Research Paper

Investigating the Role of Depression in Predicting Internet Addiction in High School Adolescents

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A B S T R A C T

Objective   The aim of this study is to investigate the function of depression in prediction Internet addiction in high school students in Sari.

Methods   The research method was descriptive-correlation and its statistical population included all high school students who were studying in 2020 and the sample of this study chooses 100 people was selected by available sampling. Beck Depression Inventory and Kimberly Young Internet Addiction Questionnaire were used to collecting data. Pearson correlation analysis and multivariate regression were used to analyze the data.

Results   The results showed that there was a positive and significant relationship between depression (R = 459) and Internet addiction (P <0.01). The results of regression analysis also showed that the predictor variable (independent) of depression can predict (criterion variable) students' Internet addiction. In summary, we can infer from the results that depression has a significant relationship with Internet addiction.

Conclusion   Thus, depressed students were more likely to use the Internet addictively and students with low depression scores were less likely to use the Internet addictively.

1. Introduction

Depression is a common mental disorder worldwide and is estimated to affect approximately 350 million people. This disorder is a major cause of death and disability worldwide, so it is considered as one of ten diseases that form the main burden of disease. Statistics of the World Health Organization show that, in general, the burden of depression is increasing, and in the next twenty years, depression will be the greatest burden of health on society in economic and social terms. Depression is a mood disorder whose important characteristics are depressed mood and loss of interest and pleasure. Depression symptoms fall into four general categories, which include emotional symptoms (sadness, guilt), cognitive symptoms (hopelessness, low self-esteem), motivational symptoms (slow psychomotor), and physical symptoms (sleep and

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appetite problems). (Bayatiani, Debardani, 2019). Depression is often defined by five categories of characteristics, including; Sadness and low mood, negative self-concept including; Blame and self-embarrassment, tendency to avoid others, the decrease in sleep and appetite that leads to weight loss, and the decrease in sexual desire and change in activity levels, which is usually accompanied by drowsiness and sometimes confusion (Salehi omran, Abedini Beltarak, Azizi Shamami, Keshavarz, 2017) At least one-fifth of adults experience depression during their lifetime. Every year in Iran, about three million cases of depression are diagnosed in doctors' offices. Depression affects all age groups. Over the last forty years, the rate of depression has increased and this increase can be a result of the way we live in this age. (McKenzie, Kwame, 2006) One of the factors that cause and intensify various mental disorders such as anxiety and depression, with its increasing prevalence in this new era, is Internet addiction. (Aghbaee, Kakavand, Bahrami Hidchi, 2017). Existing statistics show that there are 56 million and 700 thousand Internet users in Iran, which puts Iran at the top of the countries using the Internet in the Middle East. (Salehi Imran et al., 2017) Since the term Internet addiction was first coined in 1996 by Jung, many events have occurred in the scientific community. For example, Internet gaming disorder, which is a special type of Internet addiction, is included in the third section of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders as a condition that requires further research. Over time, many alternative terms have been coined to describe this phenomenon, including; Pathological use of the Internet, Internet dependence, and problematic use of the Internet. (Peterka Bonta, Sinderman, Shaw, Zhou, Monta, 2018). Internet addiction is defined as mismanagement in the use of this technology and its extreme and out-of-control use, which is associated with negative consequences so that the addictive use of the Internet leads to psychological problems such as depression, anxiety, and a drop in education in the academic period. Besides, with the increase of Internet addiction, procrastinating behaviors and neurotic characteristics increase, and it causes an increase in dissatisfaction of important people in life such as parents and friends (Mousavi, 2020).

