


Research Paper: The Relationship Between Social Support and Internet Addiction in Nursing Students: The Mediating Role of Alexithymia



Hossein Ali Ghanadzadegan^{1*}, Alireza Sangani², Paria Jangi³, Alireza Homayouni⁴

1. Department of Psychology, Faculty of Humanities, Sari Branch, Islamic Azad University, Sari, Iran.
2. Department of Cultural Psychopathology, Farabi Psychological Sciences Research Center, Mazandaran, Iran.
3. Department of Psychology, Faculty of Humanities, Science and Research Branch, Islamic Azad University, Tehran, Iran.
4. Department of Psychology, Faculty of Humanities, Bandar Gaz Branch, Islamic Azad University, Bandaragaz, Iran.

Use your device to scan and read the article online



Citation Ghanadzadegan HA, Sangani A, Jangi P, Homayouni A. The Relationship Between Social Support and Internet Addiction in Nursing Students: The Mediating Role of Alexithymia. *Avicenna J of Neuropsychophysiology*. 2018; 5(2):99-106. <http://dx.doi.org/10.32598/ajnp.5.1.120>

doi <http://dx.doi.org/10.32598/ajnp.5.1.120>



Article info:

Received: 20 Sep 2017

Accepted: 15 Mar 2018

Available Online: 01 May 2018

Keywords:

Internet addiction, Social support, Alexithymia

ABSTRACT

Introduction: The extent of internet use broadly influences the different aspects of life. Also, the cognitive, emotional, and environmental factors affect the internet dependency.

Objectives: Severe internet dependency creates a disorder, therefore, this study aimed to investigate the relationship between social support and internet addiction in nursing students, considering the mediating role of alexithymia.

Materials and Methods: It was a descriptive-correlational study based on structural equation modeling and specific regression equation. A total number of 361 nursing students (178 females and 183 males) were selected with the random sampling method, in Gorgan City, Iran, from October to November 2018. The participants filled the Zimet et al. (1988) social support scale, the Toronto Alexithymia Scale, and the Young (1996) internet addiction scale. Then, the collected data were analyzed with the regression structural equation modeling, in SPSS-18 and Amos-23 software programs.

Results: The regression equations showed a direct effect of social support on internet addiction and an indirect effect of social support on internet addiction with the mediation of alexithymia ($P < 0.01$). Moreover, alexithymia positively affects internet addiction ($P < 0.01$), and social support negatively affects alexithymia ($P < 0.01$).

Conclusion: The study model predicts 33% of internet addiction variance. This research highlights the important effect of social support on internet addiction, which is mediated by alexithymia, in students. These results provide advisers and trainers with applicable methods to improve the psychological states of students.

* Corresponding Author:

Hossein Ali Ghanadzadegan, PhD.

Address: Department of Psychology, Faculty of Humanities, Sari Branch, Islamic Azad University, Sari, Iran.

Tel: +98 (911) 3541450

E-mail: hamid.ghanadzadegan@yahoo.com



1. Introduction

Internet addiction is seen as a problem in many communities and cultures [1]. Since this issue has become widespread, many researchers and experts have tended to study its causes, consequences, and side effects [2]. The increasing use of the internet and its harmful side effects led to the definition of internet addiction, which is the most eminent among all the behavioral addictions [3, 4]. Moreover, younger people usually notice the entertaining function of the internet; this further segregates virtual and real environments. However, high social support from family members decreases internet addiction, also, the impact of family is more prominent in early adolescence [5].

Therefore, higher family support may delay the start of addiction. Also, internet-addicted people receive lower social support and suffer from multiple social deprivation, compared with the normal people [6]. Studies have shown that people with internet addiction receive lower social support, compared with the normal people [2, 7, 8]. Most of the studies have proved the indicative effect of perceived social support on internet addiction [7]. Affective relationships decrease throughout conflicting social support challenges; neglecting the affective issues leads to a growing attachment and tendency to use the internet, in individuals [9].

