

IMPRESSION OF TWITTER AND WHATSAPP ON SLEEP QUALITY AMONG NURSING STUDENTS IN INDONESIA

Yosi Maria Wijaya¹, Fransiskus Xaverius Widianoro^{2*}

^{1,2} Sekolah Tinggi Ilmu Kesehatan Santo Borromeus

Email * : fwidhie@gmail.com

Abstract

Introduction: The widely used social media by mobile-platform, which makes communication easier, faster, enhance effective flow of information. However, it may have the potential negative effect in quality of sleep in nursing students. The purpose of this study was to examined the impact of using social media and identified predictors of poor sleep quality among nursing students. **Methods:** A school-based survey design was conducted. Totally, 264 students at school of health sciences in West Java with usage social media platform were participated in this study. The extensive self-administered questionnaires were used to assess extent of using social media and the Pittsburgh Sleep Quality Index. Logistic regression analysis by a backward-stepwise technique was used to determine predictors of poor sleep quality. **Results:** One out of two nursing students (59.5 %) used both Instagram and WhatsApp, mostly at nights (59.8%), and more than 4-hour daily (19.3%). Majority nursing students (94.3%) have poor quality of sleep. Quality of sleep was differed significantly in bachelor students ($p=0.03$) in 8th semester ($p = 0.006$). Younger nursing students ($\beta = 0.025$, $p = 0.021$, 95% CI 0.001-0.566) who use social media less than 3-month ($\beta = .019$, $p = 0.001$, 95% CI 0.002-0.212), mostly during weekends and in 8th semester ($\beta = 41.32$, $p = 0.018$, 95% CI 1.902-897.73) were predictor of poorer sleep quality. **Conclusion:** Findings indicated a strong need for integrating sleep quality education and provide health-education to promote correct and effective use of social networks to minimize possible side effects in nursing students.

Keywords: nursing students; social media; sleep quality

INTRODUCTION

There is extensive usage of social media among students lead to increase access to the affordable Internet at homes and colleges. Prevalence of usage social media in different platform were Facebook was leading with 1.1 billion users, Flickr had 87 million users, Twitter's users had been approximately 500 million, and 225 million were using LinkedIn accounts, 25 million users were in MySpace among another platform (Curtis, 2013).

Social media differs from old form of mass media in many ways including quality, sophistication, reach, speed, efficiency, frequency, accuracy, usability, reliability, cheapness, immediacy, portability and permanence as it allows interaction among its users in which they create, share, exchange information and ideas in virtual communities and networks (Bello, Akintola, & Daramola, 2015; Amali, Akintola, Bello, & Yusuf, 2016). To label social media as a driver of social change, organizational and national development, one of the major advances of the 21st century is the discovery and emergence of social media, which has facilitated the creation

of different platforms for social interaction (Adaja & Ayodele, 2013). In addition, the social media as a revolutionary medium of socialization for dismantling previously existing man-made obstacles to information dissemination and sharing (Olaniran, 2014). This enormous increase in use of social media with long daily online sessions has led to its addiction.

Social media addiction is not yet considered a disorder by the psychiatric literature as evidenced by its exclusion from the Diagnostic and Statistical Manual of Mental Disorder (DSM-V), published by the American Psychiatric Association. It estimated, more than 210 million people suffer from social media addiction (statista, 2017). Individuals with social media addiction are often overly concerned about social media and are driven by an uncontrollable urge to log on to and use social media (Andreassen & Pallesen, 2014). Studies have shown that the symptoms of social media addiction can be manifested in mood, cognition (less of attention and concentration), unethical, useless chatting, time killing, physical and emotional reactions, and interpersonal and psychological

problems (Tariq et al., 2012; Balakrishnan & Shamim, 2013; Błachnio, Przepiorka, Senol-Durak, Durak, & Sherstyuk, 2017; Kuss & Griffiths, 2011; Tang, Chen, Yang, Chung, & Lee, 2016; Zaremohzzabieh, Samah, Omar, Bolong, & Kamarudin, 2014).

Therefore, we can analyse their using to know their direct influence on them. The idea is to show why these social media catch the attention of universities' students, so quickly. The social media considered as another communication channels that enables people for communication and sharing resources. It's important to know the features that are included in these social media which can add benefits for educational environment and encourage teachers and students for more interactive and the value add for academic performance.