The American Psychiatric Association also describes Internet addiction as a pattern of Internet use that causes dysfunction and is associated with unpleasant internal states over two months. Internet addiction is like drug addiction and other addictions. The term Internet addiction refers to a behavioral dependence on the Internet that is defined by characteristics such as depression, introversion, shyness, impatience and loneliness, feelings of fear, hyperactivity, and social anxiety. (Salehi Imran et al., 2017) Various research studies have shown that there is a significant positive relationship between depression and internet addiction. Shahbazi Rad and Mirdrikund (2014) showed in a study that there is a significant positive relationship between Internet addiction and depression. In a study, Liang, Zhao, Yuan, Shaw, and Bain considered depression to be a factor in Internet addiction in men, while identifying the same factor as a consequence of Internet addiction in women. (Aghbaei et al., 2017). The Internet as a medium has posed many threats in recent years; One of the researches that some researchers have pointed out is that the use of the Internet is gradually replacing the real relationships of human beings in daily life and somehow causes human social isolation. The term social isolation is widely used but rarely defined. Wenger and Barthold have defined this concept as the absence of contact with other people. Further development of this concept may distinguish two distinct aspects: the isolation of individuals or social groups from the wider community and the separation of individuals from primary social groups such as family, friends, or neighbors. (Bani Fatemeh, AghayariHir, Mohammadpour, 2016). In 1998, Kraut et al. Published the results of one of the first studies on the Internet and mental health to show that online activities were associated with decreased communication between family members and increased symptoms of depression. Over the last ten years, following the emergence and popularity of social networks, there have been profound changes in the way people communicate and interact in online environments. Today, social networks have more than one billion active users, and most experts estimate that this number will increase in the future. Recently, some authors have expressed concern that the use of the Internet, social networks, or at least online specific activities on social networking sites may be associated with mood disorders, although there are several conflicting reports on the subject. (Benjanin, Banjanin, Dimitrijevic, Pantic, 2015). Many researchers and social critics argue that the Internet has changed people's lives, but there is disagreement about how it

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changes and whether it is positive or negative. The existing views in this field (effects of the Internet) can be proposed in three groups: The first group believes that the virtual world is gradually replacing the real world. Internet contributes to positive changes. Cyberspace provides this opportunity that each person can manifest his or her identity. Accordingly, the Internet provides an opportunity to escape from problems such as depression, stress, anxiety, or communication problems.

The second group believes that the Internet has a complementary role. They believe that judging whether the Internet reduces or increases social capital makes sense in the context of personal life. The third group believes that the use of the Internet cause decline in social capital and prevents people from paying attention to the real community. Internet connections seldom lead to the promotion of deep friendships and providing intangible resources (such as emotional support). Dealing with the Internet not only reduces the time spent on other activities but also distracts people from their surroundings. (Bani Fatemeh et al., 2017). In February 2013, researchers at the University of Swansea in the United Kingdom and the University of Milan in Italy published the results of a joint study that showed if we prevent users from accessing the Internet for their treatment, they would experience psychological symptoms that drug addicts show during the withdrawal period. Some experts compared Internet use and drug use. These experts believe that both of them cause physical and psychological changes in the brain. It has long been known to researchers that regular use of drugs can be a reason for biochemical and structural changes in the body until the body can adapt to the substance. When a person wants to quit a drug, it takes days or weeks for the central nervous system to return to normal. Few studies have shown that Internet addiction can also cause this type of reaction. Examination of brain scans of those who have excessive use of the Internet has shown that changes occur in parts of the brain that are related to having control over concentration and executive functions (a mechanism that causes movement towards the target) and emotion processing. However, opponent experts believe that excessive use of the Internet is a cause of these changes. Psychologist Ellis.G. Walton said that it is not yet clear whether people become addicted to the Internet first and then their brains change, or whether their brains

change first and then they become addicted. In other words, changes in the brain make people prone to addiction. (Netzley, 2014) An important factor that allows us to quantify the use of the Internet is the amount of time spent on the Internet. Studies emphasize that Internet addiction disorder has a positive relationship with the time people spend on the Internet. These studies distinguish between time spent on the Internet for personal reasons and time spent on the Internet for professional reasons because of the motivation to use the Internet, the activities performed on the Internet and the results of this activity are different. (Peterka Bonta et al., 2018) Internet addiction is characterized by spending long hours motivated by non-professional activities such as computer games, the Internet, or video games. Young people show more symptoms of Internet addiction than older people, and other mental disorders with Internet addiction are more common in young people. Evidence shows that adolescents with depression use the Internet to reduce their symptoms and are more likely to become addicted to the Internet later than their non-depressed peers.

People who use the Internet morbidly have significantly higher rates of depression and traumatic thoughts than regular users. The Internet provides adolescents with social support and the opportunity to express their feelings and creates the conditions for relief from the emotional problems of offline life (Hesapcioglu, Yesilova, 2020). Adolescence is a period in which relationships with peers deepen, independence in decision-making grows, and one pursues intellectual pursuits and social attachments. (Sadock,& Ruiz, 2015). Peers can also play an important role in adolescence. They can play the role of information source, reinforce, and provider of social models. During adolescence, the peer community becomes an increasingly important platform for growth, and communication with peers helps to understand the views of others and awareness of oneself and others, and these developments in turn increase interaction with peers. (Salehzadeh, Fallahi, Rahimi, 2017). Adolescence is mainly a period of exploration and choice. The gradual process of moving towards self-concept is coherent. Adolescence is best described as a "process of progress" characterized by an increased ability to master the complex challenges of academic, interpersonal, and emotional homework while exploring new talents,

