The Effect of digital technology on Sleep Quality for Students' Academic Achievement

Authors:
[1]Dr. Vandana Patil, [2]Dr. Manila Jain
[1]*Ph. D., Scholar, Department of Physiology, Malwanchal University, Indore, MP*
[2]*Professor, Department of Physiology, Index Medical College Hospital & RC, Indore, MP.*
Corresponding Author:
Dr. Vandana Patil
Ph. D., Scholar, Department of Physiology, Malwanchal University, Indore, MP

ABSTRACT:
Background: The necessity of sleep for learning, practicing, maintaining physical and mental health, and living is an integral aspect of human health. It has an impact on a person's capacity for learning, academic performance, and neural-behavioral processes. **Aim and Objectives**: This research sought to ascertain the connection between students' academic success and the quality of their sleep. **Material and methods**: The study contained 450 participants. For this analysis, the cluster random sampling technique was used. All of the participants were split into three classes. Fair social network site users (group-1) have 150 members, moderate social network site users (group-2) have 150 members, and heavy social network site users (group-3) have 150 members. **Results**: Our studies found that shows the mean, standard deviation, and ANOVA statistic for academic performance among Low social network sites users, Average social network sites users, and High social network sites users. Fair social network sites users had a higher mean percentage (71.38 ± 6.66) on academic results than moderate social network sites users (67.83 ± 6.95), whereas high social network sites users had a lower mean percentage (64.02 ± 7.06) than both moderate and fair social network sites users. ANOVA is used to compare substantial mean differences between classes and the result is $F_{(2,447)} = 42.67$, p.001, indicating that there is a significant difference in Academic performance between the three groups of SNS users. **Conclusions**: The results showed no significant difference between sleep quality and academic achievement. Nevertheless, to account for confounding effects, a longitudinal study should be conducted.

Keywords: quality of sleep, the academic achievement, students

INTRODUCTION:
Media that is encoded in machine-readable formats are referred to as digital media. Digital media, which includes software, digital films, photos, web pages, databases, digital music, and E books, is content that can be created, viewed, edited, shared, and saved on digital electronics devices. Print and other conventional or analog media are the opposite of digital media. This essay makes an effort to trace the many effects of digital media on society. The study follows the effects of the digital revolution on society as well as the positives and negatives of digital media. This paper makes an effort to trace the many effects of digital media on society. The study follows the effects of the digital revolution on society as well as the positives and negatives of digital media. Pippalada responds to Gargya for his question about what Sleep, according to Prasna Upanishad (Question-4, Mantra-2) is that the time when a man hears not, sees not, smells not, tastes not, touches not, speaks not, grasps not, loves not, evacuates not and does not walk about. Each night, humans need a certain amount of sleep in order to function correctly. According to Okano et al. (2019) [1], adults require eight hours of sleep on average. When a suitable amount of sleep is not maintained, sleep deprivation occurs. In particular, sleep deprivation is very common among college students. We have had many restless nights as nursing students

because of employment schedules, necessary courses, and clinical rotations. According to research, "up to 60% of all college students suffer from poor sleep quality" (Schlarb et al., 2017, p. Over time, a person's physiological health, psychological health, and cognitive performance may all suffer from sleep deprivation. Therefore, it is important to investigate how sleep impacts the human body and look into ways to combat the issue of sleep deprivation.[2]

Modern science, similar to the above argument describes sleep characteristics as

1. A natural periodic state of rest for the mind and body, in which the eyes normally close and the consciousness is fully or partially lost, so that the body's movement and responsiveness to external stimuli decreases. The brain of humans and other mammals undergoes a typical period of brainwave activity during sleep that involves dream intervals.

2. A duration of this resting form.

3. Unconsciousness, dormancy, hibernation or death; a state of inactivity that resembles or indicates sleep.

Sleep is a time of body rest characterized by decreased environmental awareness, a species-specific posture and a specific sleep position for most species, according to Morrison (1992)[3].

