Pakistan Journal of Social and Clinical Psychology
2018, Vol. 16, No.2, 10-16

Internet Addiction, Insomnia and Mental Health Problems in University Students in Pakistan

Nida Zafar
University of the Punjab, Lahore, Pakistan.

Rukhsana Kausar
University of Management and Technology, Lahore.

Ståle Pallesen
University of Bergen, Norway.

The present research investigated the mediating role of insomnia in the relationship between internet addiction and mental health problems in university students. The research was carried out in two phases. In phase I, 1352 students were screened using Internet Addiction Test (Young, 1996) and 703 participants scored higher than the cutoff point thereby showing 52 % prevalence of internet addiction. In phase II, the Bergen Insomnia Scale (Pallesen et al., 2008) and the Mental Health Inventory (Veit & Ware, 1986) were administered on 424 who agreed to be part of the study. Hierarchical regression analysis indicated that insomnia was a significant mediator in the relationship between internet addiction and mental health problems (i.e. depression, anxiety, behavioral control, and negative affect). After controlling the effect of insomnia, internet addiction significantly predicted depression and anxiety hence demonstrating a partial mediation effect of insomnia between internet addiction and psychiatric problems. The present findings are important for parents, policy makers and clinician in terms of developing interventions for prevention of internet addiction.
Key Words: Internet addiction, insomnia, depression, anxiety, behavioral control, negative affect

Internet addiction has emerged as common disorder and qualifies to be included in DSM-V as a mental health disorder (Chen & Fengau, 2016). Internet addiction is a worldwide problem these days and youngsters are the most prolific users of internet (Cain & Gradisar, 2010; Gau, 2006; Tavernier & Willoughby, 2014). With the advancement of technology, young people are becoming more and more attracted to the internet for learning, discovering and communicating new things. Moreover, the youngesters are becoming internet addicts for interacting, communicating and entertaining themselves on social media sites (Hurr, 2006; Starcevic, 2013).

Addiction to internet has been linked with poor quality of sleep (Cheung & Wong, 2011), mood disorders, impulsivity, depression (An et al., 2014; Kim et al., 2010) and several other mental health problems (Naseri, Mohamadi, Sayehmiri, & Azizpoor, 2015). Sleep is considered very important for all age groups as it is vital for memory, learning and mental health (Gradisar, Terrill, Johnston, & Douglas, 2008). The routines and sleeping patterns of human beings are governed by circadian rhythms. The sleep awake rhythm follows circadian rhythmicity along with several other bodily functions (e.g. digestion, secretion of several hormones) (Tavernier & et al., 2014). Sleep problems related to internet addiction are very prevalent in young people and contribute to poor mental and physical health (Curcio, Ferrara, & Gennaro, 2006; Dewald et al., 2010).

Ample evidence shows that excessive usage of internet is positively correlated with mental health disturbances (Becker, Langberg, & Byars, 2015). Canan et al. (2013)'s study on Turkish adolescents revealed significant positive correlation between internet addiction and sleep problems. Park, Hwang, and Huh, (2010) did study on a Korean sample who were internet addicts and concluded that they had high level of social anxiety and stress. A large body of literature found link between technologies related sleep deprivation and outcomes such as anxiety, depression, stress, mood disorders and risky health behaviors in form of psychoactive substances and smoking (Alfano et al., 2009). Adolescents with high level of internet addiction show higher prevalence of depressive symptoms and anxiety disorders (Baum et al., 2014; Gregory, & Sadeh, 2012; Lovato & Gradisar, 2014).

Cheng and Lam Li (2014) did meta-analysis of research conducted in seven regions in order to provide an overview of global prevalence of internet addiction. The overall prevalence rate of internet addiction was 6.0%, and for specific regions it ranged from 0.1% (South America) to 10.9% (Middle East). In other regions e.g. for North America, it was 8%, for Asia it was 7.1%, for South and East Europe, it was 6.1% and for North and West Europe, it was 2.6 %. Looking at the high rates of internet usage, researchers have started to look at the causes and implications of excessive internet usage. Most of the researchers have focused on young people such as university and college students as they are more prone to developing internet addiction due to easy access of internet and less control from parents (Young, 2004) as well as due to developmental dynamics related to intimacy and identity (Kandell, 1998).