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social identities, Eric Erickson, a psychoanalyst and growth theorist, described the adolescent's normative task as identity versus role confusion. He sees identity crisis as the normative part of adolescence in which the adolescent pursues alternative styles and behaviors and then successfully incorporates these different experiences into a strong identity. Failure in this process leads to the dispersal of identity or confusion in which the adolescent lacks a coherent and secure sense of identity. (Sadock et al., 2015) Given that research has been done on the relationship between Internet addiction and psychological problems and existing studies on the cause of depression in high school students as a predictor of Internet addiction that can have negative effects They have not paid attention to their academic performance and interpersonal relationships. Therefore, the present study tries to investigate the role of depression in Internet addiction in secondary school adolescents. The current research question was whether depression has a significant relationship with Internet addiction?

2. Materials and Methods:

The method of the present research is applied in terms of purpose and terms of methodology is among the descriptive studies of correlation (regression). The statistical population of this study included all high school students who were studying in Sari in 2020. Using the available sampling method, a sample of 100 students was selected and they answered the Depression Scale and the Internet Addiction Questionnaire. Data were analyzed using SPSS-18 software through Pearson correlation coefficient and multiple regression tests. Beck Depression Inventory and Kimberly Young Internet Addiction Questionnaire were used to collecting data.

Beck Depression Inventory: A 21-item self-assessment questionnaire that measures the severity of depressive symptoms. Each substance (a symptom of the disease) is divided into four grades based on its severity and scores from zero to three. A score of zero indicates the lowest rate and a score of 3 indicates the highest rate of experience of a depressive symptom. The sum of the scores of each questionnaire can be between 0 and 63. This questionnaire is used to assess the severity of depression in people over 13 years of age. The patient should refer to the experience of the above symptoms in the last two weeks, the examiner can provide the test instructions in written or oral to the patient. If necessary, ask the subject to specify the answer to all items. Besides, according to different substances, the type of symptoms in this disease can be considered. In one study, it was reported that the substance related to pessimism in this test in 211 patients well predicted suicidal ideation in them. The test shows scores of 0-13 for minimal depression, 14-19 for mild depression, 20-28 for moderate depression, and 29-63 for severe depression. (Rahimi, 2013).

Kimberly Young Internet Addiction Questionnaire: The Young Internet Addiction Questionnaire is one of the most authoritative tools in this field and includes 20 items that the subject must answer on a Likert scale from rarely (0) to always (5). Score 0 to 30 as no internet addiction and normal user, score 31 to 49 as mild internet addiction, score 50 to 79 as moderate internet addiction, and score 80 and above as severe internet addiction cut score Is considered. During a review, the reliability of this questionnaire was calculated using Cronbach's alpha coefficient of 0.79. The reliability of this questionnaire has been reported in the present study using Cronbach's alpha coefficient of 0.93. (Mousavi, 2017).

3. Results

In this study, the frequency of gender of the subjects was 37 (37%) boys and 63 (63%) girls, respectively.

The mean (and standard deviation) age of the participants in this study was 16.69 (1.11), respectively, and the minimum and maximum age ranges of students were 14 and 19, respectively.

19% (19 people) of the subject were humanities students, 65% (65 people) of them were students of experimental sciences and 16% (16 people) of students were in mathematics and physics, respectively.

Educational grades of the subject: 31 people (31%) were in first grade, 44 people (44%) were in second grade and 25 people (25%) were third grade students in high school, respectively.

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Table 1. Table of descriptive indicators in research variables

Variables	Mean	SD
Depression	12/87	9/98
Addiction to Internet	44/45	17/56

As it is seen in the table above, the mean (and standard deviation) of the Beck Depression Score is 12.87 (9.98), respectively. Also in this table, the mean (and standard deviation) score of Internet addiction is 44.45 (17.56), respectively.

The significance level of the test for variables in being normal is more than (P > 0.05), so the null hypothesis is accepted and we can confidently declare with 95% confidence that the distribution of variables is normal. Therefore, parametric tests have been applied to test the relevant hypotheses.

Table 2. Results of Pearson correlation test for research variables

Variables	Addiction to Internet	
	Pearson correlation	Significance
Depression	0/459	0/000

As it is seen in Table 2, the correlation coefficient obtained for the research variable is (R = 0.459) which is significant at the level (P <0.001). Therefore, the null hypothesis can be rejected. That is, according to the above method and in the case of the study

population, there is a positive and significant relationship between depression and Internet addiction. In other words, students' Internet addiction increases in proportion to the increase in depression.