The new social media, such as Twitter, Whatsapp etc., can affect universities students' behavior and health consequence resulting from lack of sleep brought about by the growing amount of time they spend on the social media especially late at night (Afandi et al., 2013). Sleep quality defined as a satisfaction of sleep experiences including integrating, maintenance, and quantity of sleep, and refreshment (Kline, 2013). Quality of sleep was reported to influence the functional, academic, and social performance (Ahrberg et al., 2012). College students strive to meet their academic and social needs, and often experience stress with related sleep disturbances (Valerio, Kim, & Sexton-Radek, 2016). Prior studies reported that 21% college students have short sleepers (less than 7 hours) (Steptoe et al., 2006) and 9.4% difficulty falling or staying asleep on at least three-night per-week (Taylor et al., 2011). Additionally, excessive smartphone use among college students has been identified as a factor disturbing sleep (Ahn & Kim, 2015).

Previous studies have been proved that sleep disturbance has negative impacts in academic performance in college students (Aung, et al., 2016; El Desouky & Awed, 2015; Gianfredi et al., 2018; Khalil, 2017). However, most studies are focused on medical or general university students, and very few on nursing students (Khassawneh et al., 2017; Sajadi, Farsi, & Rajai, 2014). Notably, among the studies involving nursing students, researchers assessed sleep disturbances without comprehensive consideration of misuse of social media.

The misuse of social media in all times and when doing study or homework are the biggest problem affecting the concentration of students and that is reflected, in some cases, poor academic performance and quality of sleep because they pay attention to social media every times. Faced with this problem arises the need to analyze and see if the use of the social media all time will be impact in quality of sleep.

It should be noted that social media, used in the appropriate time and space, can generate positive results, such as the groups that are created in Twitter and WhatsApp, usually in academia are composed of nursing students of specific course, also in the best until teachers are added to these teams, facilitating and improving teaching student and teacher pedagogy, since currently a student must meet extracurricular hours and for this, keep in constant communication classmates and teachers is essential. However, nursing students currently believed that the use of social networks is indispensable in their daily lives. This study was evaluated the impression of using social media on sleep quality and risk factors associated with poor sleep quality among nursing students.

METHODS

1. Design

A school-based approach with cross sectional design was used to measure effect of social media on sleep quality and risk factors associate with poor sleep quality among nursing students in this study.

2. Sample

In total, 264 nursing students in diploma or bachelor nursing students, full-time students, using social media, aged (20 years or above) and willing to participate was invited. This study was conducted during the academic year 2019-2020.

Nursing students without a smartphone to access social media platform, taking sleep medicine were excluded from this study. The number of participants was recruited basing on a power analysis. The confidence level of 95%, type 1 error rate of 5%, the power $1-\beta$ of 0.80, non-inferiority or superior margin of 0.50, and an alpha level of .05 were set for the main and interaction effects. The 185 subjects were required after sample size calculation. Additional 79 subjects were included for considering withdraw rate with 30% in

community study (Vandelanotte, Spathonis, Eakin, & Owen, 2007). Totally, 264 nursing students through convenience sampling were participated in this study.

3. Measures

Based on review of relevant literature, the researchers have been developed an anonymous self-administered questionnaire in Bahasa Indonesia.

Demographic data: Demographic data was used to assess participants' chronological age, gender (male/female), semester, religions, and habit before sleep.

The using of WhatsApp and/or Twitter: Four items were used to measure the participants' pattern of the WhatsApp and/or Twitter includes using, frequencies, and period of maximum use. Participants were asked to respond of each item on a 4-point scale ranging from 1 (Never) to 4 (Always). The Likert scores for each item was summed to provide a quantitative overall level of extent of using the WhatsApp and/or Twitter from 4 to 16, with higher scores indicating higher level of using social media.

The Pittsburgh sleep Quality Index (PSQI): This study was used the Pittsburgh Sleep Quality Index (PSQI) (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989) to measure respondents' quality and patterns of sleep over the past month. The PSQI contains 19 items by measuring seven sub-components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction (Buysse et al., 1989). Each subcomponent is scored between 0 and 3, with higher scores indicating more problems with that subcomponent. The total score thus ranges between 0 and 21, and respondents scoring >5 are categorized as poor sleepers. Cronbach's alpha for the index was 0.64 (Exelmans & Van den Bulck, 2015).

