Contents list available http://www.kinnaird.edu.pk/

Journal of Research & Reviews in Social Sciences Pakistan

Journal homepage: http://journal.kinnaird.edu.pk

NOMOPHOBIA, INSOMNIA, ACADEMIC PERCENTAGE, AND MENTAL HEALTH PROBLEMS IN LATE ADOLESCENTS IN PAKISTAN

Khurram Awan[1], Saher Saeed[1] and Nida Zafar, PhD [1]*,
[1]Lahore Garrison University, Lahore.

Article Info

*Corresponding Author
Email Id: nida.zafar@lgu.edu.pk

Abstract

The current study aimed to investigate the mediating role of insomnia in the relationship between nomophobia, academic percentage and mental health problems in late adolescents. A sample of 200 college students was taken from various public and private colleges of Pakistan. For assessment, Nomophobia Questionnaire (Yildirim & Correia, 2015), Bergen Insomnia Scale by Pallesen, *et al.* (2008) and Mental Health Inventory (Viet & Ware, 1983) were used. Findings showed that nomophobia has a positive significant relationship with insomnia, mental health problems and a negative relationship with academic percentage. Insomnia fully mediated the relationship between nomophobia, academic percentage and mental health problems. Nomophobia significantly predicted behavioral control, emotional ties, and life satisfaction and significantly negatively predicted positive affect and academic percentage which demonstrates partial mediation. Women reported more insomnia and mental health problems as compared to men. The present research would be fruitful for educationist, students and parents in terms of creating awareness about the negative effects of excessive usage of smart phone.

Keywords

Nomophobia, Insomnia, Academic Percentage, Mental Health Problems, Late Adolescents, Pakistan.

1. Introduction

Digital communication and electronic media have made social interaction easy, including chatting with friends, (Wilson *et al*., 2015), arranging meetings (Denstadli, Julsrud, & Hjorthol, 2011), providing online education (Sun & Chen, 2016) and various daily activities (Abdel-Aziz, Abdel-Salam, & El-Sayad, 2016). People also use smart phone for entertainment and socialization which makes them dependent on smartphone (Parasuraman *et al*., 2017; Kingdon, 2018). People are developing nomophobia due to the excessive use of smart phone (Cha & Seo, 2018; Nawaz *et al*., 2017). Nomophobia is a kind of contemporary phobia of being without a digital smartphone (Bhattacharya, Bashar, Srivastava, & Singh, 2019). Nomophobia creates feelings of missing out from using different social networking apps which cause insomnia and mental health problems in late adolescents (King *et al*., 2014; Lynkova, 2019; Tamura *et al*., 2017). Fear of not having smartphone for a long time can lead to insomnia which results in low academic grades and other psychological problems in late adolescents (Bhattacharya, Bashar, Srivastava, & Singh, 2019; Lepp, 2014; Choueiry *et al*., 2016). As per statistics of Pew Research Center, the usage of smartphones is most common in Asia, Europe and the United States. In May 2020, the statistic of nomophobia is one of the most leading problems in all countries (Qutishat *et al*., 2020; Gradisar *et al*., 2013). Continuously spending five hours a day on smartphones is 71% which increases suicidal risks for teenagers (Lynkova, 2019). Various psychological (Demirci, Akgonul, & Akpinar, 2015) and academic issues appeared in the life of students having nomophobia (Farooq *et al*., 2019; Ozdemir, Cakir, & Hussain, 2018). Nomophobia is significantly related to fear of missing out which in return associated with depression and anxiety (Ali *et al.,* 2019). Mental health is impacted, causing physical and psychological issues, and behavior changes, with negative effects on a person due to nomophobia (Rodriguez, Moreno, & Belmonte, 2020). It is commonly known that in recent years, smartphones and their features are playing a vital role in building and maintaining social connection, expression, etc. If a person having sleep deprivation, his mental health will be affected (Zainab *et al*., 2019; Kidwai & Ahmed, 2013). Poor sleep quality was closely bounded with the capacity of students to learn. The less sleep you get, it turned out that it aggravates the success into a healthier life (Maheshwari & Shaukat, 2019; Zafar, Kausar, & Pallesen, 2018; Iqbal *et al*., 2018; Zeek *et al*., 2015; Alsaggaf *et al*., 2016; Choueiry *et al*., 2016; Taylor *et al.,* 2011).

2. Objective

The main objective was to investigate whether insomnia mediates relationship between nomophobia, academic percentage, and mental health problems in late adolescents.

3. Hypotheses

H1. There is likely to have a positive relationship in nomophobia, insomnia and mental health problems in late adolescents. H2. Nomophobia is likely to have a negative relationship with the academic percentage in late adolescents.

H3. Insomnia is likely to mediate relationship in nomophobia, mental health problems, and academic percentage in late adolescents.

H4. Girls are more likely to have a high score on nomophobia, insomnia, mental health problems, and academic percentage compared to boys.