Alexithymia is considered as another factor that affects the internet addiction, and is associated with a wide range of cognitive problems, such as stress disorders and depression. It is viewed as a deficit in cognitive-emotional functioning that prevents individuals to convey their emotional experiences and images that symbolize and represent the emotions [10]. Alexithymia is a multifaceted structure determined by the difficulty in identifying feelings, differentiating between emotions and physical sensations, describing feelings for others, and the limited power of imagination [11].

Spensieri et al. [12] discovered that individuals with alexithymia exaggerate normal physical arousal and misinterpret the physical signs of emotional arousal. In social relationships, people with alexithymia have difficulty in the actual identification of emotions, which causes them to adapt avoidance behaviors [13]. They have a higher level of readiness for addiction [14]. Moreover, internet addiction is significantly associated with low self-respect and social relationships [15]. On the other hand, social support is related to alexithymia [16].

Several studies have investigated the relationship between social support and internet addiction; the results show a negative relationship between social support and internet addiction [5, 7, 17]. Also, Wu et al. found a negative relationship between social support and addiction to Facebook [5]. Schimmente et al. investigated the relationship between alexithymia and internet addiction and showed a positive correlation between these two variables [10]. Bolat et al. [16] and Guo et al. [14] also found a negative correlation between social support relationships and alexithymia. Considering the above-mentioned findings, the present study aimed to find an exact answer to whether social support influences internet addiction through the alexithymia as a mediator.

Internet addiction is a new malady and a starting point for many researchers. Internet overuse affects individuals' daily activities and causes several mind and family problems in adolescents. Internet addiction is considered as a mental trauma, furthermore, as an epidemic and acute phenomenon, it is accompanied by serious familial, financial, and physical traumas. An immoderate use of the internet will change the study habits of students and influence their economy and job status after the education period. Therefore, the present study aimed to present a constructive model regarding the mediating role of alexithymia in the relationship between social support and internet addiction, in nursing students.

2. Materials and Methods

Study design and participants

The present study was a correlational research with structural equation modeling. The study population consisted of all the nursing students of Gorgan City, Iran, from October to November 2018. The study population included 348 females and 186 male students. In this study, the sample size of 361 was estimated, based on the Cochran's formula. Also, the study sample was collected through the stratified random sampling method (based on gender, 49% female and 51% male).

The inclusion criteria were being a nursing student in Gorgan City, during the 2018 academic year; being physically and mentally able to participate in the study; and giving the informed consent. Besides, the exclusion criteria included unwillingness to complete questionnaires or withdrawing from the study for any reason.

The relevant data were collected with the Multidimensional Scale of Perceived Social Support designed by Zimet et al. [18], the Toronto Alexithymia Scale designed

by Bagbee et al. (1994), and the internet addiction scale designed by Young (1996). Before the research, all participants were informed about the study purposes, and they also gave informed consent. In this research, the obtained data were analyzed with structural equation modeling in SPSS v. 18 and Amos-23.

Measures

Multidimensional scale of perceived social support

The Multidimensional Scale of Perceived Social Support was developed by Zimet et al., in 1988 [18]. This scale comprises 12 items answered on a five-point Likert scale (completely disagree, disagree, no idea, agree, totally agree), which is scored from 1 to 5. The reliability of this questionnaire was confirmed by its developers. The Cronbach's alpha of 0.88 has been reported for the validity of the total scale score. In Iran, the validity and reliability of the total scale score have been calculated as 0.88 and 0.96, respectively [19]. In the present study, the reliability of the total scale score was obtained as 0.76, based on Cronbach's alpha.

Toronto Alexithymia scale

The Toronto Alexithymia Scale has been designed by Bagbee et al., in 1994. This scale includes 20 items answered on a five-point Likert scale (completely disagree,

disagree, no idea, agree, completely agree), which is scored from 1 to 5. The reliability of the alexithymia scale was confirmed by its developers. Bagbee et al. (1994) reported the Cronbach's alpha coefficient of 0.87 for this scale. In Iran, Besharat [20] has measured the validity of the scale using Cronbach's alpha that was calculated as 0.85 for the total scale. In the present study, the reliability of the total scale score was obtained as 0.78, using Cronbach's alpha.

