

The Impacts of Internet Addiction on Sleep Disturbance and Mental Health among University Students

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Abstract

The purpose of this research paper would be to examine if there is a relationship between dependency on the Internet among university students, sleep disorders, and mental health. A sample was constituted from 200 participants from Multan University of Women, Bahauddin Zakariya University and the University of NUML and Bahria University in Lahore. This paper aims unraveling a correlation between internet addiction and sleep disorders as well as between the latter two variables and mental health. For that purpose, three tools of assessment have been used: the scale of Internet addiction, developed by Dr. Kimberly in 1995, a Likert scale for sleep quality, and a scale of mental health inventory. The results describe a statistically significant correlation between Internet addiction, sleep disorders, and bad mental health among university students.

Keywords: Internet addiction, university students, sleep quality, mental health

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Introduction

The Internet is an integral part of most people's daily lives, particularly among adolescents, who represent a significant demographic of digital technology users. Research indicates that a considerable number of adolescents engage in prolonged online activity, especially through social media, video streaming, and gaming platforms (Twenge, Martin & Campbell, 2018). The consequences of prolonged use of the Internet, especially at night, have raised concerns about their potential negative impact on sleep quality and general health. Adolescents, whose bodies and brains are still developing, are particularly vulnerable to these effects. Research suggests that late-night internet activities—particularly those involving social media, video gaming, or online interactions with friends—can hinder the onset of sleep and diminish overall sleep duration. This, in turn, may cause considerable disruptions in sleep cycles (Shin, 2010; Nazir et al., 2022). Rest is vital during adolescence for optimal cognitive growth, emotional stability, and overall health. According to the National Sleep Foundation (2006), teenagers need 8 to 10 hours of sleep every night to perform at their best. Nevertheless, the widespread use of the Internet often disrupts this crucial sleep, because it has been found that

exposure to screen light — especially blue light emitted by devices such as smartphones and computers. It restrains the secretion of Melatonin, the sleep hormone (Harvard Medical School, 2012). This disruption of circadian rhythms may make it difficult for adolescents to sleep at night, potentially leading to sleep deprivation. The long-term effects of sleep disorders are worrying because they are associated with a reduction in cognitive function, a reduction in academic performance, mood disorders and a higher risk of physical health problems such as obesity and cardiovascular diseases (Alvaro, Roberts, & Harris, 2013).

In addition, the availability of Internet access, especially through mobile devices, makes it difficult for adolescents to disconnect from the online world, even at the last hour of the night. Most teenagers have a connection to the Internet in their rooms, which allows them to spend hours on the Internet after bedtime, creating a cycle of unhealthy sleeping habits that are difficult to break (Bremer, 2005). This constant connectivity raises concerns about Internet addiction is a condition in which individuals overuse and uncontrollable use of the Internet, resulting in negative consequences in daily life, such as damaged relationships, academic decline and health problems (Shapira, 1999; Beard & Wolf, 2001). Studies have shown that Internet addiction has an effect on other mental illnesses such as anxiety, depression, social isolation, especially adolescents who are already struggling with school pressures, peer pressure, and family dynamics (Weinstein & Lejoyeux, 2010). In addition to these psychological effects, excessive use of the Internet can also affect teenagers' behaviour and social interaction. Adolescents are increasingly turning to online platforms to validate their social behaviours, leading to toxic patterns of monitoring notifications, seeking peer approval and participating in risky online behaviours. This virtual interaction provides a sense of connection and can replace face-to-face social interaction, causing loneliness and isolation when you are not online (Guan & Subrahmanyam, 2009). In addition, constant exposure to online content, including advertisements, violent images and cyberbullying, can increase adolescents' emotional distress, contributing to a negative self-image and anxiety feelings (Kuss & Griffiths, 2017; Hassan et al., 2024; Javed et al., 2020).