The purpose of this research was to assess the relationship in internet addition, insomnia and mental health problems and to investigate the mediating role of insomnia in relationship between internet addiction and mental health in youngsters. Furthermore, this research also aimed to investigate gender differences in internet addiction, insomnia and mental health problems.

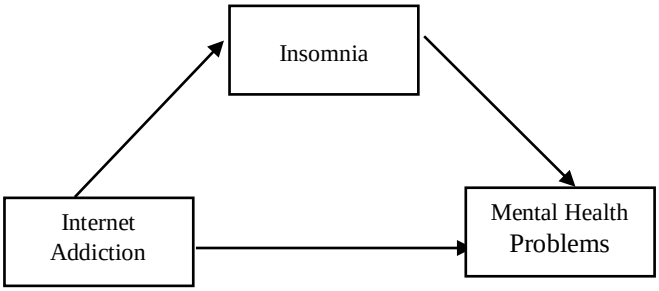
Correspondence regarding this article should be addressed to Nida Zafar- Senior Lecturer Department of Psychology Lahore Garrison University
Email: nida.zafar28@gmail.com

Hypotheses

- Internet addiction is likely to have positive relationship with insomnia and mental health problems.
- Insomnia is likely to have positive relationship with mental health problems.
- Insomnia is likely to mediate the relationship between internet addiction and mental health problems in youngsters.
- There would be gender differences in internet addiction, insomnia and mental health problems in youngsters.

After reviewing theoretical framework and literature review, the following model was postulated.

Figure 1. Hypothesized model of the research



Method

Sample

The present research was carried out in two phases from October, 2016 to December, 2016. In phase I, 424 students were screened for internet addiction. In phase two, the Bergen Insomnia Scale (Pallesen et al., 2008) and the Mental Health Inventory (Veit & Ware,1986) were administered to those who scored high on internet addiction in phase I. Participants ranged in ages between 17-25 years (*M*=19.50, *SD*= 1.61). Purposive sampling strategy was used to recruit sample according to following criteria.

Inclusion criteria

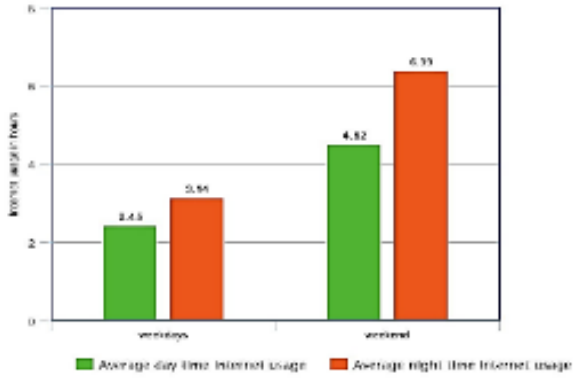
- Who had either personal smartphone or computer (either desktop or laptop).
- Those using social media sites for at least 2 hours per day.

Exclusion criteria

- Those using social networking sites for job requirements such as blogging, publicity on social webs, and online consultation.
- Those studying IT, business and computer related fields which require excessive use of such sites for academic purposes.
- Those with any mental health problem screened using mental health screening questionnaire (Mirza & Kausar, 2010).

Table 1
Sample Characteristics, Internet Usage and Sleep Patterns of Participants (N=424)

Characteristics	*f (%)*	*M (SD)*
Age (in years)		19.75 (1.72)
Monthly income in PKR (PKR 1= USD 0.0071)		52,540 (28.78)
Internet Usage in weekdays and weekends in hours		
Day time internet usage in weekdays per day		2.45(3.12)
Night time internet usage in weekdays per day		3.14(3.93)
Day time internet usage on weekends per day		4.52(2.10)
Night time internet usage on weekends per day		6.39(2.78)
Sleep patterns in weekdays and weekends in hours		
Average sleep hours in weekdays during day		2.31(13.22)
Average sleep hours in weekdays during night		3.26(19.13)
Average sleep hours on weekends during day		5.76(15.14)
Average sleep hours on weekends during night		2.22(2.78)
Gender		
Men	233(55)	
Women	191(45)	
Living style		
Nuclear (living with parents & siblings)	254(60)	
Joint (living with parents, siblings, grandparents etc.)	170(40)	
Regular exercise making sweaty or out of breath		
Never	17(4)	
Less than two times per year	28(6)	
3-4 times per year	71(17)	
5-11 times per year	85(20)	
1-3 times per month	96(23)	
1-2 times per week	81(19)	
More than two times per week	46 (11)	



Instruments

All instruments were translated and validated in Pakistani national language Urdu using MAPI institute (2008)'s guidelines for Linguistic Validation.