Young internet addiction scale

This scale has been designed by Young with 20 items. The validity of the questionnaire was confirmed by its developer. Young reported the reliability coefficient of 0.81 for the scale using Cronbach's alpha [21]. Also, the reliability coefficient is calculated as 0.62 by Alavi et al. [22]. In the present study, the reliability coefficient of 0.74 was obtained using Cronbach's alpha for the total scale score.

3. Results

According to Table 1, social support is negatively correlated with the subscales of internet addiction, among the students. Also, there is a positive correlation between the subscales of alexithymia and internet addiction at the significance level of 0.01.

Table 1. Pearson Correlation Matrix and the Statistics of the Study Variables

Variable	Mean±SD	1	2	3
Social support	42.61±6.96	1		
Alexitimya	57.80±8.52	**22.-0	1	
Internet addiction	71.36±7.04	**25.0-	**31.0-	1

AJNPP

Table 2. Goodness-of-Fit Indices of the Analyzed Model With Three Phases of Correction

Test	Description	Acceptable Values	Obtained Value
χ^2/df	Relative chi-square	>3	2.211
RMSEA	Root mean square error approximation	>0.01	0.039
GFI	Adjusted goodness of fit	<0.9	0.998
NFI	Normal fit index	<0.9	0.990
CFI	Comparison fit index	<0.9	0.987
DF	-	-	72

AJNPP

Table 3. Direct Estimation of the Model by Maximum Likelihood Method

Variable	B	R2
Social support on internet addiction	-0.19	0.11
Alexithymia on internet addiction	0.29	0.18

AJNPP

Table 4. Indirect Estimation of the Model by Maximum Bootstrap Method

Variable	B	P
Social support on internet addiction with alexithymia as a mediator	0.33	0.000

AJNPP

Table 2 shows that the RMSEA value (0.039) is smaller than 0.1, thus, the mean errors of the model are appropriate, and the model is acceptable. Also, the ratio of chi-square value to the degree of freedom (2.211) is between 1 and 3. Moreover, the indices of GFI, CFI, and NFI are roughly equal to or larger than 0.9, which shows the fitness of the measurement model of the study variables.

According to Table 3 and Figure 1, social support and alexithymia significantly affect internet addiction through direct paths.

Table 4 represents that social support affects internet addiction through the mediation of alexithymia; the standardized value (B) was confirmed with maximum bootstrap estimation method.

4. Discussion

The present study aimed to find a model of the relationships between internet addiction and social support, considering the alexithymia as a mediator. The hypothetical study model was confirmed. According to this model, the exogenous variable predicts 33% of the internet addiction variance.

The observed relationship between social support and internet addiction is also confirmed by Beirami et al. [17]. They showed a relationship between perceived social support, affective social loneliness, and internet addiction, in student society. Also, internet addiction is associated with adolescents' conflicts with parents, multi-faceted perceived social support, and happiness [23]. Perceived social support has a significant negative relationship with internet addiction [24, 25]. Isik and Ergün [8] highlighted the relationship between internet addiction and perceived family support, in Turkish secondary school students. Research has also investigated the role of identity styles, emotional autonomy, attachment, family environment, and well-being in internet addiction [23].

Social support is defined as the extent to which people access to kindness, companionship, and care from family members, friends, and others. Social support has been considered as both social reality and the result of a person's cognition. Real support referred to the type and frequency of the supportive interactions used by individuals in social relations to receive tutorial, affective, and instrumental assistance. People use supportive resources to meet their needs, based on their social relationships and the kind of bonds they have, ie, the