The impact of internet addiction should not only be considered as a mental health disorder and sleep disorder; it also interferes with the academic and social activities of teenagers. afflicted with Internet addiction often indicate poor performance in school due to lack of concentration, time delay, and online hours that can be spent in school (Young, 1998). Internet addiction, at times, tends to lead to a decrease in family relationships because adolescents are more alienated and often debate internet-related issues (Shapira, 1999). All these call for intervention with positive campaigns to minimize internet usage problems among teens and how this could be done by encouraging positive sleep habits, proper time management skills, and socialization outside computers. Given all these potential risks, it is high time to create effective measures for the prevention of internet addiction and unhygienic sleep habits in teenagers. Such interventions may include setting limits on the screen time and promoting the digital detoxing

before sleeping. More evidence of health education about a good sleep hygiene (Lemola et al., 2015; Riaz et al., 2018; Qadoos et al., 2020). Moreover, schools and parents should also fulfill an essential role in encouraging open dialogue on this issue and support teenagers in finding adaptation strategies to manage pressure and stress in their life free from overuse of digital platforms (Nikken & Jansz, 2014). By reaching out to the core causes of Internet addiction and how it affects sleep and mental well-being, teenagers are protected well to have healthy growth in that particular critical period.

Rationale of the Study

Based on the research questions listed above, this study aims at establishing if the relation between the sleep disorder and problematic Internet use is one-way or actually bidirectional interaction, wherein problematic Internet use leads to sleep disorders and vice versa. The aim is to seek an understanding of the bidirectional nature of the relation between sleep and internet addiction among children and adolescents. Internet truly plays a crucial role in both public and private sectors, and the internet-connected society grows faster than the offline communities. However, people are not always aware of the challenges and solutions posed by the overuse of the internet. Questions arise on whether the Internet is harming public and private societies in terms of environmental awareness, physical activities, and interpersonal relations. The prevalence of internet use is contributing to the formation of societies with diminished emotional engagement, where individuals may express interactions, such as liking or commenting, but lack genuine connections. This issue is largely attributed to a lack of understanding, emphasizing the importance of providing guidance in both the public and private sectors to support students and adolescents from an early age.

Objective of the Study

1. The main objective is to analyze the influence that increased internet usage has on adolescents.
2. To analyze whether internet addiction causes sleep problems.
3. To list reasons for increased internet use in the lives of teenagers.
4. To analyze the effects of internet addiction on mental health.

Hypothesis:

H₁: Internet addiction will be correlated positively with the disturbances of sleep.

H₂: Internet addiction will be positively correlated with mental health problems.

Literature Review

This current paper studies the link between Internet addiction and some health problems with a focus on sleep disorders and psychological problems concerning two specific populations:

adolescents and university students. In 2016, Mostafa Eftekhari, Saeed Rezaia, Moslem Jafarisani, and Rahim Solemn explored the relationship between Internet addiction and the quality of sleep in college students. The results of the study suggest that a higher rate of internet use is strongly correlated with a decrease in quality of sleep, which then raises the score of daytime sleepiness. There are hence adverse effects on the quality of the sleep patterns of the students, and it therefore implies that internet dependence promotes risky health effects and broader well-being issues within this population group. In a related study, Shin Mee-Kyung (2016) explored the association between Internet addiction, insomnia, and nighttime sleep time in a university students' population. The results showed that, of all the observed variables, Internet addiction was a critical factor both for insomnia and extended night sleep, the logistic regression analyses indicating that both conditions worsened with growing levels of Internet addiction. The results of the current study verify that Internet addiction interferes with normal sleep patterns and, therefore, unleashes even more difficulties, such as sleepiness during the day and problems with concentration.

Ercan Dalbudak, Bilge Evren, and Arzu Ciftci Demirci (2014) investigated the vast potential of Internet addiction among youth and its associations with substance use, psychological abnormalities, and behavioral difficulties. It was determined in their studies that adolescents prone to Internet addiction were most likely to use drugs more often, commit or attempt suicide, and be more prone to delinquent acts. This would indicate that internet addiction is primarily related to a pattern of varied mental health issues and behavioral challenges, even though addressing the addiction proves to be beneficial for the potential underlying psychological and social repercussions according to Gur, Yurt, Bulduk, and Atagoz (2015) in this research of investigation. In this research of investigation, the study concentrated upon the correlation existing between internet addiction and corresponding physical and psychological difficulties faced by students in secondary schools. Their study found that the adolescents who suffered from moderately high Internet addiction experienced several physical tribulations such as the late use of the internet and irregular eating practices, as well as various psychosocial problems such as irritability and anxiety. Their study has helped to reveal in detail all the ways through which Internet addiction affects adolescents' physical and psychological activities.