A rising area of research examines how young individuals express their sleep patterns on social media and, conversely, how their social media usage affects the quality of their sleep. According to studies conducted over the past ten years, young individuals who use electronic media had shorter sleep durations and lower sleep quality (Cain & Gradisar, 2010). More recent research has shown a connection between obsessive Facebook monitoring (i.e., an activity involving less cognitive effort) and poorer sleep quality (Mark, Wang, Niiya, & Reich, 2016) and higher rates of social media use with more sleep disturbance (Levenson, Shensa, Sidani, Colditz, & Primack, 2016). Freshmen who text more frequently have also been found to have more sleep issues (Murdock, 2013). As a result of people's sleep patterns and circadian rhythms, research on Twitter use among the general public has also revealed that tweet sentiment changes during the day (Golder & Macy, 2011). According to Golder and Macy (2011), positive affectivity on Twitter is specifically higher on weekdays, peaks when people awaken, and then steadily declines during the day.

Sleep quality is characterized as one's satisfaction with the experience of sleep, integrating aspects of the

initiation of sleep, duration, maintenance of sleep, quantity of sleep and functioning upon awakening, according to Karacan (1976). For two key factors, sleep quality is a significant clinical construct[4].

The ease with which one may go to sleep and stay asleep each night is referred to as sleep quality. Poor-quality sleep, often known as insomnia, is described as people who wake up frequently during the night or who have trouble falling asleep for hours after going to bed (Gellis et al., 2005; Stamatakis et al., 2007).

First sleep quality problems are common; epidemiological studies suggest that 15-35% of the adult population reports of regular disruption of the quality of sleep, such as trouble falling asleep or difficulty maintaining sleep. Second, poor quality of sleep may be a significant symptom of many medical and sleep disorders. Sleep length, one commonly measured aspect of sleep quality, may also have a direct correlation with mortality.

Sleep is influenced by three primary variables: a homeostatic factor, an endogenous circadian factor and a behavioral factor. Both homeostatic and circadian variables will override behavioral variables. As such, it is necessary to identify behaviors that influence sleep.[5]

In some studies, sleep efficiency has been considered as essential for recovery, cognitive processing, and memory integration.[6] On the other hand, lack of sleep has been associated with emotional instability and impaired concentration.[7] In this regard, students are particularly at risk of developing sleep disorders and development of the disorder among them has a negative effect on their academic performance across different grades,[8-10] However, there is no consensus in this case and not all studies state that sleep disorders yield a negative effect on academic performance. Eliasson (2010) believes that the time it takes to fall asleep and waking up affect academic performance more than duration of sleep does.[11] Sweileh and colleagues (2011) also believe that there is no relationship between sleep quality and academic success.[12] Similarly, it is claimed there is no relationship between the night sleep before the exam and test scores either.[13]. In another study, the author believes stress from lack of sleep causes poor school performance.[14] On the other hand, in a systematic review, the authors could not establish a cause and effect relationship between sleep quality and academic performance.[15] In their meta-analysis study, Dewald and colleagues (2010) emphasized that because of the diversity of the methodology of studies, it is

impossible to definitely derive a relationship between sleep quality and academic performance, and thus more longitudinal intervention studies are warranted. [16]According to different conclusions in this respect, the researchers decided to determine the relationship between sleep quality and academic performance among students at Index Medical College, Hospital and Research Centre in Indore.

MATERIAL AND METHODS:

Type of study:- Descriptive analytical and prospective study

Samples size: The study contained 450 participants. For this analysis, the cluster random sampling technique was used. All of the participants were split into three classes. Fair social network site users (group-1) have 150 members, moderate social network site users (group-2) have 150 members, and heavy social network site users (group-3) have 150 members.
Group 1. Fair social network sites users contains 150 participants.
Group 2. Moderate social network sites users contains 150 participants.
Group 3. Heavy social network sites users contain 1500 participants.

Sample and Sampling Method:

The Index Medical College, Hospital, and Research Centre in Indore, Madhya Pradesh, conducted this cross-sectional observational analysis. All undergraduate medical students was invited to participate. The students were informed about the study's goals and procedure. A self-administered questionnaire was provided to all 450 students in the College of Medicine. Who were able to participate in the study and complete all questionnaires were included in the study population. A stratified random sampling method was used.