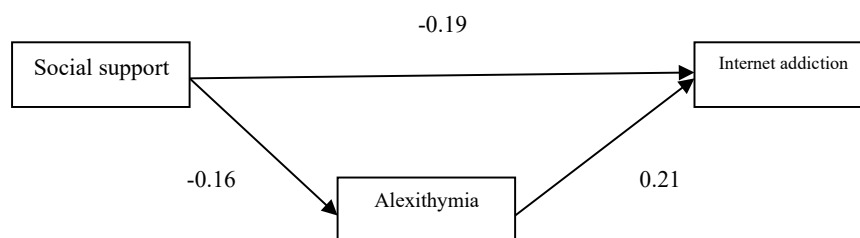


Figure 1. Final Tested Model With Standardized Path Coefficients

AJNPP

wider the social relationships, the higher the access to supportive resources. Furthermore, the social support resources decrease the number of negative effects in life and protect against the stressors of social life [26].

The social asset or support from neighbors, friends, and relatives encompasses three aspects of instrumental or concrete, tutorial, and affective assistance. Instrumental or concrete support stands for the existence of physical support. In this type of support, people receive help from those who are intimate or close to them. Tutorial support includes assistance to understand a problem or an issue. This type of support stands for the information that a person can use in private and environmental issues. Affective support is defined as having people to whom the individual can refer for sympathy and assurance. People who enjoy the affective resources typically feel they have others to whom they can refer when they face problems.

Gaining social support is considered as one of the major incentives in cyberspace and internet addiction. Although individuals view this kind of support as useful and efficient, it will not exert any positive effect. Yet, it has been assumed that social support is obtained sooner, simpler, and with fewer responsibilities, in internet relationships. Normal identity, as the first priority, and perceived support from parents, family, and important people predict people's addictive behavior [27, 28]. Thus, emotion and emotion regulation have been always posed in addiction [29].

Addiction has been mentioned as a mechanism to regulate emotions [30]. Cognitive emotion regulation strategies are among the most important determinants of people reactions to their private emotions. The increased use of maladaptive strategies is associated with pathological growth and disorders permanence [31]. According to Siqian, Kai, and Wen [32], those who have poorly learned the emotion regulation strategies may be more prone to use dangerous behaviors to relieve negative emotions [33]. According to physiological psychologists [34, 35], two biological factors underpin addiction: 1. The limbic system that forms a reward circuit and has a relationship with affection and arousal; 2. The prefrontal circuit that is responsible for preventive behaviors related to thinking, searching for substances, etc. The prefrontal circuit also prevents the individuals' behavior in positive and negative urgent situations, and regulate their emotions.

Finally, various models and hypotheses indicating environmental, social, and biological factors have been

presented in the addiction literature. Khantzian self-medication theory is one of the hypotheses viewing the subject from the psychiatric aspect [36]. Presenting this theory, Khantzian has neglected the biological, cultural, and social facets of drug addiction, however, he perceives it as assistance to other hypotheses. Khantzian [36] mentions that as addicted people characterize negative emotions and unrest as irritating and unbearable, they cannot control their emotional feelings without using drugs. They take the advantage of the physiological and psychiatric properties of the drugs to reach mood stability. Based on this hypothesis, addiction acts as an instrument to adjust disturbing affections. Besides, this hypothesis is based on this assumption that most of the people choose addiction because of a lack of proper support and mood regulation disruption.

It is suggested to consider the teachers' influential roles in increasing students' emotional and cognitive levels, acquiring thought independence, identification, and attitude in the education system. In this regard, teachers play a determining role in students' well-being, because they can directly communicate with students and significantly influence students' thoughts, during the critical years of life. Thus, the appropriate relationship methods play an important role in students' lives, because they seek independence within their adolescence period, and are in an unstable emotional conditions. It is recommended to families and universities to adopt social and behavioral expectations under the students' conditions so that they can successfully pass this stage of life.

The present results are limited to the nursing students of Gorgan City, in 2018. Also, self-report tools and the cross-sectional method have been used in this research. Another limitation of this research is the lack of a causal relationship between the endogenous (internet addiction) and exogenous (social support and alexithymia) variables.