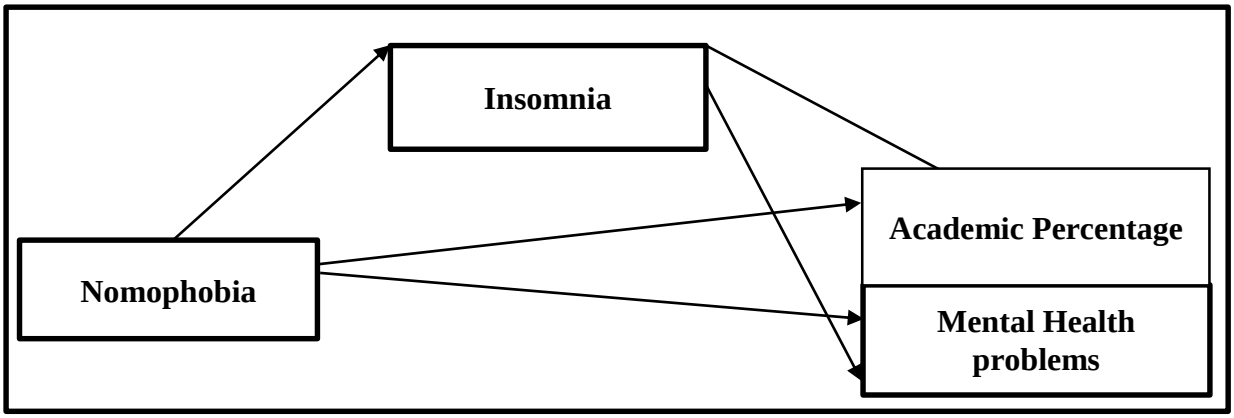

Figure 1. Proposed Model of Research

Figure 1 shows the mediation model of insomnia as being the predictor of academic percentage and mental health problems via nomophobia in late adolescents

4. Method

4.1 Sample

The sample of N = 200 late adolescents was collected through online modes from different public and private colleges of Pakistan. The age range of sample was 17 to 19 years (*M* =18.28, *SD* =.82). Students who owned personal smartphones were taken only. Duration of smartphone usage up to six hours a day, and with good mental and physical health reported by the participants were included in this research. The sample characteristics are given in Table 1.

Table 1: Description of Participants' Characteristics (N=200)

Variable	*M(SD)*	*f (%)*
Age (in years)	18.28(.82)	
Gender		
Men		82(41)
Women		118(59)
Last Examination Percentage	61.41(10.47)	
Usage of phone per day (in hours)	8.29(4.45)	
Sleeping hours per day	6.84(2.26)	
Day time sleeping hours (weekdays)	4.29(4.76)	
Nighttime sleeping hours (weekdays)	4.98(1.91)	
Day time sleeping hours (weekends)	5.14(2.16)	
Nighttime sleeping hours (weekends)	4.61(2.20)	

5. Assessment Measures

5.1 Nomophobia Questionnaire

This scale was developed by Yildirim and Correia in 2015. It has 20 items which measures four types of nomophobia including communication problems, feeling disconnectedness, unable to access information, and giving up convenience. It is a 7-point rating scale from "strongly disagree to strongly agree." The sample items are "I would be annoyed if I could not look information up on my smartphone when I wanted to do so" and "Running out of battery in my smartphone would scare me". A high score on the scale indicates high nomophobia. The reliability of this scale is .90 for the present sample. The scale was translated by researchers in Urdu language following MAPI guidelines.

5.2 Bergen Insomnia Scale

It was developed by Pallesen, *et al*. (2008). It is comprised of six items; it has an eight-point scale representing the number of days per week when insomnia related symptoms appear. The scale has good test-retest reliability. The sample item is "how many days a week you took more than 30 minutes to sleep after the light was switched off?" The high score on scale shows more insomnia. The reliability of the scale in current study was .93. The Urdu version of the scale translated by Zafar and Kausar (2016) was used in this research.

5.3 The Mental Health Inventory

The Mental Health Inventory by Viet and Ware, 1983 was used to assess mental health issues including depression, mood problems, behavioral control. It is 38 items scales with 6-point rating scale. The sample items are "For past one month, how happy and satisfied you have been with your personal life" and "In the past month, how many times have you felt crying often?". The MHI score system produces total score and subscales scores separately. For the current research, reliability was .84. The Urdu version of the scale translated by Zafar and Kausar, (2016) was used in this research.

6. Procedure

Permissions to use and translate assessment measures before data collection were received by the respective authors. Participants were assured of the confidentiality of information on the results. Participants were also assured that they can withdraw at any time during the research. It was mentioned that ten participants will be given incentives after filling the measures. Then researchers administered all assessment measures online. It took around 40 minutes approximately to fill all the assessment measures. After collecting data, the participants were given incentives in the form of mobile top up via lucky draw and were expressed with gratitude to be a part of the study.

7. Results

Results of psychometric analysis are presented in table 2.