INCLUSION CRITERIA: Many who attend college on a daily basis and use social networking sites were included.

EXCLUSION CRITERIA: Students who are physically challenged are excluded for the present study.

Study Questionnaire:
The questionnaire is based on the study's objectives and previously published survey instruments, and it is used to evaluate:
(i)   Study population demographics;
(ii)   Social media usage;
(iii)   Sleep quality
(iv)   Sleep pattern
(v) Academic performance.

Measures:

Information Schedule: This schedule was intend to provide detailed information regarding age, gender, class, place of birth, order of birth, and scholastic records which was collected with the help of class teachers and other demographic details.

OBSERVATIONS AND RESULTS:

A total of 450 people were precipitated in this report. All of the participants were split into three groups. Fair social network site users (group-1) have 150 members, moderate social network site users (group-2) have 150 members, and heavy social network site users (group-3) have 150 members.

STATISTICAL TECHNIQUE:

Normal statistical techniques were used to conduct the statistical analysis (SPSS software version 20). The probability of an outcome variable, as well as its 95 percent confidence limits, were determined. The descriptive statistics were used to learn about the characteristics and characteristics of the subjects, while the inferential statistics were used to measure the validity of the observations made from the collected data. The use of Mean SD provided results on continuous measures, but the effects on categorical measurements were provided in numbers or percentages. The meaning of the mean difference in age and sex of three groups is determined using one-way ANOVA of variance.

Table 5.1 Distribution of sex of total study participants

Variable	Gender			
	Male		Female	
	N	%	N	%
Fair social network sites users	150	60	40	90	60
Moderate social network sites users	150	85	56.67	65	43.33
Heavy social network sites users	200	105	70	45	30
Total	450	250	55.56	200	44.44

Table 5.1 show the distribution of sex of total study participants (450). The participants of sample groups belongs to fair social network sites users, moderate social network sites users and heavy social network sites users. Were 55.56% of study subjects were males and 44.44% were females.

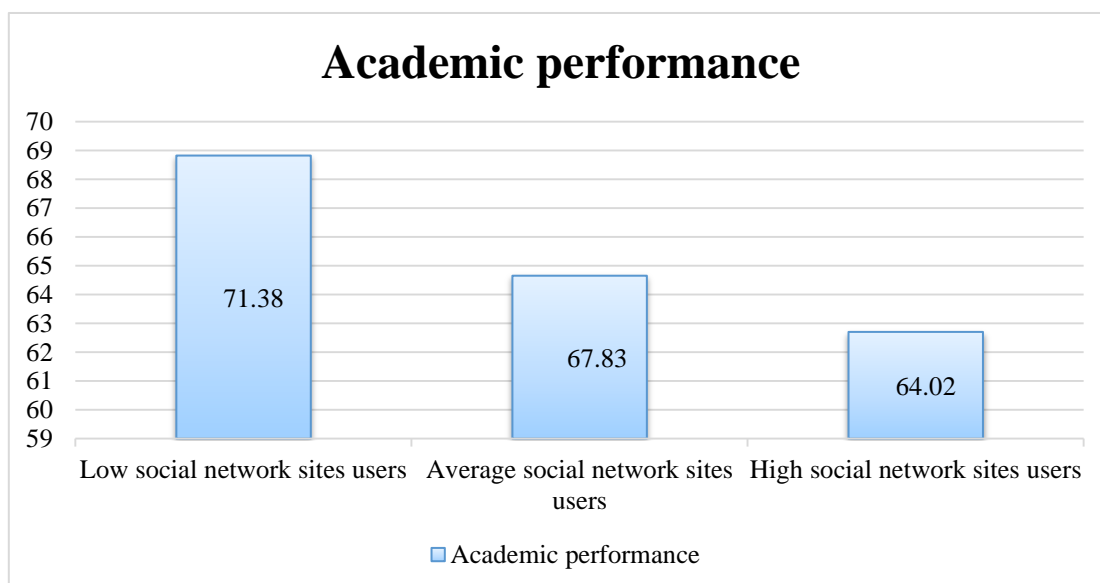**Table 5.2: Academic performance among sample groups**