5. Conclusions

This study highlights the important effect of social support on internet addiction, which is mediated by alexithymia, in students. These results provide advisers and trainers with applicable methods to improve the psychological states of students.



Ethical Considerations

Compliance with ethical guidelines

All ethical principles were considered in this article. The participants were informed about the purpose of the research and its implementation stages and signed the informed consent; they were also assured about the confidentiality of their information. Moreover, the participants were allowed to leave the study whenever they wish; the results of the research would be available to them if desired.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Authors' contributions

All authors contributed in preparing this article.

Conflict of interest

The authors declared no conflict of interest.

References

- [1] Zhou Z. An error-related negativity potential investigation of response monitoring function in individuals with internet addiction disorder. *Frontiers in Behavioral Neuroscience*. 2013; 25(7):1-31. [DOI:10.3389/fnbeh.2013.00131] [PMID] [PMCID]
- [2] Lee YH, Ko CH, Chou C. Re-visiting Internet addiction among Taiwanese students: A cross-sectional comparison of students' expectations, online gaming, and online social interaction. *Journal of abnormal child psychology*. 2015; 43(3):589-99. [DOI:10.1007/s10802-014-9915-4] [PMID]
- [3] Ebrahimi Moghaddam H, Akbari H. [The relationship between identity styles and addiction among Science and Industry students (Persian)]. Paper presented at: The First International Comprehensive Psychology Congress of Iran. 17 February 2016; Tehran, Iran. <https://civilica.com/doc/475266/>
- [4] Sariyska R, Lachmann B, Markett S, Reuter M, Montag C. Individual differences in implicit learning abilities and impulsive behavior in the context of Internet addiction and internet gaming disorder under the consideration of gender. *Addictive Behaviors Reports*. 2017; 1(5):19-28. [DOI:10.1016/j.abrep.2017.02.002] [PMID] [PMCID]
- [5] Wu XS, Zhang ZH, Zhao F, Wang WJ, Li YF, Bi L, et al. Prevalence of Internet addiction and its association with social support and other related factors among adolescents in China. *Journal of Adolescence*. 2016; 1(52):103-10. [DOI:10.1016/j.adolescence.2016.07.012] [PMID]
- [6] Ko CH, Wang PW, Liu TL, Yen CF, Chen CS, Yen JY. Bidirectional associations between family factors and Internet addiction among adolescents in a prospective investigation. *Psychiatry and Clinical Neurosciences*. 2015; 69(4):192-200. [DOI:10.1111/pcn.12204] [PMID]
- [7] Onsrودي E, Hosseiniان S, Salehi F, Momeni F. [The interrelationship of internet addiction, adolescents' conflict with parents, multidimensional perceived social support, and happiness (Persian)]. *Journal of Family and Research*. 2013; 10(3):77-94. <https://www.sid.ir/en/Journal/ViewPaper.aspx?ID=428171>
