

## Original Paper

# Internet Addiction and Its Relationship With Family Functioning in High School Students



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## ABSTRACT

**Introduction:** Family-related factors play an important role in adolescent's addiction to the Internet.

**Objective:** The aim of this study was to examine the relationship between Internet addiction and family functioning in high school students.

**Materials and Methods:** This is an analytical study with a cross-sectional design conducted on 796 high school students in Rasht city, Iran who were selected using multi-stage cluster random sampling method. Data collection tools were a demographic form, the Young's Internet Addiction Test, and the Family Assessment Device. Chi-Square test and rank-ordered logistic regression analysis were used for data analysis.

**Results:** The response rate of of students was 86.81%; 85.7% had at least two family members who were using the Internet; 71.2% of students had no addiction, 27.5% were exposed to Internet addiction and 1.3% had Internet addiction. The majority (65.0%) of students had unhealthy family functioning. The relationship between Internet addiction and family functioning was statistically significant ( $P=0.001$ ). There was a significant statistical relationship between Internet addiction and family income ( $P=0.003$ ), father's job ( $P=0.001$ ), and duration of internet usage per day ( $P=0.001$ ). Logistic regression model showed that the family functioning score ( $OR=1.02$ , 95% CI; 1.01-1.04,  $P=0.001$ ), duration of Internet usage per day ( $OR=1.02$ , 95% CI; 1.11-1.20,  $P=0.0001$ ), and gender (male) ( $OR=1.02$ , 95% CI; 1.26-2.58,  $P=0.001$ ) significantly affected Internet addiction.

**Conclusion:** Due to the direct statistical relationship between Internet addiction and family functioning, it is necessary to pay serious attention to the phenomenon of Internet addiction and make appropriate plans for adolescents and their families to use the Internet properly.

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## Highlights

- Today, the Internet, as an opportunity or threat, has posed significant challenges for the families.
- Due to a wide range of Internet services and the gradual dependence of people on it, it has caused a phenomenon called Internet addiction.
- Family functioning has a relationship with Internet addiction in high school students.

## Plain Language Summary

Today, due to the expansion of Internet use and the gradual dependence on it, a phenomenon called Internet addiction has been emerged. It can be classified as an impulsive disorder, because the excessive use of Internet can lead to psychological, social, academic or occupational problems. One of the ways that adolescents use for self-presentation is mass media including the Internet. This environment has attracted the attention of many teenagers due to ease of access and high speed. Various factors such as age, gender, level of education, family support, family involvement, and the influence of peer groups can affect Internet addiction. This study examines the effect of family functioning on Internet addiction in high school students. The results showed that Internet addiction was associated with socio-demographic factors of family income, father's job and the duration of Internet usage per day. Moreover, Internet addiction had a relationship with family functioning.

### Introduction

**F**amily is a dynamic system and one of the oldest and most important institutions that human beings have established to regulate and integrate their behaviour. If children want to maximize their potential, they need parental support [1, 2]. Family functioning affects the physical, emotional and social health of children [3]. Family skills are very important for coordination, conflict resolution, and solidarity between family members, and enforcing regulations to protect the entire system [4]. In order to understand the family structure, organization, and communication patterns, one should focus on the six dimensions of family functioning [5] including: Problem solving, communication, roles, affective responsiveness, affective involvement, and behavioural control [3].

Each person goes through different stages from the moment s/he becomes a family member. One of the stages that every person, willingly or unwillingly, faces is "adolescence" which occurs from the end of childhood to the onset of adulthood. Adolescence is a transitional period associated with many biological, social, cognitive, emotional, and psychological changes; because of these changes, adolescents experience some challenges and have difficulty coping with them [1]. Family has a very important role in individual and social development of

adolescents. Family is a protective factor against their risky behaviour, including Internet addiction [6]. Adolescents' identity formation is influenced by various factors such as cognitive, parental, school, socio-cultural, behavioural, age gap between children, communication, conflicts and daydreams.

One of the ways that adolescents use for self-presentation is the mass media including the Internet. This environment has attracted the attention of many teenagers due to ease of access and high speed [7]. Internet has become a vital tool for many people and provides valuable information to its users [8]. From December 2000 to June 2017, the number of Internet users worldwide increased from 360 million to 3885 million people [9]. Studies in Italy, China, South Korea, and Taiwan have shown that the prevalence of Internet addiction is 7.36-10.7% [6]. Due to the wide range of the Internet's practical dimensions and the gradually increased dependence on it, a phenomenon called "Internet addiction" has been raised that can be classified as an impulsive disorder, because overuse of the Internet can lead to psychological, social, academic, or occupational problems [8, 10].