Variable	Academic performance			
	N	Mean ± SD	F	P
Fair social network sites users	150	71.38 ± 6.66	42.67	0.000
Moderate social network sites users	150	67.83 ± 6.95		
Heavy social network sites users	150	64.02 ± 7.06		

Table 5.2 shows the mean, standard deviation, and ANOVA statistic for academic performance among Low social network sites users, Average social network sites users, and High social network sites users. Fair social network sites users had a higher mean percentage (71.38 ± 6.66) on academic results than moderate social network sites users (67.83 ± 6.95), whereas high social network sites users had a lower mean percentage (64.02 ± 7.06) than both moderate and fair social network sites users. ANOVA is used to compare substantial mean differences between classes and the result is F (2,447) =42.67, p.001, indicating that there is a significant difference in Academic performance between the three groups of SNS users.

The use of social networking sites had a significant influence on students' academic performance, according to a one-way ANOVA statistic. We can deduce from the above statement that the moderate SNS user group performed poorly academically as compared to the heavy SNS user group. In comparison to the fair SNS user and average SNS classes, the study of high SNS users showed poor academic results. It was discovered that increasing the use of online social networking sites has a negative impact on adolescent academic achievement.

Figure 5.1: Academic performance among three groups

Figure 5.1: Academic performance among three groups

Figure 5.1: Shows the mean percentage on academic performance among three groups belong to fair social network sites users, moderate social network sites users and heavy social network sites users

Table 5.3: Using the post-hoc Tukey's HSD measure, several comparisons of three groups' academic performance are seen.

HSD	Multiple comparison		
	Mean difference	Std Error	P-value
Fair SNS users	3.54	0.56	0.000
Moderate SNS users	7.35	0.56	1.284
Heavy SNS users	3.8	0.56	0.000

Given the statistical significance of the omnibus ANOVA test, post-hoc tests were carried out, with Tukey's HSD test applied to all possible pairwise contrasts. The following categories were found to be statistically significant. Group 1 (fair SNS user group; 71.38 ± 6.66), group 2 (moderate SNS user group; 67.83 ± 6.95), and group 3 (Heavy SNS user group; 64.02 ± 7.06) were the three groups. In other words, fair SNS users outperformed average and heavy SNS users in terms of academic achievement by a statistically significant margin. Furthermore, the following pairs of groups were found to be non-significant: Group 2 (moderate SNS user group) and Group 3 (moderate SNS user group) (Heavy SNS user group).
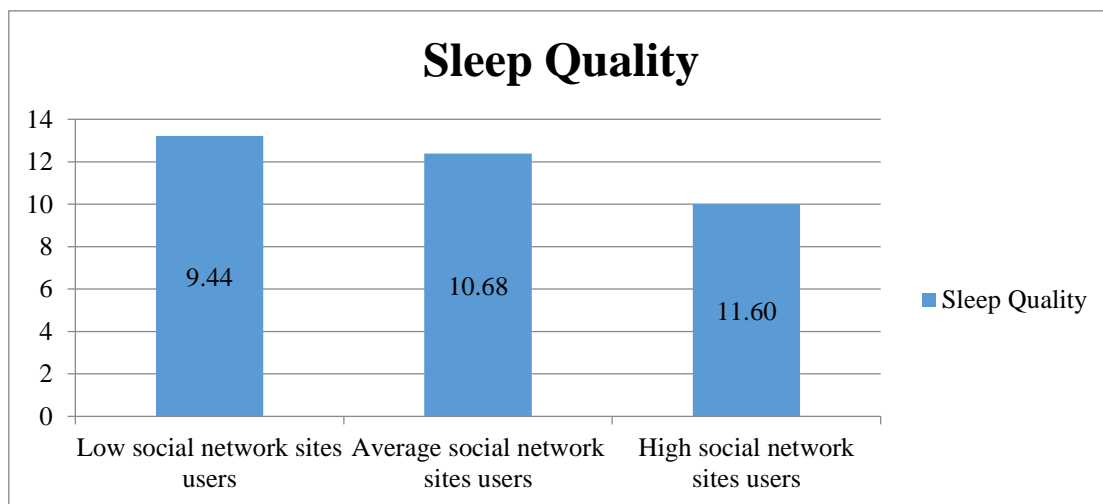
Table 5.4: Sleep quality among sample groups