Table 2: Psychometric Properties of Assessment Measures (N=200)

Scales	*K*	*α*	*M*	*SD*	*Actual*	*Potential*
Nomophobia Questionnaire	20	.90	74.18	18.87	33-132	20-140
Bergen Insomnia Scale	6	.93	25.02	8.23	10-42	6-42
Mental Health Inventory (overall score)	38	.84	145.36	29.97	91-220	38-226
Anxiety	9	.81	32.18	7.63	12-51	9-54
Depression	5	.69	16.36	4.08	7-27	5-29
Loss of Behavioral/Emotional control	10	.46	34.52	6.51	21-53	10-59
General positive affect	10	.84	33.90	7.61	20-56	10-60
Emotional ties	2	.73	6.76	2.22	3-12	2-12
Life satisfaction	2	.52	7.31	2.03	2-12	2-12

Note. k=number of items; *α=reliability; M=mean; SD=standard deviation*

Psychometrics shows that all scales have acceptable reliability to proceed further.

Table: 3Relationship in Nomophobia, Insomnia, Academic Percentage and Mental Health Problems in Late Adolescents (N=200)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. PMY	-																	
2. MPH	-.19**	-																
2. MUA	-.01	-.16*	-															
3. SHD	-.14*	-.08	.12	-														
4. SDT (WDS)	.15*	-.04	.02	.14*	-													
5. SNT (WDS)	.17*	-.35***	.17*	.01	-.03	-												
6. SDT (WND)	.15*	-.10	.06	.16*	.51***	-.01	-											
7. SNT (WND)	.22**	-.35***	.12	.03	.01	.61***	-.02	-										
8. NMP	.21**	-.10	.07	-.04	-.03	.23**	.06	.24**	-									
9. INS	.12	.15*	.06	-.05	-.07	.13	.07	.15*	.67***	-								
11. APA	.13	-.04	-.05	.01	.10	.04	.03	-.001	-.31***	-.25***	-							
12. MHP	.27***	-.24**	.15*	-.01	.09	.24***	.11	.27***	.76***	.72***	-.17*	-						
13. ANX	.20**	-.18**	.09	-.12	.04	.16*	.06	.14*	.44***	.68***	-.01	.64***	-					
14. DEP	.21**	-.21**	.13	-.02	.05	.25***	.05	.25***	.53***	.58***	-.14*	.66***	.65***	-				
15. LBE	.23**	-.15*	.11	.01	.07	.18*	.13	.17*	.53***	.47***	-.06	.64***	.56***	.60***	-			
16. GPA	.23**	-.15*	.17*	-.13	.23**	-.02	.07	.01	-.21**	-.10	-.01	-.04	-.09	-.16*	-.23**	-		
17. TET	.11	-.03	.14*	-.17*	.04	.09	.19**	-.02	.21**	.08	.07	.23**	.06	.00	.10	.43***	-	
18. TLS	.30***	-.19**	.15*	.10	.13	.19**	.15*	.10	.33***	.22**	-.01	.35***	.12	.11	.31***	.32***	.47***	-

Note. PMY= pocket money; MPH= mobile phone usage in hours; MUA= mostly used applications; SHD= sleeping hours per day; SNT (WDS)= sleeping hours during night time on weekends; SDT (WND)= sleeping hours during daytime on weekdays; SDT (WND)= sleeping hours during daytime on weekdays; NMP= Nomophobia; INS= insomnia; APA= academic percentage; MHP= mental health problems; ANX= anxiety; DEP= depression; LBE= loss of behavioral/emotional control; GPA= general positive affect; TET=emotional ties; TLS= life satisfaction *p<.05, **p<.01, ***p<.001

Results showed that nomophobia has a significant positive relationship with insomnia and all subscales of mental health problems except positive affect and insomnia have significant negative relationship with academic percentage and general positive affect. To test the mediation hypothesis, mediation analysis was applied. First of all, Barron and Kenny's assumptions of mediation were checked. As all the assumptions were fulfilled, hierarchical regression analysis was used for mediation. In block 1, control variables were added. In block 2, insomnia was added and in block 3 nomophobia was added. The results are shown in table 4.

Table 4: Mediating Role of Insomnia in the relationship between Nomophobia, Academic Percentage and Mental Health Problems in Late Adolescents

	Academic Percentage		**Mental Health Problems**											
			Anxiety		**Depression**		**Loss of behavioral/ emotional control**		**General positive affect**		**Emotional ties**		**Life satisfaction**	
Predictors	*β*	SE	*β*	SE	*β*	SE	*B*	SE	*β*	SE	*β*	SE	*β*	SE
Block 1														
PMY	.12	.001	.13	.01	.13	.001	.18	.001	.18*	.01	.06	.001	.28***	.001
MPH	-.03	.18	-.12	.13	-.09	.06	-.04	.11	-.15*	.12	.01	.03	-.08	.03
MUA	-.06	.24	.07	.17	.09	.09	.08	.14	.19**	.16	.15*	.05	.11	.04
SHD	.02	.34	-.13	.24	-.03	.12	.001	.20	-.16*	.23	-.21**	.06	.10	.06
SDT (WDS)	.10	.18	.02	.13	.02	.06	-.001	.11	.26**	.12	-.04	.03	.04	.03
SNT (WDS)	.08	.50	.07	.35	.11	.18	.07	.30	-.10	.33	.15*	.10	.15*	.09
SDT (WND)	-.04	.40	.04	.28	.01	.15	.09	.24	-.08	.27	.22**	.08	.05	.07