Demographic Characteristics, Internet Usage and Sleep Patterns related Questionnaire. Questions about age, gender, monthly income, family system, physical exercise, and internet usage and sleep pattern were included.

Internet Addiction Scale. Young in 1996 has developed Internet Addiction Scale. It has 20 items with six-point rating scale (does not apply=0 to always=5). It measures the intensity of internet usage and its score ranges from 0-100. The sample item is "How much time you stay online opposite to your intention of staying online?" High score on the scale indicates high internet addiction. Cronbach's alpha coefficient of IAT was .81 for the present sample.

Bergen Insomnia Scale. The Bergen Insomnia Scale was developed by Pallesen et al. (2008). It has 6 items, covering problems of onset of sleep, maintenance of sleep, early morning awakening, poor restitution, daytime impairment, and dissatisfaction with sleep. It has an 8 point rating scale in which participant report their sleep disturbances according to the their symptoms while sleeping. The sample item is "how many days a week you took more than 30 minutes to sleep after light was switched off?" Higher score reflects high level of insomnia. For current study, Cronbach's alpha coefficient of the scale was .89.

The Mental Health Inventory. The Mental Health Inventory (MHI) was developed by Veit and Ware (1986). The MHI consists of 18 items and four sub scales, depression, anxiety, behavioral control and general distress. The sample item is "Did you feel depressed?". The scoring system for the MHI produce cumulative scores as well as scores of all subscales (anxiety, depression, behavior control, and positive affect), respectively. For the present study, Cronbach's alpha coefficient was .79 for complete scale and for subscales; depression, anxiety, positive affect and general distress, it was .79, .87, .78 and .81 respectively.

Procedure

First, Institutional Review Board Committee of University of the Punjab, Lahore, Pakistan this research proposal (ethical approval number is D/1999-02/Acad) and funded by the Higher Education Commission, Pakistan under its scheme ``International Research Support Initiative Program (Grant no 1-8/HEC/HRD/2016/6371). Permissions for using the respective instruments were granted from the respective authors. The researchers visited universities and took permission from respective heads of the institutes for approaching students and gathering data. The research was carried out in two phases. In phase one, 1700 questionnaires (internet addiction test) were distributed but only 1352 questionnaire were returned, thereby in phase 1 the response rate was 80 percent. Out of 1352 respondents in 703 respondents were identified as internet addicts to proceed further for phase two. All those 703 participants were contacted via phone numbers provided by them in phase I. Only 424 participants replied and participated in phase II, thereby response rate was 60%. In phase II, the Bergen Insomnia Scale and the Mental Health Inventory along with the demographic items were administered. Students were approached in class room settings and all participants read and signed informed consent before filling the questionnaires. After completion of the data, participants were thanked for their cooperation, but no monetary or other form of material rewards were provided.

Statistical Analyses

For analyses, Statistical Package for Social Sciences version 21 was used. Descriptive statistics, reliability analysis, Pearson product-moment correlation analysis and mediation analysis and t-test analysis were also applied. Mediation using Baron and Kenny (1986) approach through regression analysis was applied to investigate mediating role of insomnia in association between internet addiction and mental health problems. To check the assumptions of mediation, linear regression analyses were also applied.

Results

Descriptive statistics and internal consistencies of internet addiction scale, Bergen insomnia scale and mental health inventory are presented in table 2.

The results showed that all scales except behavioral control have moderate to good reliability. The reason of low reliability on behavioral control scale could be due to the nature of items in scale which are related to their control on behavior. May be participants were reluctant to respond on such items.

Pearson Product-Moment correlation analysis was used to examine relationship between study variables and demographic characteristics. Results are presented in table 3 and only significant results are reported.

It was hypothesized that insomnia would mediate the relationship between internet addiction and mental health problems. Mediation analysis was applied to investigate mediating role of insomnia and mediation method described by Baron and Kenny (1986) [28] was used. The assumptions of Baron and Kenny were tested prior to the analysis and linear regression analyses were used for the said purpose. The assumptions are: independent variable (IV) predicts dependent variable (DV); IV predicts mediator (M); mediator predicts DV.