Variable	Sleep Quality			
	N	Mean ± SD	F	P
Fair social network sites users	150	9.44 ± 2.39	25.81	2.411
Moderate social network sites users	150	10.68 ± 2.73		
Heavy social network sites users	150	11.60±2.71		

Table 5.4 shows the mean levels and standard deviation of sleep quality across three survey groups: low social network site users, average social network site users, and high social network site users. Fair social network sites users had a lower mean sleep quality score (9.44 ± 2.39) than moderate social network sites users (10.68 ± 2.73) and Heavy social network sites users had a higher mean sleep quality score (11.60±2.71) than moderate social network sites users and fair social network sites user community. ANOVA was used to compare significant mean differences between groups, and the result was F (2447) = 25.81, p- 2.411, indicating that there is a significant difference in sleep quality among the three groups of SNS users.

The use of social networking sites had a major impact on the students' sleep efficiency, according to a one-way ANOVA statistic. We can deduce from the above explanation that the fair SNS user group had better sleep quality than the heavy SNS user group. In contrast to the moderate SNS user and fair SNS user groups, the study of heavy SNS users showed poor sleep quality.

Figure 5.2: Sleep quality among three groups

Sleep Quality

Figure 5.2: Shows the mean percentage on sleep quality among three groups belong to Low social network sites users, Average social network sites users and high social network sites users

Table 5.5: Using the post-hoc Tukey's HSD test, several comparisons of three groups on sleep quality are shown

HSD	Multiple comparison		
	Mean difference	Std Error	P-value
Fair SNS users	1.24	0.214	0.000
Moderate SNS users	2.16	0.214	1.385
Heavy SNS users	0.21	0.214	0.007

Given the statistical significance of the omnibus ANOVA test, post-hoc tests were carried out, with Tukey's HSD test applied to all possible pairwise contrasts. The following groups were discovered to be significantly different (p.01). Group 1 (fair SNS users; 9.44 ± 2.39) and Group 3 (heavy SNS users; 11.60±2.71). In other words, the heavy SNS user group had significantly poorer sleep quality than the moderate SNS user group. The significance of the following pairs of groups was also determined (p.01).

DISCUSSION:

Online social networks (OSNs) are rapidly becoming a common way for students to communicate with one another. As a result, educational institutions and faculties are gradually using social networking platforms like Facebook, WhatsApp, LinkedIn and academia, among others. This has raised concerns about the impact of online social networking sites on academic performance and the potential for using them as a teaching and learning tool. This study was conducted to learn more about the impact of social networking sites on academic performance. This study discovered that using social networking sites has a negative effect on academic success among college students. As compared to moderate and fair social networking site users, the heavy SNS users group had weak academic results. In other words, students who used less social networking sites performed better academically than students who used more social networking sites. Several previous reports support the current study's results: Our studies shown that the distribution of sex of total study participants (450). The participants of sample groups belongs to fair social network sites users, moderate social network sites users and heavy social network sites users. Were 55.56% of study subjects were males and 44.44% were females.

Michikyan et al. (2015) [17] aimed to explore the use of Facebook among college students in academic success. The same multi-ethnic sample was adopted by 261 college students. The results revealed that 14 percent of the participants modified the post and status related to academic topics and that academically good students displayed more positive status than negative or neutral status. The researcher further indicated that students who received low grades were reported to post negative status, and the researcher further noted

that the students' academic success dictates their use of Facebook.

Maqableh et al. (2015)[18] suggested that the use of SNS had an effect on the student's academic performance and the use of SNS per week had an impact on the academic performance of the student, but no discrepancies were observed in the impact of the use of SNSs on academic performance due to age, academic achievement, and regular use of most pages. This analysis aims to gain insight into how the use of social networking sites affects the success of students.