Ghaith Batarsch, Ahmad Yessin, and Katreen Haddad (2017) conducted a research study among the university students and discovered that depression occurs in those who indulge in Internet addiction. The resultant findings concluded that Internet addiction significantly enhances symptoms of depression, stress, and anxiety as this is related to an interlocking relationship in the condition that needs therapeutic interventions to treat both problems at the same time.

Examining the connection between Internet addiction and anxiety in university students, Rashid Behram Khan, Altaf Hussain, and Mehvish Haseeb (2014) reported higher prevalence of Internet addiction in male students positively with more anxiety. All these conclusions indicate

that Internet addiction may raise anxiety symptoms and highlight the urgent need for mental health interventions involving Internet addiction.

Masomeh Hadadvand, Lyli Karimi, and Zahra Abbasi (2013) surveyed the relationship of Internet addiction with students' sleep problems. The authors concluded that excessive Internet usage is highly associated with increased daytime sleepiness and compromised quality of sleep. The findings in these studies are consistent with others that chronicle the adverse sleep-related conditions caused by Internet addiction.

F. Canan and A. Ataoglu (2013), in their research work on examining the interaction of teenagers and the Internet addiction condition with sleep disorders, had ascertained that indeed there was a correlation: the overuse of the Internet might affect sleep adversely, thus leading to further health troubles. To put it in a nutshell, in summary, the general findings of these studies show that the internet-addiction-related different sleeping disorders, anxiety and depression disorders, and behavioral problems are interrelated with each other.

Methodology

Participants

The target population was university students. The sample was taken from different universities including BZU Multan, WUM , NUML, Bahria University ,Lahore . A convent sampling ~~thi~~ was used to conduct the sample of 200 university students.

Instruments:

In instruments three scales were used:

- Internet Addiction Test(IAT) Manual
- Sleep Quality Likert Scale
- Mental health inventory scale

Internet Addiction Test(IAT) Manual

In 1998, Dr. Kimberly Young developed the Internet Addiction Test to identify internet dependency in adults and ascertain its severity. The test uses a 20-point scale for measurement. Dr. Kimberly Young is a professor at St. Bonaventure University and is presently the director of the Center for Internet Addiction Recovery. She was inspired to develop the Internet Addiction Test to enable the evaluation of symptoms characterized by compulsive behaviors associated with internet dependency in different contexts. It evaluates the severity of compulsive Internet use in adults as well as adolescents. However, the interpretation of results obtained from the IAT should be taken with utmost caution, especially in clinical populations characterized by comorbid psychiatric conditions that come under the compulsive syndrome category itself. The IAT is a very commonly used measurement scale and has been translated

into various other languages, such as Chinese, French, and Turkish, for the assessment of internet addiction.

Scoring

The total score in the Implicit Association Test (IAT) is derived by summing the ratings provided by the test taker for the twenty item responses. Each item is evaluated on a five-point scale that ranges from 0 to 5, thereby enabling the attainment of a maximal score of 100 points. The total IAT score will vary across different levels of internet compulsivity and addiction, with higher scores indicating greater severity levels. Scores range from 0 to 30 in the usual context of internet use. Scores of 31-49 are indicative of mild internet addiction scores. Scores from 50 to 79 indicate a moderate level of internet addiction. Scores from 80 to 100 indicate severe dependence on internet use. Various research studies published in different journals show that those score ranges are sensitive and valid. The IAT has been translated and tested in many languages; hence, it is supposed that the test administrators make sure they use the study appropriate for that language of the test.

Sleep Quality Likert Scale.

The 28 items of the scale score sleep quality across six distinct domains: daytime symptoms, restoration following sleep, difficulties associated with initiating and maintaining sleep, challenges encountered during waking, and overall satisfaction with sleep. The developers conceived this general measurement tool of sleep quality in order to create an instrument that is reliable to accurately measure sleep quality across various patient populations under clinical and research settings. Preliminary psychometrics of Yi et al. suggested an internal consistency coefficient of 0.92 and a test-retest reliability score of 0.81. The SQS shows a good relationship with scores on the Pittsburgh Sleep Quality Index. At the same time, the score within the insomnia group was slightly elevated from the level in the control group; it is in this regard that the construct validity of the scale is particularly well-emphasised.