SNT (WND)	-.08	.44	.01	.31	.10	.16	.06	.26	-.04	.29	-.13	.08	-.10	.07
Block 2														
Insomnia	-.27***	.09	.66***	.04	.55***	.02	.44***	.05	-.12*	.06	.04	.01	.17*	.01
Block 3														
Nomophobia	-.32**	.05	-.04	.02	.21	.01	.35***	.02	-.31***	.03	.27**	.01	.28**	.01
R	.39		.71		.65		.58		.49		.40		.48	
R²	.15		.50		.43		.34		.24		.16		.23	
F	3.50***		19.45***		14.31***		10.02***		6.16***		3.74***		5.86***	
ΔR²	.05		.00		.02		.06		.05		.03		.04	

Note. PMY= pocket money; MPH= mobile phone usage in hours; MUA= mostly used applications; SHD= sleeping hours per day; SDT (WDS)= sleeping hours during the daytime on weekdays; SNT (WDS)= sleeping hours during nighttime on weekends; SDT (WND)= sleeping hours during the daytime on weekdays; SDT (WND)= sleeping hours during daytime on weekdays *p<.05, **p<.01, ***p<.001

Results of mediation showed that the relationship between academic percentage and mental health problems was mediated by insomnia via nomophobia. Nomophobia was a significant positive predictor of loss of behavioral/emotional control, emotional ties, and life satisfaction, and a significant negative predictor of academic percentage and general positive effect in late adolescents. Moreover, Insomnia was a significant positive predictor of anxiety, depression, loss of behavioral/emotional control and life satisfaction, and a significant negative predictor of academic percentage and general positive effect in late adolescents. Results also showed that insomnia fully mediates the relationship between nomophobia with academic percentage and subscales of mental health (emotional control and general positive affect, and life satisfaction) and partially mediates the relationship between nomophobia and subscales of mental health problems (emotional ties, anxiety and depression) in late adolescents. Sobel test was applied to check the significance of mediation. Results of the Sobel test suggested that there was a negative association between nomophobia and the academic percentage which was significantly mediated by insomnia ($z' = -2.56$, $p<0.05$). Depression ($z' = 2.60$, $p<0.05$)., behavioral control ($z' = 3.68$, $p<0.05$) and life satisfaction ($z' = 1.95$, $p<0.05$) was positively significant mediated by insomnia.

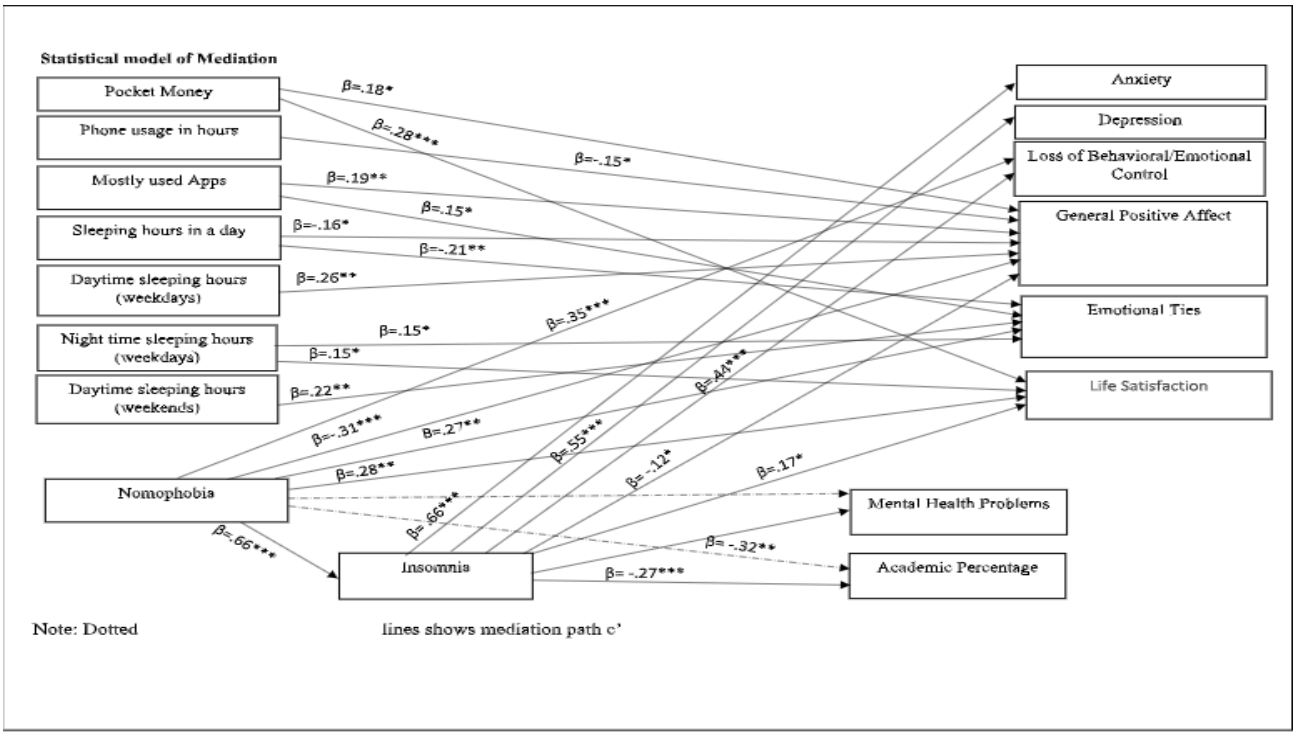

Figure 2: shows the statistical model for nomophobia and insomnia as a predictor of academic percentage and mental health problems.