Mingle et al., (2015) studied the way students used SNSs and the time spent on social media sites and their effects on their grammar, spelling and academic performance in the sense of social learning and gratification theories, aimed at evaluating the influence of social media engagement and academic performance among high school students. The research integrated survey and interview methodology. The results showed that most of the students used Facebook and Whatsapp to talk with their friends, and these students had bad grammar and spelling, and it was also recorded that these students submitted their assignments very late due to the use of SNS, had less study time and kept poor academic records. It is evident from the analysis that the usage of social network sites had a severe effect on scholastic achievements of students. [19]

Paul et al. (2012) found that there is a negative association between time spent on the web of the social network and academic success. The attention span of students was greatly influenced by the use of social networking sites. It was also found that the students' attention span was significantly associated with the students' behavioural impact. It was apparent from this study that the use of social network sites influences user cognition.[20]

Kirschner et al., (2010) aimed to investigate the use of Facebook and its impact on academic performance and other events related to the study. A survey design was introduced and the results revealed that students with high usage of social network sites had lower grade point averages, and additionally, these users of social network sites had very few hours spent on their studies relative to non-users. This study has helped us to understand how the use of social networks impacts academic success.[21] The results of this study may be explained by the fact that college students use internet social networking sites as a means of interaction, socializing, and pure entertainment, and they spend time thinking about how to get more features on these sites and spending more time on them. While many people are unaware of it, internet social networking sites contain a number of potentially dangerous components, and many people are concerned about some of the major issues they contain, such as educational and academic success. College students nowadays use online social networking sites for academic purposes as well, and having a smart phone with internet connectivity has made a student reliant. Students never write down the timetable or take short notes; instead, they use the camera to take pictures of the timetable, etc., and email or record their teachers' lectures. This reflects a lack of interest in formal learning and research.

Students are majorly distracted by using internet social networking sites, according to previous empirical evidence, and further use of such sites has a detrimental impact on their learning and educational efficiency. However, some students have begun to use social media for a number of academic purposes. However, since these networks can lead to diversion from educational activities, their use must be disciplined and directed. Although some students saw social networking sites as a source of diversion and were reluctant to express their feelings, a large percentage of respondents saw it as a low-cost way to find current knowledge and enter communities or online networks.

Many previous studies concluded that college students should capitalize on the value of classroom instruction and face-to-face instruction. There is a case to be made that the notion that internet social networking sites have a negative effect on college students is incorrect. It would be very beneficial for their academic purposes if parents and teachers properly track their children's internet activities. Students attending virtual classes will benefit from the use of internet social networking sites for educational / tutoring purposes. Students attending virtual classes will benefit from the use of internet social networking sites for educational / tutoring purposes. Humankind has been revolutionized by internet social networking sites, which have taken us together than ever before. College students must take advantage of this and put it to good use for a better life and a better tomorrow. It should be used to communicate, keep in touch, and exchange ideas, rather than being used to waste time.

There is a great deal of empirical evidence that attempting to process multiple sources of information at the same time has negative consequences, including increased research time to reach learning parity and an

increase in errors when processing information as compared to those who process information sequentially or serially.

The study discovered that social networking systems have a detrimental effect on academic success and that time management is key when using SNSs. Managing time, especially for college students, is critical because if a student does not know how to manage their time and apply organization to their schedule, their learning and academic performance will suffer.

According to research, college students can learn how to manage their time and prioritize their goals before participating in other activities. As a student, it is important to note that academic learning should always take precedence over entertainment. Alternatively, if a student spends more time on social networking sites than on his studies, it has a direct impact on his academic results.