- [8] Işık I, Ergün G. Determining the relation between the internet addiction in Turkish secondary school students and the perceived family support. *European Psychiatry*. 2017; 1(41):441-2. [DOI:10.1016/j.eurpsy.2017.01.447]
- [9] Scimeca G, Bruno A, Crucitti M, Conti C, Quattrone D, Pandolfo G, et al. Abnormal illness behavior and Internet addiction severity: The role of disease conviction, irritability, and alexithymia. *Journal of Behavioral Addictions*. 2016; 6(1):92-7. [DOI:10.1556/2006.6.2017.008] [PMID] [PMCID]
- [10] Schimmenti A, Passanisi A, Caretti V, La Marca L, Granieri A, Iacolino C, et al. Traumatic experiences, alexithymia, and Internet addiction symptoms among late adolescents: A moderated mediation analysis. *Addictive Behaviors*. 2017; 1(64):314-20. [DOI:10.1016/j.abbeh.2015.11.002] [PMID]
- [11] Lyvers M, Karantonis J, Edwards MS, Thorberg FA. Traits associated with internet addiction in young adults: Potential risk factors. *Addictive Behaviors Reports*. 2016; 1(3):56-60. [DOI:10.1016/j.abrep.2016.04.001] [PMID] [PMCID]
- [12] Spensieri V, Valastro C, Cerutti R. PO-31: Technology addiction and alexithymia features in a sample of Italian adolescents. *Journal of Behavioral Addictions*. 2016; 5(Suppl. 1):58-9. <https://go.gale.com/ps/anonymou?id=GALE%7CA459058640&sid=googleScholar&v=2.1&it=r&linkaccess=abs&issn=20625871&p=AONE&sw=w>
- [13] Maniaci G, Picone F, van Holst RJ, Bolloni C, Scardina S, Cannizzaro C. Alterations in the emotional regulation process in gambling addiction: The role of anger and alexithymia. *Journal of Gambling Studies*. 2017; 33(2):633-47. [DOI:10.1007/s10899-016-9636-4] [PMID]
- [14] Gao T, Li J, Zhang H, Gao J, Kong Y, Hu Y, et al. The influence of alexithymia on mobile phone addiction: The role of depression, anxiety and stress. *Journal of Affective Disorders*. 2018; 1(22):761-6. [DOI:10.1016/j.jad.2017.08.020] [PMID]
- [15] Tsai HF, Cheng SH, Yeh TL, Shih CC, Chen KC, Yang YC, et al. The risk factors of Internet addiction: A survey of university freshmen. *Psychiatry Research*. 2009; 30(3):294-9. [DOI:10.1016/j.psychres.2008.01.015] [PMID]
- [16] Bolat N, Yavuz M, Eliaçık K, Zorlu A. The relationships between problematic internet use, alexithymia levels and attachment characteristics in a sample of adolescents in a high school, Turkey. *Psychology, Health & Medicine*. 2018; 28(5):604-11. [DOI:10.1080/13548506.2017.1394474] [PMID]
- [17] Beyrami M, Movahedi Y, Movahhedi M. [The relationship between perceived social support and affective, social feeling of loneliness with internet addiction in student society (Persian)]. *Scientific Journal of Social Cognition*, 2015; 3(2):109-22. http://journals.pnu.ac.ir/article_1365.html