It was hypothesized that there would be gender differences in internet addiction, insomnia and mental health problems in university students. Independent sample t test analysis was used and results are presented in table 5.

Table 2
Psychometric Properties of the Scales (N=424)

Scales	*k*	*α*	*M*	*SD*	*Actual score*	*Potential score*
Internet Addiction Scale	20	.81	62.50	5.43	35-100	20-100
Bergen Insomnia Scale	6	.89	31.45	3.16	6-38	6-42
Mental Health Inventory (Composite score)	18	.79	206.54	19.60	18-78	18-108
Anxiety	5	.76	75.27	5.91	5-22	5-30
Depression	5	.71	33.01	6.43	5-12	5-30
Behavioral Control	4	.51	60.20	10.41	6-13	4-24
Negative Affect	4	.86	38.05	7.146	6-15	4-24

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

Table 3
R*elationship in Internet Usage, Sleep Patterns, Internet Addiction, Insomnia and Mental Health Problems in University Students (N=424)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. DTIU (weekday)*	-														
2. NTIU (weekday)	.21	-													
3. DTIU (weekend)	.54**	.76**	-												
4. NTIU (weekend)	.34**	.45**	.81**	-											
5. SHDD (weekday)	-.62**	.82**	-.58**	-.51**	-										
6. SHDN (weekday)	-.44**	.68**	-.55**	-.47**	-.43**	-									
7. SHDD (weekend)	-.78**	.62**	.31**	.43**	.36**	.31**	-								
8. SHDN (weekend)	.45**	.27**	.33**	.39**	.55**	.14	.11	-							
9. Internet Addiction	.24**	.73**	.61**	.82**	-.69**	-.45**	.13	-.76**	-						
10. Insomnia	.16	.84**	.67**	.76**	-.34**	-.67**	.13	-.84**	.37**	-					
11. Mental Health Problems	.44**	.69**	.62**	.45**	-.65**	-.60**	.14	-.54**	.73**	.55**	-				
12. Anxiety	-.11	.42**	.35**	.65**	-.59**	-.51**	.18	-.66**	.84**	.73**	.72**	-			
13. Depression	.67**	.45**	.56**	.54**	-.72**	-.64**	-.09	-.61**	.88**	.72**	.79**	.77**	-		
14. Behavioral Control	-.12	-.19	.45**	.34**	-.34**	-.06	.11	-.23**	.82**	.75**	.73**	.38*	.65**	-	
15. Negative Affect	.26**	.09	.12	.35**	-.53**	-.08	.12	.-.20**	.72**	.71**	.71*	.83**	.17	.84**	-

Note. DTIU= day time internet use, =NTIU= day time internet use, SHDD= sleeping hours during day, SHDN= sleeping hours during night
Only significant findings are reported. *Internet usage in weekdays and weekends are reported in hours per day.
*p<.05, **p<.01

Results in Table 3 show that day time and night time usage of internet has significant positive correlations with internet addiction, insomnia and mental health problems. Sleep hours during day and night in weekday and sleep hours during night on weekends have negative correlation with internet addiction, insomnia and mental health problems. Internet addiction has significant positive correlation with insomnia and mental health problems (anxiety, depression, inability to control behavior, and negative affect). Insomnia is found to be positively correlated with mental health problems (anxiety, depression, behavioral control and negative affect).

Results showed that internet addiction (IV) was a significant and positive predictor of insomnia (M) (β=.32**, P<.01) and mental health problems (DV) i.e. anxiety (β=.33**, P<.01), depression (β=.32**, P<.01), behavioral control (β=.44**, P<.01) and negative affect (β=.41**, P<.01). Furthermore, insomnia (M) also predicted mental health problems (DV) i.e. anxiety (β=.31**, P<.01), depression (β=.35**, P<.01), behavioral control (β=.34**, P<.01) and negative affect (β=.38**, P<.01). Thus, all assumptions were met.

Subsequently, hierarchical regression analysis was applied to examine the mediating role of insomnia in the relationship between internet addiction and mental health problems. In first block, age, monthly income, gender, day and night time internet usage on weekdays and weekends in hours and sleep patterns were included as control variables. In block 2 insomnia was added as mediator and in block 3 internet addiction was added as independent variable. The results are presented in table 4.