The research mentioned above contributes to an ongoing debate about whether social networking sites, especially Facebook, WhatsApp, Twitter, and others, have an effect on college students' academic performance today, as well as public concerns, particularly from parents, such as: Should these sites be banned in order to reduce the risks of our children getting low grades? It also contributes to the ongoing discussion about the value of social networking sites among practitioners and researchers. Vast, uncharted waters are still waiting to be discovered. The lack of experimental or longitudinal studies limits the capacity of SNS researchers to make causal statements. Despite the fact that the situation is rapidly evolving, researchers still have a poor understanding of who uses these pages, why, and for what purposes. Large-scale quantitative and qualitative research will be needed to address these questions. The researchers hope that these results and the work presented here will serve as a basis for future research into these and other relevant social networking issues. Furthermore, by recognizing the role of social networking sites in academic success, these results assist them in managing their usage of these sites.

Discussion on Social Network Sites and Sleep quality:

This study discovered that using social networking sites has a negative effect on sleep quality among college students. As compared to moderate and fair social networking site users, the heavy SNS user's community had poor sleep quality. To put it another way, students who use less social networking sites have better sleep quality than students who use a lot of social networking sites.

Our studies shown that shows the mean levels and standard deviation of sleep quality across three survey groups: low social network site users, average social network site users, and high social network site users. Fair social network sites users had a lower mean sleep quality score (9.44 ± 2.39) than moderate social network sites users (10.68 ± 2.73) and Heavy social network sites users had a higher mean sleep quality score (11.60±2.71) than moderate social network sites users and fair social network sites user community. ANOVA was used to compare significant mean differences between groups, and the result was F (2447) = 25.81, p- 2.411, indicating that there is a significant difference in sleep quality among the three groups of SNS users.

The use of social networking sites had a major impact on the students' sleep efficiency, according to a one-way ANOVA statistic. We can deduce from the above explanation that the fair SNS user group had better sleep quality than the heavy SNS user group. In contrast to the moderate SNS user and fair SNS user groups, the study of heavy SNS users showed poor sleep quality. Several previous reports support the current study's findings-

Levenson et al. (2017) confirmed that the strong correlation between the use of SM and sleep disruption has major clinical consequences for young adults' health and well-being. The goal of future work should be to determine directionality and to better understand the impact of contextual factors relevant to the use of SM[22].

Long et al. (2015) found that more than half of undergraduates who use social media have low sleep quality. University of Foreign Languages undergraduates may be less likely to have poor sleep quality. When you use WeChat, you're less likely to have a bad night's sleep [23].

Wolniczak et al. (2013) discovered a connection between Facebook addiction and poor sleep quality. More than half of the students said they didn't get enough sleep. It is necessary to develop strategies to limit the use of this social network and to improve sleep quality in this population.[24]

Since the technology is such an integral part of most tertiary students' lives, it is important to understand the impact it has on their sleep and daytime sleepiness. Inadequate sleep is associated with negative outcomes in several areas of health and functioning, including

somatic and psychosocial health, school performance and risk taking behavior. Moreover, treatments of sleep have potential to improve social and occupational functioning.

Limitations:

The main limitation of this study was the small sample size, but a specific sampling method was chosen to overcome this shortcoming. Another limitation of the study

was not controlling for confounding factors in the study. Based on the results of this study and similar studies, further research should be conducted with a better design.

CONCLUSION:

The results indicated no significant difference between sleep quality in achieved and unachieved academic performance. Nevertheless, to conclude with more certainty, longitudinal studies should be performed to control confounding factors.

Ethics Approval and Consent to Participate:

Informed consent obtained from all participants in the study and this study conducted by the Sleep Disorders Research Center. Identity letter obtained from deputy of research and technology to collecting data. Ethics approval was received from the ethics committee of deputy of research and technology – Index Medical College, Hospital & Research centre, Indore, received the institutional ethical clearance.