Table 5: Gender Differences in Nomophobia, Insomnia, Academic percentage and Mental Health Problems in Late Adolescents (N=200)

	Men (n=82)		Women (n=118)				*95% CI*		
Variables	*M*	*SD*	*M*	*SD*	*t*	*p*	*LL*	*UL*	*Cohen's d*
Nomophobia	71.71	18.04	75.88	19.31	-1.54	.12	-9.50	1.16	
Insomnia	22.90	7.47	26.50	8.44	-3.10	.001	-5.88	-1.31	.45
Academic Percentage	61.28	10.59	61.50	10.43	-.14	.88	-3.19	2.75	
Mental Health (overall)	138.91	28.76	149.83	30.09	-2.57	.01	-19.30	-2.54	.37
Anxiety	30.47	6.91	33.37	7.89	-2.68	.001	-5.02	-.76	.39
Depression	15.97	3.92	16.63	4.18	-1.12	.26	-1.81	-4.96	
Behavioral/emotional control	33.95	6.03	34.92	6.82	-1.03	.30	-2.81	.87	
General positive affect	34.07	8.01	33.77	7.36	.26	.78	-1.87	2.45	
Emotional ties	6.77	2.28	6.76	2.18	.01	.98	-.62	-.63	
Life Satisfaction	7.39	1.97	7.25	2.06	.46	.64	-.44	.71	

Note: M=mean; SD=standard deviation; LL=lower limit; UL= upper limit; 95% CI= 95 percent confidence interva

The results of table 5 showed that significant gender differences were found only in insomnia, overall mental health problems, and anxiety in late adolescents. Moreover, women reported more problems with insomnia, overall mental health problems, and anxiety as compared to men.

8. Discussion

The present research showed that nomophobia is related to insomnia, poor mental health and poor academic performance. These findings are in line with the previous researches conducted on the subject (Bhattacharya, Bashar, Srivastava, & Singh, 2019; Lepp, 2014). Findings also demonstrated that insomnia has a significant positive impact on nomophobia and mental health problems such as depression and life satisfaction. Findings of our research are in line with the past researches of Veerapu *et al*., (2019) and Farooq *et al*., (2019), they concluded the positive relationship of nomophobia, sleep difficulty, and anxiety among students. In today's times, when smartphone addiction is on its peak people rely more on mobile phones to be communicated with all the world at a single time. Thus, the person having nomophobia symptoms has a fear of missing out from the social networking apps which causes sleep deprivation and affects the mental health of millions of people around the world (Kumari *et al*., 2019; Nour *et al*., 2016). The research supports the hypothesis that insomnia would mediates with academic percentage and mental health in the light of nomophobia. A person may suffer only from nomophobia because they have a mental health problem. Instead, if a person does not sleep properly due to the excessive use of smartphones, the person is at risk of developing more mental health problems than those who sleep properly (Tavernier & Willoughby, 2014). Smartphone addiction is increasing worldwide day by day (Kingdon, 2018). Sleeping hours during the day is a symptom with high clinical and public health importance because it is related to increased risk for poor academic performance, impaired quality of life and poor mental health (Fu *et al*., 2020; Hayley *et al*., 2015). Insomnia symptoms and mental health problems were related to occurrences of daytime sleepiness in one study (Hasler *et al*., 2005; Ohayon *et al*., 2012). However, sleeping hours during the day were related to depression, but not with emotional ties and life satisfaction in another study (Hayley *et al*., 2013). Our results explained a significant relationship between sleeping hours during the daytime with emotional ties and life satisfaction. This could be because the more sleep the students need for better sleep, the more comfortable they can be in life and then work effectively over the rest of the hours (Iftikhar *et al*., 2014, Shabir *et al*., 2014). Studies on insomnia and academic percentage, have shown that the two constructs seem to be negatively related. Findings proved that if adolescents have sleep deprivation than their academic performance will be affected (Alqudah *et al*., 2019; Haile, Alemu, & Habtewold, 2017; Maheswari & Shaukat, 2019; Vedaa, 2019). Thus, students should be educated that adequate sleep is important to help healthy every-day and learning and memorizing information. Furthermore, results showed that insomnia had a significant positive relationship with

poor mental health which is consistent with previous meta-analysis conducted by Choueiry *et al*., (2016) and (Staner, 2003). However, mental health problems such as depression associated with academic performance (Hysenbegasi, Hass, & Rowland, 2005; Moreira de Sousa, Moreira, & Telles-Correia, 2018). Our results showed a significant negative relationship between depression and academic percentage. In Asian culture, specifically in Pakistan, there are few opportunities for kids to play football, cricket, soccer, swimming, jogging, etc., but very few for girls to leave their homes because of the cultural constraints (Ahmed & Qazi, 2011). The relationship of nomophobia and mental illnesses was also stronger for girls than boys. The threat to the security system in Pakistan is also a major concern, and because of this, parents are unable to allow their children to spend more time outside their homes. Typically, students spend time at home after school, college, or university, and smartphone use is the only source of entertainment and also a need to do socializing. To conclude, study results showed that nomophobia and insomnia were significantly related to academic performance as well as with mental health problems.