4. Ethics approval

After obtaining approval from the government of West Java and the Indonesian Ethics Review Board, 264 participants provided written informed consent and completed data questionnaires.

5. Data Analysis

The Statistical Package for Social Sciences (SPSS version 18.0) was used to analyze the

data. Descriptive statistics (i.e., frequency percentage, mean and standard deviation) were calculated. Tests of significance were applied, i.e., Chi-square, independent sample t-test and one-way analysis of variance (ANOVA) were applied to test significance of differences. P-values less than 0.05 were considered as statistically significant. A multiple logistic regression was performed to analyze the determinate predictors of sleep quality. For linear regression, an estimated odd ratio (OR) and 95% confidence interval (95% CI) were used to determine predictors of sleep quality.

RESULTS

Table 1.

Characteristic demographics and Quality of sleep among nursing students with bivariate analysis (n=264)

Variables	Total	Quality of Sleep				p
		Poor (n=249)		Good (n=15)		
		n	%	n	%	
Age (yr/o, M±SD)	(10.7)	20.6	1.76	21.3	1.45	.132
Gender						
Male	19 (7.2%)	19	7.6	0	0	.267
Female	245 (92.8%)	230	92.4	15	100	
Education						
Diploma	58 (22%)	58	23.3	0	0	.034
Bachelor	206 (78%)	191	76.7	15	100	
Semester						
2	35 (13.3)	32	12.9	3	20	.006
3	23 (8.7)	23	9.2	0	0	
4	34 (12.9)	31	12.4	3	20	
5	41 (15.5)	41	16.5	0	0	
6	43 (16.3)	41	16.5	2	13.4	
GPA						
<3.00	20 (7.6)	19	7.6	1	6.7	.970
3.00-3.50	163 (61.7)	154	61.8	9	60.0	
3.51-4.00	81 (30.7)	76	30.6	5	33.3	
Duration of study (year)						
1	35 (13.3)	32	12.9	3	20.0	.006
2	57 (21.6)	54	21.6	3	20.0	
3	83 (31.8)	82	33.0	2	13.4	
4	74 (28.0)	71	28.5	3	20.0	
5	14 (5.3)	10	4.0	4	26.6	

Among the 264 nursing students, the mean age was ranged from 18 to 32 years (M = 20.67, SD = 1.75) with the majority female (n =245, 92.8%). Most of respondents were educated to a bachelor (n=206; 78.0%), and had obtained a 4th year in university (n=62; 23.5%). Majority students' Grade point average (GPA) ranged from 3.00 to 3.50 (61.7%). One out of two nursing students (N = 157, 59.5%) reported that they used as favorite two types of social media platform (WhatsApp and Instagram), and majority used social media more than 2-year. A high frequency of respondents, 158 (59.8%) was used social media mostly at nights. Most of respondents (n= 147; 55.7 %) used social media multiple times on the same day. Moreover, one in four (25%) respondents spent 15-30 minutes on their social media per day, and one in five (19.3%) more than 4 hours per day. Almost all respondents (n=249; 94.3%, and M=9.69; SD=2,71) have poor quality of sleep by the Pittsburgh Sleep Quality Index (PSQI).

	(11.0)				0
15-30 minutes	66 (25.0)	58	23.3	8	53.
31-60 minutes	34 (12.9)	32	12.9	2	13.3
1-2 hours	62 (23.5)	60	24.1	2	13.3
3-4 hours	22 (8.3)	22	8.8	0	0
>4 hours	51 (19.3)	51	20.5	0	0
Period of maximum using of social media					
Morning	17 (6.4)	16	6.4	1	6.7 .730
Afternoon	28 (10.6)	26	10.4	2	13.3
Evening	61 (23.1)	56	22.5	5	33.3
	158				
Night	(59.8)	151	60.7	7	46.7

Results found that Bachelor was significantly higher on poor quality of sleep than Diploma nursing students (p < 0.03). Female have poor quality of sleep than male, but there was no gender significant difference for sleep quality score (p =0.27). There was significant difference between duration of using Twitter/WhatsApp/Instagram (p = 0.006) and quality of sleep. Most of nursing students in 8th semester were significantly highest prevalence of poor quality of sleep (p = 0.006; 58.5%).