Scoring

The Initial Sleep Questionnaire Scale (SQS) comprises 28 items organized under six categories, specifically: daytime dysfunction, which includes 12 items; restoration after sleep, consisting of 4 items; difficulty in falling asleep, which encompasses 4 items; difficulty in waking up, containing 3 items; satisfaction with sleep, also comprising 3 items; and difficulty in maintaining sleep, featuring 2 items . Participants are subsequently required to evaluate each item utilizing a 4-point Likert scale, which ranges from 'few' (0) to 'almost always' (3). It is important to note that items associated with the dimensions of "restoration after sleep" and "satisfaction with sleep" were scored in reverse.

Mental Health Inventory Scale

The Mental Health Inventory contains 38 items except for those items numbered 9 and 20, and there is a five-point scale value of 1 to 5. The remaining items use values assessed along a six-point scale, ranging from 1 to 6. There are pre-coded values for the item in the supporting documentation. The MHI is comprised of six subscales, which include Anxiety, Depression, Loss of Behavioral/Emotional Control, General Positive Affect, Emotional Ties, and Life Satisfaction.

Procedure

Quantitative survey method was used through cross sectional study for collecting data and testing hypothesis. The study sample consists of 200 students from various universities. Questionnaires were administered on the students and they were asked to go through the scales responses and complete the demographic sheet. They were also asked to fill the questionnaires honestly and return them back. All the students returned questionnaire after completing them so the turnover was 100 %. Students to fill questionnaires were capable of understanding English language. The results have been analyzed on the basis of hypothesis; SPSS 20th version has been used for statistical analysis.

Results

The following review was provided in order to examine the internet addiction effects on sleep Disturbance and mental health. The study was carried out with the example 200 special children. The Measurable strategies applied in the testing of present research were correlation. The step-by-step results were lineated below.

Table 1: Demographic composition of sample of the study

Demographics		Weighted%
Gender		
Male	100	50%
Female	100	50%
Total	200	100%

Table 1 shows the demographic composition of the sample of the study.

Table 2: Pearson correlation table between internet addiction and sleep disturbance among university students (N=200).

Scales	IA	SQ	DTD	RAS	DIFA	DIFU	SWS	DIMS
Internet addiction		.222**	.216**	-0.092	.148*	.293**	-.334**	0.105
Sleep quality			.820**	-0.043	.459**	.412**	-.177*	.362**
Daytime dysfunction				-.254**	.207**	.170*	-.345**	.248**
Restoration after sleep					-.288**	-.268**	.306**	-.456**
Difficulty in falling asleep						.206**	-.300**	.304**
Difficulty in getting up							-.380**	.250**
Satisfaction with sleep								-.326**

Note. * $p < 0.05$, ** $p < 0.01$, N=200

IA=internet addiction, SQ sleep quality, DTD=day time dysfunction, AS=restoration after sleep, DIFU=Difficulty in falling asleep, DIFU=Difficulty in getting up, SWS=satisfaction with sleep, DIMS=Difficulty in maintaining asleep.

Above table depicts the correlation between internet addiction and sleep disturbance. Since p value which has < 0.05 as shown below it clears there is a significant positive correlation between internet addiction and sleep disturbance.

Table 3: Pearson correlation table between internet addiction and mental health among university students (N=200)

Scales	IA	MHI	A	D	EC	GPA	ET	LS
Internet addiction		0.039	0.111	-0.059	.199**	-.211**	0.049	-.166*
Mental health inventory			.696**	.348**	.422**	.505**	.423**	.158*
Anxiety				0.082	.153*	0.085	.362**	-0.036
Depression					.240**	.139*	-.205**	.163*
Emotional control						-.154*	-0.015	-0.094
General positive effect							-0.026	.160*
Emotional ties								0.016

Note. * $p < 0.05$, ** $p < 0.01$, N=200

IA=internet, HI=mental health inventor, A=anxiety, D=Depression, Ec=Emotional control, PA=general positive effect, ET=emotional ties, Ls=life satisfaction

An above table below shows correlation between internet addiction and mental health. As shown by the p value that is <0.05 , it clears that there is a highly positive correlation between the internet addiction and the mental health of students.

Discussion

Electronic media often are viewed as contributing to sleep quality and functioning during the day among adolescents. Sleep loss can add up to impair their ability to function at work or college; it leads to unsafe behavior. This paper looks into excessive Internet usage and disrupted sleep patterns among college students. This is the case since the development of easy access into the Internet has made students fully aware of the issue branded as Internet addiction (Yilmaz et al., 2014).