9. Implications

Despite the above-stated limitations, the study has important implications. The present research contributes to the existing body of knowledge about how nomophobia and insomnia have consequences on student's mental health and academic performance. This study is important because it provides information to create awareness about nomophobia and insomnia, on educational attainment among adolescents. This research will increase the awareness to concentrate on student's sleep deprivation to start their day fresh and learning new things effectively to get academic success. Finally, it will control children's activities which lead to academic failure and poor patterns of life achievement.

Limitations of the Study

The present study has some limitations that are mentioned here.

1. First of all, data on sleep diaries were not included in this analysis due to time constraints. Future work is suggested to collect data through the sleep diary on sleep quantity and efficiency.
2. The research was mainly based on Lahore (online data collection), so the results could not be extended to other cities and regions. It is proposed that data from other cities of Pakistan should in the future be collected to get an overview of smartphone use and, accordingly, to establish some action and take precautionary steps to overcome the trending behavioral addiction.
3. The screening question regarding good mental and physical health was not included.
4. The sample of this research was collected during COVID-19, acts as a confounding variable that affects mental health problems.

References

Abdel-Aziz, A. A., Abdel-Salam, H., & El-Sayad, Z. (2016). The role of ICTs in creating the new social public place of the digital era. *Alexandria Engineering Journal, 55*(1), 487-493. https://doi:10.1016/j.aej.2015.12.019

Ahmed, I, & Qazi, T. (2011). A look out for academic impacts of social networking sites (SNSs), A student-based perspective. *African Journal of Business and Management, 5*(12), 5022-5031. https://doi: 10.5897/AJBM11.595

Ali, A., Mehmood, S., Farooq, L., Arif, H., Korai, N. A., & Khan, M. A. U. (2019). Influence of Excessive Mobile Phone Use on Anxiety and Academic Performance among Medical College Students. *Journal of Pharmaceutical Research International, 31*(6), 1-7. https://doi.org/10.9734/jpri/2019/v31i630334

Alqudah, M., Balousha, S. A. M., Al-Shboul, O., Al-Dwairi, A., Alfaqih, M. A., & Alzoubi, K. H. (2019). Insomnia among Medical and Paramedical Students in Jordan: Impact on Academic Performance. *BioMed Research International,* 1–7. https://doi:10.1155/2019/7136906

Alsaggaf, M., Wali, S., Merdad, R., & Merdad, L. (2016). Sleep quantity, quality, and insomnia symptoms of medical students during clinical years. Relationship with stress and academic performance. *Saudi Medical Journal, 37*(2), 173-182. https://doi:10.15537/smj.2016.2.14288

Bhattacharya, S., Bashar, M. A., Srivastava, A., & Singh, A. (2019). Nomophobia: No Mobile Phone Phobia. *Journal of family medicine and primary care, 8*(4), 1297–1300. https://doi:10.4103/jfmpc.jfmpc

Cha, S. S., & Seo, B. K. (2018). Smartphone use and smartphone addiction in middle school students in Korea: Prevalence, social networking service, and game use. *Health Psychology Open.* https://doi:10.1177/2055102918755046

Choueiry, N., Salamoun, T., Jabbour, H., El Osta, N., Hajj, A., & Rabbaa Khabbaz, L. (2016). Insomnia and relationship with anxiety in university students: a cross-sectional designed study. *PLOS ONE, 11*(2), 1–11. https://doi:10.1371/journal.pone.0149643

Demirci, K., Akgonul, M., & Akpinar, A. (2015). Relationship of smartphone use severity with sleep quality, depression, and anxiety in university students. *Journal of Behavioral Addictions, 4*(2), 85–92. https://doi:10.1556/2006.4.2015.010

Denstadli, J. M., Julsrud, T. E., & Hjorthol, R. J. (2011). Videoconferencing as a mode of Communication. *Journal of Business and Technical Communication, 26*(1), 65 - 91. https://doi:10.1177/1050651911421125

Farooq, L., Ali, A., Mahmood, S., Farzand, M., Masood, H., & Mujahid, S. (2019).