Quality of sleep differed significantly according to students' duration (p = 0.000), and frequency (p=0.000) use of Twitter/WhatsApp/Instagram with highest prevalence of poor sleep quality among those who spend more than 2 years, and irregular daily using Twitter/WhatsApp/Instagram. However, nursing students' quality of sleep did not differ significantly according to their gender, age, GPA, use of Twitter/WhatsApp/Instagram, everyday usage, and period of maximal use.

In the hierarchical regression analysis that controlled for the aforementioned confounding variables and included the social media indicators simultaneously (Table 3), duration of using social media did predict poorer sleep quality (β = .039, SE = .664, p = 0.000, 95% CI 0.011-0.145): nursing students who use Twitter/WhatsApp/Instagram less than 3-month tended to report poorer sleep quality. Students who use Twitter/WhatsApp/Instagram mostly during weekends and in 8th semester were significantly predictor of poorer sleep quality (β = .019, SE = 1.243, p = 0.001, 95% CI 0.002-0.212 and β = 41.32, SE = 1.571, p = 0.018, 95% CI 1.902-897.73). Age was significantly predicted poor of sleep quality (β = 0.025, SE = 1.597, p = 0.021, 95% CI 0.001-0.566). The others factors were not significant moderator of poor sleep quality.

Table 2.

Social media and Quality of sleep among nursing students with bivariate analysis (n=264)

Variables	Total (n,%)	Quality of Sleep				P
		Poor (n=249)		Good (n=15)		
		n	%	n	%	
Favorite social media platform						
WhatsApp,	49	47	18.9	2	13.	.976
Twitter & Instagram	(18.6)			3		
WhatsApp & Twitter	4 (1.5)	4	1.6	0	0	
WhatsApp & Instagram	157 (59.5)	148	59.4	9	60.	
Twitter & Instagram	2 (0.8)	2	0.8	0	0	
WhatsApp	50 (18.9)	46	18.5	4	26.	
Instagram	1 (0.4)	1	0.4	0	0	
None	1 (0.4)	1	0.4	0	0	
Frequency of usage social media						
Regularly at all time	74 (28.0)	73	29.3	1	6.7	.000
Night	35 (13.3)	33	13.3	2	13.	
Weekend	8 (3.0)	5	2.0	3	20.	
Irregular	147 (55.7)	138	55.4	9	60.	
Duration of usage social media						
< 3 months	13 (4.9)	6	2.4	7	46.7	.034
3-6 months	11 (4.2)	11	4.4	0	0	
7-11 months	7 (2.7)	7	2.8	0	0	
1-2 years	51 (19.3)	51	20.5	0	0	
>2 years	182 (68.9)	174	69.9	8	53.	
Everyday usage of social media						
< 15 minutes	29	26	10.4	3	20.	.064

Table 3.

By logistic regression with a backward-stepwise technique to analyze the associated factors for quality of sleep among nursing students (n=264)

Variables in Model	S.E.	Odd's Ratio	95% CI	p
Demographics characteristic				
Age	1.60	0.25	.001 - .566	.021
Semester	1.94	0.158	.004-7.061	.018
Use of social media				
Frequency of usage social media	1.24	.02	.002-.212	.001
Duration of usage social media	.66	.04	.011-.145	.000

DISCUSSIONS

This study was examined the association between social media (Twitter/WhatsApp/Instagram) use and sleep quality among a representative sample of nursing students, and explored a vulnerability perspective to identify potential at-risk groups based on age, gender, education, and habitual social media used. Results showed that almost all representative nursing students sample use Instagram and/or WhatsApp. The majority were daily users for more than 4 hours, mostly at night.

These findings were similar with prior study that almost all bachelor students were used social media networks especially WhatsApp in several times a week (A'lamElhuda & Dimetry, 2014). The other prior study found that most of university students were used social media and WhatsApp around 2.3 hours per day and access the social media at night before sleeping (Choudhary, Momin, & Kantharia, 2015). The current study found that higher use of WhatsApp and Twitter by females. Other findings signal an overall association between demographic characteristics and poor sleep quality, in particular for female, bachelor, and those nursing students in 8th semester. Recent study findings were similar with prior studies that university students in 6th scholastic years and who spend more than 4 hours daily using social media likes Twitter/WhatsApp were significant poor quality of sleep (Abdulghani et al., 2012; Siddiqui et al., 2016).