Internet addiction is regarded as a psychopathological disorder that involves all age groups and both sexes. According to various research studies, it affects the psychology of students adversely and results in issues such as anxiety and depression. The following table shows the demographic composition of the sample under study in terms of two sections based on sector and age group.

The first hypothesis comes from the statistics shown in Table 2. There is a positive relationship between internet addiction and sleep disturbance. Expanding on that, there also exists a positive relationship between internet addiction and mental health, a conclusion that data provided in Table 2 also supports.

Conclusion

Hundreds of millions of Internet users worldwide increasingly integrate the net into their lives as an essential tool for work and leisure. While most access the Net to considerable extents for information and entertainment, others may reach an obsessive dependence on it. Internet Addiction Disorder has yet to be recognized as an independent diagnosis, but the addiction might be specifically in certain applications or behaviors-the primary ones being cybersex, gambling, gaming, and social networking. More research is needed on this subject.

As suggested by this review, the majority of IA-related studies along with sleep disorders tend to target the youth.

Thus far, the data found merit noteworthy concern and call for more research on this contemporary issue. Information shows that children, adolescents, and young adults are likely targeted by IA because their lives are characterized by continuous developmental processes. Clinically, it has been observed that lack of engagement in good sleep hygiene practices among adolescents and young adults with IA results in pronounced negative effects on the quality of

sleep. Therefore, their support towards appropriate sleep hygiene practices, where they avoid using the internet or any other engagement through smartphone before bedtime or while in bed, is very essential. The current review stresses that internet addiction has a very strong relationship with sleep disturbances along with other complaints in mental health.

Further studies are needed to make clear the nature of this relationship and to determine which types of internet addiction have a greater interaction with sleep than others. The findings here have been clearly suggestive of an interplay between internet addiction and sleep-related problems as well as mental health problems. Moreover, two hypotheses that were propounded concerning the relationship between certain specific mental health disorders and sleep patterns of internet-addicted female students had also been supported.

Limitation, Suggestion and Practical Implication

The study highlighted some limitations, including the restriction of the sample to a single city, a small sample of only 200 participants, and the absence of cooperation of many students. In order to address these problems, it is suggested that future research should include samples from several institutions and increase the size of the samples to improve the generalization of the results. It is therefore essential to conduct research on the demographic variables, such as age and education, that affect internet addiction and sleep disorders. Some observational studies and other research methods may provide more benefits in the assessment of internet addiction in the context of sleep disorders for a deeper understanding of the relationship between Internet addiction and sleep. In practice, it would be easy to point out the consciousness existing in Pakistani society towards the relationship between internet addiction and sleep disorders. Besides, it will also improve the understanding of students on the harmful effects that occur due to internet dependency over mental health concerns as well as academic problems. Creating awareness among students who engage in internet use about the implications of such addiction with both philosophical and practical undertones may curb undesirable habits and enhance both the well-being and academic results among these individuals.