Table 4
Mediating Role of Insomnia in Internet Addiction and Mental Health Problems

	Mental Health Problems			
	Anxiety	Depression	Behavioral Control	Negative Affect
Predictors	*B*	*β*	*β*	*β*
Block 1				
Gender	.19**	.12**	.13**	.15**
NTIU (weekend)	.30**	.34**	.12	.03
NTIU (weekdays)	-.33**	.23	.01	.13
Block 2				
Insomnia	.33**	.31**	.27**	.21**
Block 3				
Internet Addiction .29**		.31**	.11	.14
R	.33	.23	.32	.31
R^2	.11	.21	.11	.12
F	.31**	.33**	.31**	.32**
ΔR^2	.11	.21	.11	.12

Note. Only significant findings are reported, *Internet usage in weekdays and weekends are reported in hours per day, **p<.01; *p<.05.

Results show that insomnia partially mediates the relationship between internet addiction and mental health problems. When insomnia was controlled for, internet addiction only had significant correlations with two psychiatric problems (depression and anxiety), demonstrating a partial mediation effect of insomnia between internet addiction and psychiatric problems.

To test the significance of mediation, Sobel test was used. Results of the Sobel test suggest that the association between high internet addiction and anxiety is significantly mediated by insomnia (z' = 1.74, p<0.05). Results also suggest that the association between internet addiction and depression is significantly mediated by insomnia (z' = 2.62, p<0.05).

Table 5
Gender Differences in Internet Addiction, Insomnia and Mental Health Problems in Youngsters

	Men (n=233)		Women *(n= 191)*				*95%CI*		
Variables	*M*	*SD*	*M*	*SD*	*t*	*p*	*LL*	*UL*	*Cohen's d*
Internet Addiction	12.82	.49	17.90	.37	3.60	.03	.37	.19	.46
Insomnia	7.89	2.22	12.78	.64	1.46	.04	.36	.59	.37
Mental Health	7.05	.66	16.95	1.72	4.54	.01	.26	.46	.29
Anxiety	6.84	1.10	7.34	.95	3.44	.01	.36	.46	.49
Depression	10.17	.79	7.51	.85	3.34	.03	.79	.21	.43
Behavioral Control	6.72	1.00	7.22	.91	3.70	.01	.77	.22	.52
Negative Affect	6.73	1.26	6.45	1.24	1.54	.13	-.27	.19	.22

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

Results show significant gender differences in internet addiction, insomnia and mental health problems. Internet addiction is higher in girls than boys. Girls report more insomnia symptoms and psychiatric problem (depression, anxiety and behavioral control problems) compared to boys.

Discussion

The findings show that internet addiction, insomnia and mental health problems are inter-related. Thus, the results of the present study confirm findings reported in the literature (Baum et al., 2014; Lovato & et al., 2014; Gregory & Sadeh UI, 2012). Of 1352, 703 participants were identified as internet addicts which amounts to 51.99% prevalence among student population. This number is very alarming in comparison to an earlier study by Iqbal, Noor, and Mian (2014) in Pakistan who found 30 percent internet addicts in a sample of 1000 university students. Hence it indicates that prevalence of internet addiction is increasing very swiftly over time. In Pakistan, young age people have few other sources of entertainment except internet (Adeeb & Mubashir, 2012; Iftikhar & Tariq, 2014; Shabir, Mahmood, Hameed, Safdar, & Gilani, 2014). There are few opportunities for boys for example playing cricket, football, swimming, jogging etc., but serious restrictions are for girls when it comes to leaving their home due to cultural restrictions (Iqbal, & et al., 2014; Ahmed & Qazi, 2011). Our findings also support earlier findings of girls being more addicted to internet as compared to boys.

Moreover, the positive relationship between internet addiction and mental health problems was also stronger in girls than boys. Security threat is also a major concern in Pakistan and due to that, parents do not allow children to spend more time outside home. After college or university timings, students are usually bound to spend time at home so internet is the only source of pleasure for them. The users profiles on Facebook often portray positively images of users, young people who use internet heavily may come to compare themselves with others like 'everyone is better than me' and this comparison may lead towards depression and anxiety (Cain et al. 2016; Gau, 2006; Gradisar, et al., 2008).