The possible reason may be explained by the fact that females need the social networks more than males. Female may consider access to these networks an easy way to communicate in a conservative community, free, can be used on mobiles, tablets, even laptops and desktops, and programmed for many operating systems. On the other hand, males can freely go out on their own any time day and night. The significantly higher prevalence of poor sleep quality among 8th semester nursing students in our study probably reflects relatively higher stress of academic task.

Moreover, the 8th semester of nursing students can use of Instagram and/or WhatsApp as an easy way and faster to exchange information or communication with each other (Choudhary et al., 2015). The social networking (Instagram and/or WhatsApp) has beneficial effects on academic aspects. Nursing students who use of WhatsApp and Instagram as a favorite platform could share information about academic and health, and discussed ideas.

The other findings of this study showed that almost all nursing students affected poor quality of sleep. Poor quality of sleep was highest among those spend more than 2 years, and irregular daily using social media. Prior studies were similar results with recent study (Abdulghani et al., 2012; Siddiqui et al., 2016). Regarding the possible association between social media and poor sleep quality, prior studies found that most of university students lost sleep due to using social networking applications (Espinoza, & Juvonen, 2011). Woods and Scott (2016) study reported that social media involves continued alerts at all times of the day. This feature affects sleep quality since incoming text messages usually disturb sleep at night (Van den Bulck, 2003).

In the hierarchical regression analysis that controlled for the aforementioned confounding variables and included the social media indicators simultaneously, duration of using social media did predict poorer sleep quality ($\beta = .039$, SE = .664, $p = 0.000$, 95% CI 0.011-0.145); nursing students who use Twitter/WhatsApp/Instagram less than 3-month tended to report poorer sleep quality. Students who use social media network mostly during weekends and in 8th semester were significantly predictor of poorer sleep quality ($\beta = .019$, SE = 1.243, $p = 0.001$, 95% CI

0.002-0.212 and $\beta = 41.32$, $SE = 1.571$, $p = 0.018$, 95% CI 1.902-897.73, respectively). Age was significantly predicted poor of sleep quality ($\beta = 0.025$, $SE = 1.597$, $p = 0.021$, 95% CI 0.001-0.566). The others factors were not significant moderator of poor sleep quality.

In regression analyses that included multiple social media measures significantly predicted poorer sleep quality, adjusting for demographics characteristics. Moderation analyses were conducted to identify at risk groups with regard to age, gender, and duration using social media. However, gender was not significant predictor of poorer sleep quality, both age and duration using social media was significant predictors. It is indicating that the predictors of poor sleep quality differ depending on individuals' age and how long they using social media. This highlights the value of exploring a vulnerability perspective, as only considering bivariate correlations at population level can mask different underlying effects in sub-groups.

For age, the findings highlighted that poorer of sleep quality was only significantly predicted nursing students for those under 20 years of age. The age and generation differences in how users interact with and experience social media may explain this finding. Young adults favor different social media platforms than older adults, and are more likely to report that it would be difficult to stop using social media (Smith & Anderson, 2018). In particular, younger tend to report higher levels of fear of missing out, using social media as a tool to maintain social engagement and avoid feeling disconnected (Przybylski, Murayama, DeHaan, & Gladwell, 2013; Vorderer, Krömer, & Schneider, 2016). This fear of missing out may not only drive social media engagement, but also increase pre-sleep cognitive arousal (Scott & Woods, 2018). This stronger emotional engagement in social media may help explain why younger are more vulnerable to poor of sleep quality.

For duration of use social media, nursing students who are using social media at weekends and in the 7th semester amplified the effects of poor sleep quality. The social media use is an unstructured activity, which usually lacks a clear beginning and end. It is likely to be extended, thus, reducing sleep time, and shortening its duration. Moreover, use of social media is a sedentary usage of entertainment, which may change sleep style

(Higuchi, Motohashi, Liu, & Maeda, 2005) and would lead to poor quality of sleep (Chen et al., 2005). Prior study found that mindfulness could influence social media experiences and associated outcomes (Brown & Ryan, 2003). Individuals have positive experienced more positive and less stress when using instant messaging (Bauer, Loy, Masur, & Schneider, 2017), whereas less mindful was increased emotional exhaustion of social media use (Charoensukmongkol, 2015).