REFERENCES:

1. Kana Okano, Jakub R. Kaczmarzyk, Neha Dave, John D. E. Gabrieli, & Jeffrey C. Grossman. (2019). Sleep quality, duration, and consistency are associated with better academic performance in college students. *Npj Science of Learning*, *4*(1), 1–5.
2. Schlarb, A. A., Friedrich, A., & Claßen, M. (2017). Sleep problems in university students - an intervention. *Neuropsychiatric disease and treatment*, *13*, 1989–2001.
3. Morrison, A.R. (1902). Proprietress in Psychobiology and Physiological Psychology. LIK: Oxford University Prcss.
4. Karacan, 1. (1 976). Pharmacology of sleep: A while medical public in. Newyork

5. Nasirudeen AMA, Adeline LCC, Josephine KWN, et al.. Impact of social media usage on daytime sleepiness: A study in a sample of tertiary students in Singapore. Digit Health 2017; 3:1-9.
6. Young JS, Bourgeois JA, Hilty DM, Hardin KA. Sleep in hospitalized medical patients, part 1: factors affecting sleep. J Hosp Med. 2008;3 (6):473–482.
7. Kim JK, Lee JH, Lee SH, Hong SC, Cho JH. School performance and behavior of Korean elementary school students with sleep-disordered breathing. Ann Otol Rhinol Laryngol. 2011;120(4):268–272.
8. Gaultney JF. The prevalence of sleep disorders in college students: impact on academic performance. J Am Coll Health. 2010;59(2):91– 97.
9. Tsai LL, Li SP. Sleep education in college: a preliminary study. Percept Mot Skills. 2004;99(3 Pt 1):837–848.
10. Howell AJ, Jahrig JC, Powell RA. Sleep quality, sleep propensity and academic performance. Percept Mot Skills. 2004;99(2):525–535.
11. Eliasson AH, Lettieri CJ, Eliasson AH. Early to bed, early to rise! Sleep habits and academic performance in college students. Sleep Breath. 2010;14(1):71–75.
12. Sweileh WM, Ali IA, Sawalha AF, Abu-Taha AS, Zyoud SH, Al-Jabi SW. Sleep habits and sleep problems among Palestinian students. Child Adolesc Psychiatry Ment Health. 2011;5(1):25.
13. Kazim M. Sleep patterns and academic performance in students of a medical college in Pakistan. KUST Med J. 2011;3(2):57–60.
14. Ahrberg K, Dresler M, Niedermaier S, Steiger A, Genzel L. The interaction between sleep quality and academic performance. J Psychiatr 2012;46(12):1618–1622. doi:10.1016/j.jpsychires.2012.09.008
15. Duarte J, Nelas P, Chaves C, Ferreira M, Coutinho E, Cunha M. Sleepwake patterns and their influence on school performance in portuguese adolescents. Aten Primaria. 2014;46(Suppl 5):160–164.
16. Dewald JF, Meijer AM, Oort FJ, Kerkhof GA, Bogels SM. The influence of sleep quality, sleep duration and sleepiness on school performance in children and

adolescents: A meta-analytic review. Sleep Med Rev. 2010;14(3):179–189.

17. Michikyan M, Subrahmanyam K and Dennis J. Facebook use and academic performance among college students: A mixed-methods study with a multi-ethnic sample. Computers in Human Behavior 2015; 45:265–72.

18. Maqableh MM, Rajab L, Quteshat W, Moh'd Taisir Masa RE, et al. The Impact of Social Media Networks Websites Usage on Students' Academic Performance. Communications and Network 2015; 7(04):159.

19. Mingle J & Adams M. Social Media Network Participation and Academic Performance in Senior High Schools in Ghana. Library Philosophy and Practice 2015;1:e-1286.

20. Paul JA, Baker HM & Cochran JD. Effect of online social networking on student academic performance. Computers in Human Behavior 2012; 28(6):2117-27.

21. Kirschner PA & Karpinski AC. Facebook® and academic performance. Computers in human behavior 2010; 26(6):1237-45.

22. Levenson JC, Shensa A, Sidani JE, et al. The Association between Social Media Use and Sleep Disturbance among Young Adults. Prev Med. 2016;85(4):36-41.

23. Long Xu X, Zhu RZ, Sharma M, et al. The Influence of Social Media on Sleep Quality: A Study of Undergraduate Students in Chongqing, China. J Nurs Care 2015; 4: 253.

24. Wolniczak I, Cáceres-DelAguila JA, Palma-Ardiles G, et al. Association between Facebook dependence and poor sleep quality: a study in a sample of undergraduate students in Peru. PLoS One. 2013;8(3):e59087.