In the present study, hypothesis pertaining to mediating role of sleep in internet use and mental health is supported. A person may not suffer from mental health problems just because of internet usage, rather if a person is not taking proper sleep due to excessive use of internet, s/he is at risk of developing mental health problems compared to those who take proper sleep. Day by day, importance of internet is increasing in our daily lives (Baum et al., 2014; Becker, et al., 2015). Staying awake late at night results in sleep difficulties in users and continuous lack of sleep may develop depression, anxiety, mood problems and general distress (Iftikhar & et al., 2014, Shabir et al., 2014).

In our sample, when effect of insomnia was controlled, internet addiction predicted depression and anxiety which indicates that internet addiction itself puts one at risk for mental health problems. Though, improving sleep quality of an internet user may help improve mental health but it seems advisable to cut down on internet use or provide intervention to those got addicted to internet.

To conclude, internet addiction has detrimental effect on sleep in students and results in insomnia which subsequently has adverse effect on mental health problems in university students.

Limitations of the Study

There are some limitations of the present study that should be mentioned. First of all, due to time constraint, data regarding sleep diary was not included in this study. It is suggested that future research gather data regarding sleep quantity and quality through sleep diary. The sample of this study was only from Lahore city so the findings cannot be generalized to other cities and regions. It is suggested that in future data is gathered from other cities of Pakistan in order to get a comprehensive picture of internet use and hence to devise some intervention and take steps for prevention.

Implications

This research has important implications for parents to educate their children about the right use of internet. Parents can monitor the usage of internet and sleeping patterns of their children and can guide them how lack of sleep due to internet can affect their mental well-being. This research will also help educational institutes to devise guidelines on right use of internet and importance of sleep for mental wellbeing. This research can also provide lay ground to media for developing programs which can help in reducing internet addiction and make our generation aware about the importance of sleep.

References

Adeeb, S., & Mubashir, T. (2012). *Facebook Compulsion, and Academic Engagement of. Student* (Unpublished Masters' thesis). Institute of Applied Psychology, University of the Punjab, Lahore.

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.

Alfano, C. A., Zakem, A. H., Costa, N. M., Taylor, L. K., & Weems, C. F. (2009). Sleep problems and their relation to cognitive factors, anxiety, and depressive symptoms in children and adolescents. *Depression & Anxiety, 26,* 503–512.

An, J., Sun, Y., Wan, Y., Chen, J., Wang, X., & Tao, F. (2014). Associations between problematic internet use and adolescents' physical and psychological symptoms: possible role of sleep quality. *Journal of Addiction Medicine, 8*(4), 282–287.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51,* 1173-1182.

Baum, K. T., Desai, A., Field, J., Miller, L. E., Rausch, J., & Beebe, D. W. (2014). Sleep restriction worsens mood and emotion regulation in adolescents. *Journal of Child Psychology and Psychiatry, 55,* 180–190.

Becker, S. P., Langberg, J. M., & Byars, K. C. (2015). Advancing a biopsychosocial and contextual model of sleep in adolescence: A review and introduction to the special issue. *Journal of Youth Adolescence, 2015,* 44, 239–270.

Cain, N., & Gradisar, M. (2010). Electronic media use and sleep in school ages children and adolescents: a review. *Sleep Medicine, 11,* 210-213.

Cain, N., Gradisar, M., Chen, Y. L., & Fengau, S. S. (2016). Sleep problems and internet addiction among children and adolescents: a longitudinal study. *Journal of Sleep Research, 25*(4), 458-65.

Canan, F., Yildirim, O., Sinani, G., Ozturk, O., Ustunel, T. Y., & Ataoglu, A. (2013) Internet addiction and sleep disturbance symptoms among Turkish high school students. *Sleep and Biological Rhythms, 11,* 210–213.

Cheng, C., Lam, L. (2014). Internet addiction prevalence and quality of (real) life: a meta-analysis of 31 nations across seven world regions. *Cyber Psychology & Behavioral Net, 17*(12).

Cheung, L. M., & Wong, W. S. (2011). The effects of insomnia and internet addiction on depression in Hong Kong Chinese adolescents: an exploratory cross-sectional analysis. *Journal of Sleep Research, 20,* 311-317.