References

1. Alvaro, P. K., Roberts, R. M., & Harris, J. K. (2013). A systematic review assessing bidirectionality between sleep disturbances, anxiety, and depression. *Sleep*, 36(7), 1059-1068.
2. Azher, M., Khan, R. B., Salim, M., Bilal, M., Hussain, A., & Haseeb, M. (2014). The relationship between internet addiction and anxiety among students of University of Sargodha. *International Journal of Humanities and Social Science*, 4(1), 288-293.
3. Bremer J (2005) defined as internet use which is excessive, out of control and severely disruptive individual lives.
4. 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.
5. Ercan Dalbudak, Bilge Evern and Arzu ciftci Demirci (2014) to investigate the relationship with life substance use, psychological and behavioral problem among adolescent. *Journal of Personality Assessment*.
 6. Guan, S. S. A., & Subrahmanyam, K. (2009). Youth Internet use: risks and opportunities. *Current opinion in Psychiatry*, 22(4), 351-356.
 7. Gür, K., Yurt, S., Bulduk, S., & Atagöz, S. (2015). Internet addiction and physical and psychosocial behavior problems among rural secondary school students. *Nursing & health sciences*, 17(3), 331-338.
 8. Hadadvand, M., Karimi, L., Abbasi Validkandi, Z., Ramezani, P., Mehrabi, H., & Zeighami Mohammadi, S. (2013). The relationship between internet addiction and sleep disorders in students. *Journal of health and care*, 15(4), 39-49.
 9. Hassan, M., Fang, S., Rizwan, M., Malik, A. S., & Mushtaque, I. (2024). Impact of financial stress, parental expectation and test anxiety on role of suicidal ideation: A cross-sectional study among pre-medical students. *International Journal of Mental Health Promotion*, 26(1), 1-9.
 10. Javed, S., Hussain, S., Shabbir, S. W., & Rizwan, M. (2020). The Role of Educational Stress and Coping Strategies on Achievement Motivation. *Journal of Languages, Culture and Civilization*, 2(1), 39-46.
 11. Kimberly, Johnwiley, sons, Kandell JJ, (1998) Internet addiction on campus: the vulnerability of college students.
 12. Kuss DJ, Griffiths MD, Karila L., Billieux J. (2014) Internet addiction: a systematic review of eepidemiological research for the last decade.
 13. Li W, O'Brien JE, Snyder SM, Howard MO. (2015) Characteristics of Internet addiction pathological Internet use in US university students: a qualitative method investigation.
 14. Mee-Kyung, S. (2016). The relation of internet addiction, insomnia and excessive daytime sleepiness in Korean college students. *International Journal of u-and e-Service, Science and Technology*, 9(1), 91-98.
 15. Mostafa Eftekhari, Saeed Rezaia, Moreno, Moslem Jafarisani, (2016) the relationship between internet addiction and sleep problem among college students.
 16. Nazir, M., Parveen, S., Batool, S., Mazhar, F., & Sibt-e-Ali, M. (2022). Impact Of Health Communication Via Social Networking Sites On Preventive Behavior Intentions: The Mediating Effect Of Risk Perception, Protective Measures And Self-Efficacy. *Webology*, 19(2).
 17. Nikken, P., & Jansz, J. (2014). Developing scales to measure parental mediation of young children's internet use. *Learning, Media and technology*, 39(2), 250-266.
 18. Qadoos, I., Shahzad, M. A., Hashim, M., & Rizwan, M. (2020). Role of Electronic Media in Changing Fashion Trends among University Students: A Case of Bahauddin Zakariya

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- University Multan. *Review of Education, Administration & LAW*, 3(1), 31-40.
19. Rabadi, L., Ajlouni, M., Masannat, S., Bataineh, S., Batarseh, G., Yessin, A., ... & Rabadi, G. (2017). The relationship between depression and internet addiction among university students in Jordan. *J Addict Res Ther*, 8(6), 1-8.
20. Riaz, S., Bano, Z., Abbas, R., & Rizwan, M. (2018). Dilemmas of adolescents: Dark triad and relational aggression, moderated by economic status. *Review of Economics and Development Studies*, 4(2), 209.
21. Shapira, N. A., Lessig, M. C., Goldsmith, T. D., Szabo, S. T., Lazoritz, M., Gold, M. S., & Stein, D. J. (2003). Problematic internet use: proposed classification and diagnostic criteria. *Depression and anxiety*, 17(4), 207-216.
22. Shin, D. H. (2010). Analysis of online social networks: A cross-national study. *Online Information Review*, 34(3), 473-495.
23. Twenge, J. M., Martin, G. N., & Campbell, W. K. (2018). Decreases in psychological well-being among American adolescents after 2012 and links to screen time during the rise of smartphone technology. *Emotion*, 18(6), 765.
24. Watson, Weinstein, A., & Lejoyeux, M. (2010) Internet addiction or excessive internet use American Journal of Drug and Alcohol Abuse.
25. Yen, J., KO, C., Yen, C., Wu, H., & Yang. M. (2007) the comorbid psychiatric symptoms of internet addiction: Attention deficit and hyperactivity disorder (ADHD), depression, social phobia, and hostility. *Journal of Adolescent Health*.
26. Yilmaz, Yalın, H.I, Karataş, S., & Karabulut, C.B. (2011) Internet addicted children and advices for teachers. *World Conference on Educational Technology researches*.
27. Young, K.S. (1998) Internet addiction: The emergence of a new clinical disorder *Cyber Psychology and Behaviour*.