Results of the present study have important clinical implications for the health of young adults and public health practice. However, this study has some limitations. Participants' responses were mostly subjective and nursing students' habitual checking behavior of social media was not assessed. Future study could explore how habitual checking behavior combines with emotional domain, fear of missing out, difficulty disconnecting to predict quality of sleep. This will continue to build a more nuanced understanding of how social media use relates to sleep quality in different groups, acknowledging that the same reported frequency of use does not reflect the same experience for different individuals.

CONCLUSIONS

In conclusion, the majority of a convenience nursing students sample were females, 8th semester, and Instagram and/or WhatsApp as a favourite platform. Almost all students have poor sleep quality, especially who spend more than 2 years, and irregular daily using of social media. In the hierarchical regression analysis found that younger nursing students who use social media less than 3-month, mostly during weekends and in 8th semester were significant predictor of poorer sleep quality. Findings of the present study indicate a strong need for integrating sleep quality education for nursing students to improve their sleeping practices and also to provide health education to promote correct and effective use of social networks to minimize their possible side effects among undergraduate nursing students.

REFERENCES

- Abdulghani, H. M., Alrowais, N. A., Bin-Saad, N. S., Al-Subaie, N. M., Haji, A. M., & Alhaqwi, A. I. (2012). Sleep disorder among medical

- students: relationship to their academic performance. *Medical teacher*, 34(sup1), S37-S41.
- Adaja, T. A. & Ayodele, F. A. (2013). Nigerian youths and social media: Harnessing the potentials for academic excellence. *Arabian Journal of Business and Management Review*, 2(5), 65–75. Retrieved from http://www.arabianjbmr.com/pdfs/KD_VOL_2_5/8.pdf
- Afandi, O., Hawi, H., Mohammed, L., Salim, F., Hameed, A. K., Shaikh, R. B., ... & Khan, F. A. (2013). Sleep quality among university students: Evaluating the impact of smoking, social media use, and energy drink consumption on sleep quality and anxiety. *Inquiries Journal*, 5(06). Retrieved from <http://www.inquiriesjournal.com/a?id=738>
- Ahrberg, K., Dresler, M., Niedermaier, S., Steiger, A. & Genzel, L. (2012). The interaction between sleep quality and academic performance. *Journal of Psychiatric Research* 46 (12), 1618-1622
- Ahn, S. Y., & Kim, Y. J. (2015). The influence of smart phone use and stress on quality of sleep among nursing students. *Indian Journal of Science and Technology*, 8(35). <https://doi.org/10.17485/ijst/2015/v8i35/85943>
- A'lamElhuda, D. & Dimetry, D.A. (2014). The Impact of Facebook and Others Social Networks Usage on Academic Performance and Social Life among Medical Students at Khartoum University. *International Journal of Scientific & Technology Research*, 3(5), 41-46.
- Amali, I. O., Akintola, M., Bello, M. B., & Yusuf, A. (2016). Chapter Five Drives, Derivatives and Deterrents of Social Media Usage among University Undergraduates in Nigeria. *Theory, Knowledge, Development and Politics: What Role for the Academy in the Sustainability of Africa?*, 113.
- Andreassen, C. S., & Pallesen, S. (2014). Social network site addiction-an overview. *Current Pharmaceutical Design*, 20, 4053–4061. <https://doi.org/10.2174/13816128113199990616>
- Aung, K. T., Nurumal, M. S., & Zainal, S. N. B. (2016). Sleep quality and academic performance of nursing students. *IOSR Journal of Nursing and Health Science*, 5(6 Ver. 1), 145-149
- Balakrishnan, V., & Shamim, A. (2013). Malaysian Facebookers: Motives and addictive behaviours unraveled. *Computers in Human Behavior*, 29, 1342–1349. <https://doi.org/10.1016/j.chb.2013.01.010>
- Bauer, A. A., Loy, L. S., Masur, P. K., & Schneider, F. M. (2017). Mindful instant messaging: Mindfulness and autonomous motivation as predictors of well-being in smartphone communication. *Journal of Media Psychology*, 29(3), 159-165. <https://doi.org/10.1027/18641105/a000225>
- Bello, M., Akintola, M., & Daramola, D. (2015). Usage of Whatsapp as a social media platform among undergraduate in Kwara state. *Nigerian International Journal of Educational Technology*, 1(1), 48
- Błażchnio, A., Przepiorka, A., Senol-Durak, E., Durak, M., & Sherstyuk, L. (2017). The role of personality traits in Facebook and Internet addictions: A study on Polish, Turkish, and Ukrainian samples. *Computers in Human Behavior*, 68, 269–275. <https://doi.org/10.1016/j.chb.2016.11.037>
- Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: mindfulness and its role in psychological well-being. *Journal of personality and social psychology*, 84(4), 822. doi: 10.1037/0022-3514.84.4.822
- Buysse, D. J., Reynolds, C. F., Monk, T. H., Berman, S. R. & Kupfer, D. J. (1989). Pittsburgh Sleep Quality Index (PSQI): A New Instrument for psychiatric practice and research. *Psychiatry Res*, 28(2), 193-213.
- Charoensukmongkol, P. (2015). Mindful Facebooking: The moderating role of mindfulness on the relationship