Curcio, G., Ferrara, M., & Gennaro, L. (2006). Sleep loss, learning capacity and academic performance. *Sleep Medicine Review, 10,* 323–337.

Curcio, G., Ferrara, M., Gennaro, L., Dewald, J. F., Meijer, A. M., Oort, F. J., …, Bögels, S. M. (2010). The influence of sleep quality, sleep duration and sleepiness on school performance in children and adolescents: A meta-analytic review. *Sleep Medicine Review, 14,* 179–189.

Gau, S. S. F. (2006). Prevalence of Sleep Problems and their association with inattention/hyperactivity among children aged 6-15 in Taiwan. *Journal of Sleep Research, 27,* 761-770.

Gradisar, M., Terrill, G., Johnston, A., & Douglas, P. (2008). Adolescent sleep and working memory performance. *Sleep and Biological Rhythms, 6,* 146–154.

Gregory, A. M., & Sadeh, A. (2012). Sleep, emotional and behavioral difficulties in children and adolescents. *Sleep Medicine Review, 16,* 129–136.

Gregory, A. M., & Sadeh, U. I. (2012). Parent-reported sleep problems during development and self-reported anxiety/depression, attention problems, and aggressive behavior later in life. *Archives of Pediatric & Adolescent Medicine, 162,* 330–335.

Hurr, M. H. (2006). Demographic, habitual, and socioeconomic determinants of Internet addiction disorder: an empirical study of Korean teenagers. *Cyber Psychology and Behavior, 9*(5), 514-525.

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. W., Noor, M., & Mian, N. A. (2014). Analysis of internet addiction amongst university level students. *VFAST Transactions on Software Engineering, 3*(2), 11-16.

Kandell, J. J. (1998). Internet addiction on campus: The vulnerability of college students. *Cyber Psychology & Behavior, 1,* 11–17.

Kim, J. H., Lau, C. H., Cheuk, K. K., Kan, P., & Hui, H. L., & Griffiths, S. M. (2010). Brief report: Predictors of heavy Internet use and associations with health-promoting and health risk behaviors among Hong Kong university students. *Journal of Adolescence, 33*(1), 215–20.

Lovato, N., & Gradisar, M. (2014). A meta-analysis and model of the relationship between sleep and depression in adolescents: recommendations for future research and clinical practice. *Sleep Medicine Review, 18,* 521–529.

Naseri, L., Mohamadi, J, Sayehmiri, K., & Azizpoor, Y. (2015). Perceived social support, self-esteem, and internet addiction among students of al-zahra university, Tehran, Iran. *Iran Journal of Psychiatry Behavioral Sciences, 9*(3), 421-426.

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.

Park, N., Hwang, Y., & Huh, E. (2010). *Exploring problematic mobile phone use: relationships between adolescents' characteristics and mobile phone addiction.* Paper presented at the annual meeting of the international communication Association, Suntec Singapore International Convention & Exhibition Centre, Suntec City, Singapore.

Shabir, G., Mahmood, Y., Hameed, Y., Safdar, G., & Gilani, S. M. F. The Impact of Social Media *on* Youth: A Case Study of Bahawalpur City. *Asian Journal of Social Sciences and Humanity, 3*(4), 152-161.

Starcevic, V. (2013). Is internet addiction a useful concept? *Australian and New Zealand Journal of Psychiatry, 47*(1), 16 -19.

Tavernier, R., & Bruy, T. (2014). Sleep difficulties in university students. *Journal of Sleep Research, 23,* 389-396.

Tavernier, R., & Willoughby, T. (2014). Sleep Problems: Predictors or outcome of media use among emerging adults at university? *Journal of Sleep Research, 23,* 389-396.

Veit, C. T., & Ware, J. E. (1983). *Mental health inventory. The Rand Health.* Retrieved from http://www.rand.org/health/surveys_tools/mos/ mos_mentalhealth.html; 1983.

Young, K. S. (1996). Internet addiction. A new clinical phenomenon and its consequences. *American Behavioral Scientist, 48,* 402–415.

Young, K. S. (2004). *Caught in the Net: How to recognize the signs of Internet addiction and a winning strategy for recovery.* New York: John Wiley.

Received: 17th January 2018
Revisions Received: 3rd September 2018