Association between Excessive Use of Mobile Phone and Insomnia among Pakistani Teenagers Cross-Sectional Study. *American International Journal of Multidisciplinary Scientific Research, 5*(4), 10-15. https://doi.org/10.46281/aijmsr.v5i4.406

Fu, S., Chen, X., & Zheng, H. (2020). Exploring an adverse impact of smartphone overuse on academic performance via health issues: a stimulus-organism-response perspective. *Behaviour & Information Technology, 40*(7), 663-675. https://doi.org/10.1080/0144929X.2020.1716848

Gradisar, M., Wolfson, A. R., Harvey, A. G., Hale, L., Rosenberg, R., & Czeisler, C. A. (2013). The Sleep and Technology Use of Americans: Findings from the National Sleep Foundation's 2011 Sleep in America Poll. *Journal of Clinical Sleep Medicine, 9*(12), 1291-1299. https://doi.10.5664/jcsm.3272

Haile, Y. G., Alemu, S. M., & Habtewold, T. D. (2017). Insomnia and its temporal association with academic performance among university students: a cross-sectional study. https://doi. org/10.1155/2017/2542367

Hasler, G., Buysse, D. J., Gamma, A., Ajdacic, V., Eich, D., Rössler, W., & Angst, J. (2005). Excessive daytime sleepiness in young adults: a 20-year prospective community study. *The Journal of clinical psychiatry, 66*(4), 521–529. https://doi.org/10.4088/jcp.v66n0416

Hayley, A. C., Williams, L. J., Berk, M., Kennedy, G. A., Jacka, F. N., Pasco, J. A. (2013). The relationship between excessive daytime sleepiness and depressive and anxiety disorders in women. *Australian & New Zealand Journal of Psychiatry, 47*(8), 772–778. https://doi. 10.1177/0004867413490036

Hayley, A. C., Williams, L. J., Kennedy, G. A, Berk, M., Brennan, S. L., Pasco, J. A. (2015). Excessive daytime sleepiness and metabolic syndrome: a cross-sectional study. Metabolism, 64(2), 244–52. https://doi, 10.1016/j.metabol.2014.09.011

Hysenbegasi, A., Hass, S. L., & Rowland, C. R. (2005). The impact of depression on the academic productivity of university students. *The journal of mental health policy and economics, 8*(3), 145–151.

Iftikhar, M., & Tariq, S. (2014). Self-control, Narcissistic tendencies, and internet addiction among adolescents. *Journal of Arts & Social Sciences, 1*(2), 37-52.

Iqbal, M., Akbar, M., Khalid, R., & Iqbal, T. (2018). *Sleep and academic performance. Pakistan Journal of Physiology, 14*(2), 41–42. Retrieved from https://pjp.pps.org.pk/index.php/PJP/article/view/210

Kidwai, R., & Ahmed, S. H. (2013). Prevalence of insomnia and use of sleep medicines in urban communities of Karachi, Pakistan.

The Journal of the Pakistan Medical Association, 63(11), 1358–1363.

King, A. L. S., Valença, A. M., Silva, A. C., Sancassiani, F., Machado, S., & Nardi, A. E. (2014). Nomophobia: Impact of cell phone use interfering with symptoms and emotions of individuals with panic disorder compared with a control group. *Clinical Practice & Epidemiology in Mental Health, 10*(1), 28–35. https://doi:10.2174/174501790141001002 8

Kingdon, J. M. (2018). *The Rise of Phone Addiction. Thrive Global.* Retrieved from https://thriveglobal.com/stories/stats-the-rise-of-phone-addiction/

Kumari, G. K., Pasha, A. M and Fathima, A. (2019). Prevalence of nomophobia and use of social networking sites and apps- a cross-sectional study among undergraduate medical students in SRMC, Nandyal. *Journal of Dental and Medical Sciences, 18*(5), 31-34. https://doi: 10.9790/0853-1805043134

Lepp, A., Barkley, J. E., & Karpinski, A. C. (2014). The relationship between cell phone use, academic performance, anxiety, and Satisfaction with Life in college students. *Computers in Human Behavior, 31,* 343–350. https://doi:10.1016/j.chb.2013.10.049

Lynkova, D. (2019). *21 + Freelancer Statistics to Make You Dutch Your 9-5 in 2020. Leftronic*. Retrieved from https://leftronic.com/freelancer-statistics/

Maheshwari, G., & Shaukat, F. (2019). Impact of Poor Sleep Quality on the Academic Performance of Medical Students. *Cureus, 11*(4), e4357. https://doi.org/10.7759/cureus.4357

Moreira de Sousa, J., Moreira, C., & Telles-Correia, D. (2018). Anxiety, depression, and academic performance: a study amongst Portuguese medical students versus non-medical students. *Acta Medica Portuguesa, 31*(9), 454-462. https://doi.org/10.20344/amp.9996

Nawaz, I., Sultana. I., Amjad, J. M., & Shaheen, A. (2017). Measuring the Enormity of Nomophobia Among Youth in Pakistan. *Journal of Technology in Behavioral Science, 2*(4), 149-155. https://doi:10.1007/s41347-017-0028-0

Nour, M. M., Evans, L., Nutt, D., & Carhart-Harris, R. (2016). Ego-dissolution and psychedelics: validation of the ego-dissolution inventory (EDI). *Frontier in Human Neuroscience, 10,* 269. https://doi.org/10.3389/fnhum.2016.00269

Ohayon, M. M., Riemann, D., Morin, C., & Reynolds, C. F. (2012). Hierarchy of insomnia criteria based on daytime consequences. *Sleep Medicine, 13*(1), 52–57. https://doi:10.1016/j.sleep.2011.06.010

Ozdemir, B., Cakir, O., and Hussain, A. (2018). Prevalence of nomophobia among university students: a comparative study of Pakistani and Turkish undergraduate students. *EURASIA Journal of Mathematics, Science, and Technology Education, 14*(4), 1519-1532. https://doi: 10.29333/ejmste/84839.

