variables	Frequency (%)
Age group (years)	
15 – 19	58 (15.2)
20 – 24	257 (67.4)
25 – 29	58 (15.2)
30 – 34	6 (1.6)
≥ 35	2 (0.6)
Sex	
Male	284 (74.5)
Female	97 (25.5)
Religion	
Islam	358 (94.0)
Christianity	22 (5.8)
Others	1 (0.3)
Marital status	
Single	370 (97.1)
Divorce/separated	2 (0.5)
Widowed	0 (0.0)
Married	9 (2.4)
Institution/School	
UDUS	314 (82.4)
SSU	67 (17.6)

Table 2: Usage of social media *.

Variables (n = 380)	Frequency (%)
Uses social media	373 (97.9)
Usage of facebook	308 (81.7)
Usage of WhatsApp	321 (84.9)
Usage of Twitter	94 (24.9)
Usage of Instagram	136 (36.1)
Usage of 2go	78 (20.4)
Usage of Snapchat	41 (10.9)
Usage of Other platforms	23 (6.1)
Most frequently used platforms *	
Facebook	158 (41.9)
WhatsApp	276 (73.2)
Twitter	18 (4.8)
Instagram	33 (8.8)
2go	16 (4.2)
Snapchat	8 (2.1)
Others	8 (2.1)

* Multiple answers allowed

in developing world with the largest proportion of users being young people. . In addition its increasing association with sleep disturbance among this group of people is also worrisome.

Findings from our study indicated that majority, 97.9% of the study respondents were currently using social media to access various SNS. The proportion of our respondents using social media is in consonance with findings from other studies.^[1,3] This may be due to the perceived importance ascribed to social media use by these students. The relatively cheap internet data plans and the easy accessibility to Internet services provided by the network providers within campuses may also be contributory factors.

Table 3: Pattern of social media use.

Variables	Frequency (%)
Duration of social media usage	
less than 1 year	55 (14.6)
2-5 years	210 (55.7)
5-9 years	86 (22.8)
10 years and more	26 (6.9)
On the average, for how long do you use social media in a day?	
<30 minutes	60 (16.0)
1 hr	71 (18.9)
2 hrs	75 (19.9)
3 hrs	67 (17.8)
>3 hrs	103 (27.4)
Time of the day used social media the most	
Morning	13 (3.4)
Afternoon	3 (.8)
Evening	32 (8.5)
Night	114 (37.1)
Anytime	189 (50.1)

Table 4: Factors influencing social media usage.

Variables	Frequency (%)
Why do you use social media *	
Learning	252 (66.8)
Get latest/current news	231 (61.3)
Connect with friends	220 (58.4)
Entertainment	216 (57.3)
Share information/Interest	205 (54.4)
It helps with my studies	182 (48.3)
Make friends	165 (43.8)
It helps with my assignment	119 (31.6)
Self Esteem	57 (14.9)
Others	13 (3.4)
How fast is your access to social media	
Very slow	14 (3.8)
Slow	48 (12.9)
Fast	255 (68.7)
Very fast	54 (14.6)

*Multiple answers allowed

Table 5: Effects of social media on sleep pattern.

Variables	Frequency (%)
Social media usage at night	
Yes	349 (91.6)
No	32 (8.4)
Duration of social media use at night	
<30 minutes	77 (22.3)
1 hr	100 (29.0)
2 hrs	67 (19.4)
3 hrs	63 (18.3)
>3 hrs	38 (11.0)
Sleep duration affected by social media use	
Yes	158 (46.1)
No	185 (53.9)
Effects of social media use on sleep duration	
difficulty in waking up	58 (31.7)
shortened sleep time	39 (21.3)
Difficulty maintaining sleep	37 (20.2)
difficulty in initiating sleep	30 (16.4)

frequent waking up	13 (7.1)
Others	6 (3.3)
Effect of disrupted sleep on daytime activities	
Yes	209 (54.9)
No	172 (45.1)
If yes, how?	
somnolence/sleepiness	65 (30.4)
Fatigue	51 (23.8)
learning difficulties	51 (23.8)
mood disturbances	38 (17.8)
Others	9 (4.2)

Table 6: Relationship between duration of social media use and sleep quality.