- [18] Zimet GD, Dahlem NW, Zimet SG, Farley GK. The multidimensional scale of perceived social support. *Journal of Personality Assessment*. 1988, 52(1):30-41. [DOI:10.1207/s15327752jpa5201_2]
- [19] Entezar RK. Mental health, emotional intelligence and social support among mothers of children with mild intellectual disability [PhD dissertation]. Johor: Universiti Teknologi Malaysia; 2013. <http://eprints.utm.my/id/eprint/37910>
- [20] Besharat MA. [Defensive styles and emotional deficiency (Persian)]. *Scientific Journal of Mental Health Principles*. 2009; 10(3):181-90. [DOI:10.22038/JFMH.2008.1673]
- [21] Young KS. Internet addiction: Symptoms, evaluation and treatment. *Innovations in Clinical Practice*. 1999; 17:19-31. [https://www.scirp.org/\(S\(351jmbntvnsjt1aadkposzje\)\)/reference/ReferencesPapers.aspx?ReferenceID=909095](https://www.scirp.org/(S(351jmbntvnsjt1aadkposzje))/reference/ReferencesPapers.aspx?ReferenceID=909095)
- [22] Alavi S, Jannatifard F, Eslami M, Rezapour H. Evaluation of diagnostic criteria of DSM-IV-TR for diagnosis of internet addiction disorder. *Zahedan Journal of Research in Medical Sciences*. 2011; 13(6):e93833. <https://sites.kowsarpub.com/zjrms/articles/93833.html>
- [23] Pednekar NK, Tung S. Problematic internet use in adolescents: Role of identity styles, emotional autonomy, attachment, family environment and well-being. *Indian Journal of Health & Wellbeing*. 2017; 8(4):258-62. <http://www.i-scholar.in/index.php/ijhw/article/view/157000>
- [24] Fengqiang G, Jie X, Yueqiang R, Lei H. The relationship between internet addiction and aggression: multiple mediating effects of life events and social support. *Psychology Research*. 2016; 6(1):42-9. [DOI:10.17265/2159-5542/2016.01.005]
- [25] Gunuc S, Dogan A. The relationships between Turkish adolescents' Internet addiction, their perceived social support and family activities. *Computers in Human Behavior*. 2013; 29(6):197-207. [DOI:10.1016/j.chb.2013.04.011]
- [26] Akbari Shayeh Y, Vatankhah M, Zargar Y, Teymouri Bakherzi N, & Ahmadian A. [Clarifying Relations of Personality traits (neurosis, agreement Excitement Seeking, Habitude Psychosis), and Styles for Confronting Addiction among students at Ferdowsi University of Mashad (Persian)]. *Scientific Journal of Social Security Studies*. 2014; 33(4):163-79. http://sss.jrl.police.ir/article_11862.html
- [27] Hosseini Almadani SA, Ahadi H, Karimi Y, Bahrami H, Moazedian A. [The comparison of resiliency, identity styles, spirituality and perceived social support in addicts, Non-addicts, and recovered addicts (Persian)]. *Journal of Research on Addiction*. 2012; 6(21):47-64. <http://etiadjpajohi.ir/article-1-332-fa.html>
- [28] Koob GF. The dark side of emotion: The addiction perspective. *European Journal of Pharmacology*. 2015; 15(753):73-87. [DOI:10.1016/j.ejphar.2014.11.044] [PMID] [PMCID]
- [29] Taube-Schiff M, Van Exan J, Tanaka R, Wnuk S, Hawa R, Sockalingam S. Attachment style and emotional eating in bariatric surgery candidates: The mediating role of difficulties in emotion regulation. *Eating Behaviors*. 2015; 1(18):36-40. [DOI:10.1016/j.eatbeh.2015.03.011] [PMID]
- [30] Mills P, Newman EF, Cossar J, Murray G. Emotional maltreatment and disordered eating in adolescents: Testing the mediating role of emotion regulation. *Child Abuse & Neglect*. 2015; 1(39):156-66. [DOI:10.1016/j.chiabu.2014.05.011] [PMID]
- [31] Patron E, Benvenuti SM, Favretto G, Gasparotto R, Palomba D. Depression and reduced heart rate variability after cardiac surgery: The mediating role of emotion regulation. *Autonomic Neuroscience*. 2014; 11(80):53-8. [DOI:10.1016/j.autneu.2013.11.004] [PMID]
- [32] Siqian G, Kai X, Wen H. [The study on the Relationship between Alexithymia and mental health of middle school students (Chinese)]. *Science of Social Psychology*. 2015; 5:0-17. https://en.cnki.com.cn/Article_en/CJFDTotal-SHXL201505017.htm
- [33] Esmaeeli Nasab M, Andami Khoshk A, Azarmi H, Marrakhi A. The predicting role of difficulties in emotion regulation and distress tolerance in students' addiction potential. *Scientific Journal of Addiction Studies*. 2014; 8(29):49-63. <http://etiadjpajohi.ir/article-1-607-fa.html>
- [34] Berridge KC. From prediction error to incentive salience: Mesolimbic computation of reward motivation. *European Journal of Neuroscience*. 2012; 35(7):1124-43. [DOI:10.1111/j.1460-9568.2012.07990.x] [PMID] [PMCID]
- [35] Berridge KC, Kringelbach ML. Neuroscience of affect: Brain mechanisms of pleasure and displeasure. *Current Opinion in Neurobiology*. 2013; 23(3):294-303. [DOI:10.1016/j.conb.2013.01.017] [PMID] [PMCID]
- [36] Khantzian EJ. The self-medication hypothesis of addictive disorders: Focus on Heroin and Cocaine dependence. In: Allen DF, editor. *The Cocaine Crisis*. Boston: Springer; 1987. [DOI:10.1007/978-1-4613-1837-8_7]