Pallesen, S., Bjorvatn, B., Nordhus, I. H., Sivertsen, B., Hjørnevik, M., Morin, C. M. A. (2008). New scale for measuring insomnia: The Bergen Insomnia Scale. *Perceptual and Motor Skills, 107*(3), 691-706.

Parasuraman, S., Sam, A. T., Yee, S., Chuon, B., & Ren, L. Y. (2017). Smartphone usage and increased risk of mobile phone addiction: A concurrent study. *International journal of pharmaceutical investigation, 7*(3), 125–131. https://doi.org/10.4103/jphi.JPHI_56_17

Qutishat, M., Lazarus, E. R., Razmy, M., & Packianathan, S. (2020). University students' nomophobia prevalence, sociodemographic factors, and relationship with academic performance at a university in Oman. *International Journal of Africa Nursing Sciences, 100206.* https://doi:10.1016/j.ijans.2020.100206

Rodriguez-Garcia, A. M., Moreno-Guerrero, A., & Belmonte, J. (2020). Nomophobia: An Individual's Growing Fear of Being without a Smartphone—A Systematic Literature Review. *International Journal of Environmental Research and Public Health, 17*(2), 580. https://doi:10.3390/ijerph17020580

Sagar, K. (2019). Smartphone Addiction: Nomophobia. *Asian Journal of Nursing Education and Research, 9*(4), 583-587. doi: 10.5958/2349-2996.2019.00128.9

Shabir, G., Hameed, Y. M. Y., Safdar, G., & Gilani, S. M. F. S. (2014). The impact of social media on youth: A case study of Bahawalpur city. *Asian Journal of Social Sciences and Humanity, 3*(4), 152-161.

Staner, L. (2003). Sleep and anxiety disorders. *Dialogues in clinical neuroscience, 5*(3), 249–258. https://doi.org/10.31887/DCNS.2003.5.3/lstaner

Sun, A., & Chen, X. (2016). Online education and its effective practice: A research review. *Journal of Information Technology Education: Research, 15*, 157-190. Retrieved from http://www.informingscience.org/Publications/3502

Tamura, H., Nishida, T., Tsuji, A., & Sakakibara, H. (2017). Association between excessive use of mobile phone, insomnia and depression among Japanese adolescents. *International Journal of Environmental Research and Public Health, 14*(7), 701. https://doi:10.3390/ijerph14070701

Tavernier, R., & Willoughby, T. (2014). Sleep problems: predictor or outcome of media use among emerging adults at university? *Journal of Sleep Research, 23*(4), 389–396. https://doi:10.1111/jsr.12132

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:10.1080/15402002.2011.557992

Vedaa, O., Erevik, E. K., Hysing, M., Hayley, A. C., & Sivertsen, B. (2019). Insomnia, sleep

duration, and academic performance: a national survey of Norwegian college and university students. Sleep Medicine: X, 1, 100005. https://doi:10.1016/j.sleepx.2019.100005

Veerapu, N., Philip, K. R., Vasireddy, H., Gurrala, S., & Kanna, T. S. (2019). A study on nomophobia and its correlation with sleeping difficulty and anxiety among medical students in a medical college, Telangana. International *Journal of Community Medicine and Public Health, 6*(5), 2074-2076. https://doi.org/10.18203/2394-6040.ijcmph20191821

Wilson, R. E., Harris, K., & Vazire, S. (2015). Personality and friendship satisfaction in daily life: do every day social interactions account for individual differences in friendship satisfaction. *European Journal of Personality, 29*(2), 173–186. https://doi:10.1002/per.1996

Yildirim, C., & Correia, A. (2015). Exploring the dimensions of nomophobia: Development and validation of a self-reported questionnaire. *Journal of Computers in Human Behavior, 49*(1), 130-137. https://doi: 10.1016/j.chb.2015.02.059

Zafar, N., Kausar, R., & Pallesen, S. (2016). Psychosocial Factors and Implications of Usage of Social Networking Sites: A Cross-Cultural Study. Unpublished PhD Dissertation, Institute of Applied Psychology, University of the Punjab, Lahore.

Zafar, N., Kausar, R., & Pallesen, S. (2018). Internet addiction, insomnia and mental health problems in university students in Pakistan. *Pakistan Journal of Social and Clinical Psychology, 16*(2), 10-16.

Zainab, S., Khoso, A., Soomro R. A, Zehra, R. (2019). Demographic and academic characteristics of medical students with sleep disorders- A cross-sectional study from Karachi, Pakistan. *Isra Medical Journal, 11*(4), 247-251.

Zeek, M. L., Savoie, M. J., Song, M., Kennemur, L. M., Qian, J., Jungnickel, P. W., & Westrick, S. C. (2015). Sleep Duration and Academic Performance Among Student Pharmacists. *American Journal of Pharmaceutical Education, 79*(5), 63. https://doi:org/10.5688/ajpe79563.