Variable	Sleep duration affected by social media use		Test statistics
	Yes	No	
	Duration of social media use at night		
<30 minutes	17 (22.1)	60 (79.1)	Test statistics $\chi^2 = 66.336$, $p < 0.000$
1 hr	33 (33.3)	66 (66.7)	
2 hrs	30 (44.8)	37 (55.2)	
3 hrs	46 (74.2)	16 (25.8)	
>3 hrs	32 (84.2)	6 (15.8)	
	Duration of social media use at night		
≥ 2 hours	108 (64.7)	59 (35.3)	Test statistics AOR = 4.6 (2.9 – 7.3) $\chi^2 = 45.219$, $p < 0.000$
< 2 hours	50 (28.4)	126 (71.6)	

Facebook and WhatsApp were the commonly used social media platforms amongst the respondents. Their relative ease of use, being cheap to maintain, factory pre-installed application ((app) on most commonly affordable smart phones and popularity among young people are the plausible reasons for its popularity. This is in spite of the fact that other social media platforms have been in existence before WhatsApp. This finding is in agreement with other studies which observed the face book and WhatsApp as the commonest SNS amongst their respondents. [6,17-21]

Similarly, facebook dependence was found among 8.5% of respondents in a similar study among undergraduate students in Peru. [1] On the contrary, Snapchat and Instagram which are mainly Picture/ video based social networking platforms that consume lots of internet data and also require very high-speed Internet access compared to WhatsApp and Facebook are the most common social media platform among students of Alabama University in the United States. [22] This may be made possible by lower tariffs charged on data networks and more efficient Internet access in most developed countries compared to developing countries like Nigeria. Empirical evidence has shown that even university Professors are using social networking sites to assist in negotiating the teacher-student relationships. Yet, in many of the colleges and universities, both the administrators and academicians still wonder whether they should embrace SNS as a pedagogical tool. [23]

Our study showed that all the respondents accessed SNS using smart phones. Although smart phones are a bit on the expensive side, Nigeria like most other developing countries has ready markets for fairly used phones imported into the country. These smart phones are ubiquitous in the lives of these students and are affordable to the average student thus making access to

social media universal. This is further made possible by the provision of cheaper data and internet bundles to students at Nigerian university campuses by various network providers. More than half of the respondents have used social media for 2-5 years while the main factor that motivated the respondents to use social media was to learn new things. This is in line with the view that networking helps to leverage and complement formal education learning outcomes in universities. [24] Some studies claim that Face book use affects students' education, either directly or indirectly. [25,26]

Also, in a related study conducted at Islamia University in Bahawalpur of Pakistan with more than 600 students, nearly 90% claimed that they were using Facebook for their academic activities too. [27]

Furthermore, from 160 researchers in philosophy and social studies at the University of Delhi, 71.25% stated that they were using Facebook during their research into collaborative learning processes. [28] However, a significant proportion of the respondents also used social media to get current/latest news and information. The study by Akakandelwa and Walubita in Zambia found that most of the sampled students used social media to obtain new information, keep in touch with friends and for school work, [29] and this finding is consistent with what Sharma & Shukla found among Indian college students. [30] This corroborates the finding that social media platforms are fast replacing traditional media as means of sharing information. [31] Most of the respondents preferred to use social media at night and this is in accord with similar study among students in China where all students interviewed used social media at night. [31] Furthermore, our study showed that about two-thirds of these students used social media for at least two hours every night

which is similar to findings in Lagos and Ede, Nigeria where a significant proportion of students used social media for more than 3 hours daily.^[7,32] This may be explained by the addictive tendencies young people have towards social networking sites.^[3]

In contrast, other studies found that majority of their sampled students spent between 30 and 60 minutes on social media per day.^[29,33-35] Larson observed that university students have reached a stage in their lives when they spend most of their leisure time alone, free from parental control and independently explore the world which gives them a chance to make media choices that are not constrained by others.^[36]

Our study further revealed that about half of those who used social media at night complained of poor sleep quality which was also corroborated by studies in China^[3] and Peru^[1] where a significant proportion of respondents also had poor sleep quality. Additionally, our study showed a statistically significant relationship between duration of social media use and sleep quality with those with longer duration of social media use having 5 times the odds of having a poorer sleep quality further buttressing the relationship between social media use and sleep quality.

Difficulty initiating sleep, shortened sleep duration and difficulty waking up which are related to sleep disorders^[3,37,38] were the effects social media use had on sleep duration of the respondents. Research has shown that if people are not getting sufficient sleep each night then their long term memory would definitely become negatively affected.^[3] Difficulty with academic learning, fatigue, sleepiness during the day and mood disturbances were major effects respondents who had sleep disturbances experienced during daytime hours. These are also known to negatively affect concentration in class and academic performance of students.^[3,11,12]

Conclusion

Findings from this study showed a high prevalence of social media use among students of higher institutions in Sokoto metropolis with a high proportion of them engaged in using WhatsApp and Facebook. Majority of the students used social media sites for more than three hours every day and mostly at nights with more than half of the respondents complaining of poor sleep quality. This invariably has resulted in fatigue, sleepiness during the day and difficulty coping with academic activities. In view of these findings and in order to stem the rising tide of social media use and addiction, school authorities should educate their students on the need to limit the use of SNS as this has serious consequences on alertness and concentration during the day time. Also government should regulate the activities of network and GSM providers to restrict the provision of free data bundles on school campuses to only day time so as to discourage prolonged night time social media use especially among students.

Competing Interests

The authors declare that they have no competing interests.

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