- between social media use intensity at work and burnout. *Journal of Health Psychology*, 21(9), 1966-1980. <https://doi.org/10.1177/1359105315569096>
- Chen, X., Sekine, M., Hamanishi, S., Wang, H., Gaina, A., Yamagami, T., & Kagamimori, S. (2005). Lifestyles and health-related quality of life in Japanese school children: a cross-sectional study. *Preventive medicine*, 40(6), 668-678. <https://doi.org/10.1016/j.ypmed.2004.09.034>
- Choudhary, S.R., Momin, M.I.H. & Kantharia, S.L. (2015). Facebook and WhatsApp: Beneficial or Harmful? *Journal of Evidence Based Medicine and Healthcare*, 2(17), 2506-2511.
- Curtis, A. (2013). The Brief History of Social Media. Retrieved from: <http://www.uncp.edu/home-acurtis/NewMedia/SocialMedia/SocialMediaHistory.html>
- Espinoza, G., & Juvonen, J. (2011). The pervasiveness, connectedness, and intrusiveness of social network site use among young adolescents. *Cyberpsychology, Behavior, and Social Networking*, 14(12), 705-709. <https://doi.org/10.1089/cyber.2010.0492>
- El Desouky, E. M., & Awed, H. A. M. (2015). Relationship between quality of sleep and academic performance Among Female Nursing Students. *International Journal of Nursing Didactics*, 5(9), 06-13. <https://doi.org/10.15520/ijnd.2015.vo15.iss9.111.06-13>
- Exelmans, L., & Van den Bulck, J. (2015). Sleep quality is negatively related to video gaming volume in adults. *Journal of sleep research*, 24(2), 189-196. <https://doi.org/10.1111/jsr.12255>
- Gianfredi, V., Nucci, D., Tonzani, A., Amodeo, R., Benvenuti, A. L., Villarini, M., & Moretti, M. (2018). Sleep disorder, Mediterranean Diet and learning performance among nursing students: inSOMNIA, a cross-sectional study. *Annali di igiene: medicina preventiva e di comunita*, 30(6), 470-481. <https://doi.org/10.7416/ai.2018.2247>
- Sajadi, A., Farsi, Z., & Rajai, N. (2014). The rel
- Higuchi, S., Motohashi, Y., Liu, Y., & Maeda, A. (2005). Effects of playing a computer game using a bright display on presleep physiological variables, sleep latency slow wave sleep and REM sleep. *Journal of sleep research*, 14(3), 267-273. <https://doi.org/10.1111/j.1365-2869.2005.00463.x>
- Khalil, A. I. (2017). Sleep pattern disturbance among undergraduate nursing students and the association with their academic performance. *International Journal of Health, Wellness & Society*, 7(2), 1-17.
- Khassawneh, B. Y., Alkhatib, L. L., Ibnian, A. M., & Khader, Y. S. (2017). The association of snoring and risk of obstructive sleep apnea with poor academic performance among university students. *Sleep and Breathing*, 22(3), 831-836. <https://doi.org/10.1007/s11325-018-1665-z>
- Kline, C. (2013). Encyclopedia of Behavioral Medicine. Marc D. Gellman and J. Rick Turner (Editors). Springer, New York
- Kuss, D. J., & Griffiths, M. D. (2011). Online social networking and addiction: A review of the psychological literature. *International Journal of Environmental Research and Public Health*, 8, 3528-3552. <https://doi.org/10.3390/ijerph8093528>
- Olaniran, S. (2014). Social media and changing communication patterns among students: An analysis of twitter use by university of Jos students. *Covenant Journal of Communication*, 2(1), 40-60. Retrieved from <http://journals.covenantuniversity.edu.ng/cjoc/published/May2014/Samuel.pdf>
- Przybylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. *Computers in Human Behavior*, 29(4), 1841-1848. <http://dx.doi.org/10.1016%2Fj.chb.2013.02.014>