Table 3. Results of multiple regression analysis of research variables

Model	Sum Of Squares	df	Mean Square	F	Sig
Regression	2082/22	1	2082/22	26/18	0/00
Residual	7793/93	98	79/52		
Total	9875/31	99			

As it is seen in the table above, the variable of depression predicted 0.45% (about 45%) of the variance (changes) of the variable of Internet addiction. The results of the above table show that (P <0.001, F = 26.18 (1.99)); As a result, the whole

regression model is significant. According to the results of the above tables, the data related to predicting the depression variable using the Internet addiction variable show that this component is a significant predictor for the Internet addiction variable.

Table 4. Multiple regression analysis indices with simultaneous entry method

Model	Standardized Beta	t	Sig
Addiction to Internet	0/459	5/11	0/000

The results of multiple regression test analysis show that the standardized beta coefficient for measuring the portion of each variable in the model gives a measure. Beta, t and P values indicate the effect of each

predictor variable. The large value of Beta and absolute t and the small value of P (P <0.001) show that there is a significant relationship between the predictor variables and the criterion variable.

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Based on the above data and considering Table 4, the predictor (independent) variable of depression is a significant predictor for the criterion (dependent) variable of Internet addiction (P <0.001); The predictor (independent) variable "depression" with the largest Beta and absolute t values (t = 5.11, Beta 0.45) and smaller P (P = 0.001), respectively, had the greatest effect on The criterion variable (dependent) is Internet addiction.

4. Discussion and Conclusion

The purpose of this study is to investigate the relationship between depression and Internet addiction (Aghbaei et al., 2017). The results of the present study showed that there is a significant relationship between (Salehi et al., 2017) depression and Internet addiction; This means that as the score of depression increases, so does Internet addiction among adolescents. According to research by a group of researchers, Internet addiction may be merely a sign or manifestation of other mental illnesses; That is, this behavioral addiction may develop under the influence of other psychological distress. (Aghbaee et al., 2017).

According to some authors, computer-generated communications may lead to changes in people's perceptions of other users' physical, educational, moral, or other traits. In 2012, Chow and Ajah published a report suggesting that online communication may lead to the misconception that other online users are happier. Another factor to consider when researching the relationship between the Internet and depression is the potential link between Internet-based interactions and self-esteem. According to some studies, computer-related communication is associated with decreased self-esteem and increased narcissistic behavior. Certain aspects of self-esteem and narcissism are associated with increased depression (Benjenin et al., 2015). Depression and self-esteem seem to be simultaneous

predictors of Internet addiction. High self-esteem is a protective factor that prevents people from engage in uncontrolled use of the Internet. Depression reduces a person's flexibility and increases their vulnerability to other mental disorders. Depressed people use the Internet to improve their mood and escape from everyday problems. (Hesapcioglu et al., 2020) It is noteworthy that in some cases, the Internet is used to reduce depression. In summary, the prevalence of depression among the subjects was higher than their internet dependence, which means that depression could be the reason for students' greater tendency to use the Internet. (Bazrafshan, Jokar, Rahmati, Ahmadi, Kavi, Sokhak, Hashemi Aliabadi, 2019).

Research Limitations:

1. Since the present study was conducted on high school students, it is necessary to be cautious in generalization to other education levels.
2. Research result basic on self-report scales and are only quantitatively analyzed to indicate that participants are likely to be biased in their responses.
3. Another limitation was the small number of samples due to conditions caused by the outbreak of Covid-19.

Research and practical suggestions:

1 Use other tools such as interviews and observation to gather and test these people.

2. Give the effective of depress on students' mental health when they abuse the Internet addiction, that suggestion is should students be calm to reduce their Internet addiction by reducing depression.

3. It suggested that school counselors design educational programs based on skills to reduce depression and the accurate use of cyberspace in the form of textbooks, lectures, plays, etc., and present of communities.

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5. Ethical Considerations

Compliance with ethical guidelines

All ethical principles are considered in this article. The participants were informed about the purpose of the research and its implementation stages. They were also assured about the confidentiality of their information and were free to leave the study whenever they wished, and if desired, the research results would be available to them.

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Authors' contributions

All authors have participated in the design, implementation and writing of all sections of the present study.

Conflicts of interest

The authors declared no conflict of interest.

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