- relationship between sleep quality with fatigue severity and academic performance of nursing students. *Nurse Practice Today*, 1(4), 213-220
- Scott, H., & Woods, H. C. (2018). Fear of missing out and sleep: Cognitive behavioural factors in adolescents' nighttime social media use. *Journal of adolescence*, 68, 61-65. <https://doi.org/10.1016/j.adolescence.2018.07.009>
- Siddiqui, A. F., Al-Musa, H., Al-Amri, H., Al-Valerio, A., Al-Shahrani, M., & Al-Qahtani, M. (2016). Sleep patterns and predictors of poor sleep quality among medical students in King Khalid University, Saudi Arabia. *The Malaysian journal of medical sciences: MJMS*, 23(6), 94.
- Smith, A., & Anderson, M. (2018). Social media use in 2018: A majority of Americans use Facebook and YouTube, but young adults are especially heavy users of Snapchat and Instagram. *Pew Research Center*.
- Statista. (2017). Statistics and Facts about Internet Usage Worldwide. Retrieved from: <https://www.statista.com/topics/1145/internet-usage-worldwide/>
- Steptoe, A., Peacey, V., & Wardle, J. (2006). Sleep duration and health in young adults. *Archives of Internal Medicine*, 166(16), 1689-1692. <https://doi.org/10.1001/archinte.166.16.1689>
- Tang, J. H., Chen, M. C., Yang, C. Y., Chung, T. Y., & Lee, Y. A. (2016). Personality traits, interpersonal relationships, online social support, and Facebook addiction. *Telematics and Informatics*, 33, 102-108. <https://doi.org/10.1016/j.tele.2015.06.003>
- Taylor, D. J., Gardner, C. E., Bramoweth, A. D., Williams, J. M., Roane, B. M., Grieser, E. A., & Tatum, J. I. (2011). Insomnia and mental health in college students. *Behavioral Sleep Medicine*, 9(2), 107-116. <https://doi.org/10.1080/15402002.2011.557992>
- Tariq, W., Mehboob, M., Khan, M. A., & Ullah, F. (2012). The impact of social media and social networks on education and students of Pakistan. *International Journal of Computer Science Issues*, 9(4), 407-411
- Vandelandotte, C., Spathonis, K. M., Eakin, E. G., & Owen, N. (2007). Website-delivered physical activity interventions: A review of the literature. *American journal of preventive medicine*, 33(1), 54-64.
- T. D., Kim, M. J., & Sexton-Radek, K. (2016). Association of stress, general health, and alcohol use with poor sleep quality among U.S. college students. *American Journal of Health Education*, 47(1), 17-23. <https://doi.org/10.1080/19325037.2015.111173>
- Van den Bulck, J. (2003). Text messaging as a cause of sleep interruption in adolescents, evidence from a cross-sectional study. *Journal of Sleep Research*, 12(3), 263-263. <https://psycnet.apa.org/doi/10.1046/j.1365-2869.2003.00362.x>
- Vorderer, P., Krömer, N., & Schneider, F. M. (2016). Permanently online—Permanently connected: Explorations into university students' use of social media and mobile smart devices. *Computers in Human Behavior*, 63, 694-703. <https://psycnet.apa.org/doi/10.1016/j.chb.2016.05.085>
- Woods, H. C., & Scott, H. (2016). # Sleepyteens: Social media use in adolescence is associated with poor sleep quality, anxiety, depression and low self-esteem. *Journal of adolescence*, 51, 41-49. <https://doi.org/10.1016/j.adolescence.2016.05.00>
- Zaremohzzabieh, Z., Samah, B. A., Omar, S. Z., Bolong, J., & Kamarudin, N. A. (2014). Addictive Facebook use among university students. *Asian Social Science*, 10, 107. <https://doi.org/10.5539/ass.v10n6p107>