When a person is addicted to the Internet, symptoms such as low tolerance, tremors, anxiety, obsessive thoughts and fantasies, and voluntary/involuntary movements of the fingers are clearly recognizable for at least 20 months, in addition to personality traits such as stress, impulsivity, and increased emotional reac-

tivity [8]. Various factors such as age, gender, level of education, family support, family involvement, and the influence of peer groups can affect Internet addiction [6]. Adolescents who are addicted to the Internet have lower family satisfaction and have a feeling that their parents do not care about them and that, thus, there is more conflict between them and their parents [11].

People with the Internet addiction spend many hours on the Internet and do not want to lose their connection and leave their computers, which can negatively affect their daily living activities and social relations [2]. Given that adolescents are one of the important community groups and, on the other hand, inappropriate family functioning causes problems, the present study aimed to determine the relationship between Internet addiction and family functioning in high school students in Iran.

## Materials and Methods

This is an analytical study with cross-sectional design conducted from June 2019 to May 2020. The study population consists of all students in 103 secondary school students in two districts of Rasht city, Iran. The sample size was calculated 796 using the formula and considering the correlation between family functioning and Internet addiction as 0.14 reported in Imani's study [11] and  $1-\alpha=0.95$  and  $1-\beta=0.90$ . Also, the probability of sample attrition was estimated to be 14%. Students were selected using a multi-stage cluster sampling method. The entry criteria included: studying in the second grade, having a mobile than can connect to the Internet, and parental and student consent.

After obtaining the necessary permissions, the male researcher visited the boys' school and female researcher visited the girls' school after introducing themselves to the school principals and explaining the study objectives. Then, their demographic information were recorded and the questionnaires were distributed among them. A full explanation of the study process was first provided to all students, and they were free to participate in this study and can leave the study at anytime. Then, the parents of students signed a consent form on the behalf of them.

Data collection tools were a demographic form, the Internet Addiction Test (IAT), and Family Assessment Device (FAD). The demographic form surveys age, gender, father's and mother's education and job, family income, Internet usage history, duration of Internet usage per day, mobile internet connectivity, and Internet use by family members. IAT is one of the most reputable tests for measuring Internet addiction designed by Young [12] with 20

items to measure internet addiction in different populations. The responses are rated on a 5-point Likert scale from 1: Never to 5: Always. To measure its total score, the scores of each question are added up. The total score of IAT ranges from 20 to 100, where higher scores indicate higher levels of Internet addiction; score 20-49 shows no Internet addiction, score 50-79 indicates exposure to Internet addiction, and score 80-100 shows having Internet addiction. In Iran, Alavi et al. have examined the psychometric properties of this questionnaire [13].

The consisted of 60 items developed by Epstein, Baldwin, & Bishop in 1983 [14] to measure family functioning based on the McMaster Model of Family Functioning for people aged 12 years and higher. The FAD had 7 subscales; 6 related to family functioning dimensions of problem solving (items 2, 12, 24, 38, 50, 60), communication (items 3, 14, 18, 22, 29, 35, 43, 52, 59), roles (items 4, 8, 10, 15, 23, 30, 34, 40, 45, 53, 58), affective responsiveness (items 9, 19, 28, 39, 49, 57), affective involvement (items 5, 13, 25, 33, 37, 42, 54), and behavioral control (items 3, 7, 17, 20, 27, 32, 44, 47, 48, 55) and one subscale measures overall family functioning (items 1, 6, 11, 16, 21, 26, 31, 36, 46, 51, 56, 60) [5, 14].

The scoring is based on a scale from 1= strongly agree to 4= strongly disagree. The mean score of each items that is ranged from 1 (healthy functioning) to 4 (unhealthy functioning) is calculated to obtain the scores of each subscale; higher scores indicate unhealthy functioning. In this study, the Persian version of this tool was used [15]. Data analysis was performed using descriptive and inferential statistics (Chi-squared test, Fisher's exact test and rank-ordered logistic regression analysis) in SPSS v. 21. The significance level of the tests was considered as  $P<0.05$ .

## Results

In this study, 796 male and female high school students were participated, and their response rate was 86.81%. The mean and standard deviation of the age of participants was  $16.88\pm 0.89$  years, where most of them were 16 years old (42.5%) and female (57.9%) whose fathers had a high school diploma (39.8%), and the family income of more than half of them (57.2%) was  $\geq 500$  dollars. Their mean and standard deviation of Internet usage history was  $5.19\pm 2.45$  years and 57% had a history of 5-8 years. Regarding the duration of internet usage per day, the mean and standard deviation was  $4.45\pm 5.14$  hours, and 57.2% were reported to use the Internet for 0-4 hours per day. Moreover, 85.7% had at least two family members who were using the Internet.

The results of IAT showed that only 1.30% had Internet addiction and 27.50% were exposed to Internet addiction. The FAD scores showed that 64.98% had unhealthy family functioning. Regarding the relationship between Internet addiction and family functioning, the results showed a statistically significant relationship ( $P=0.001$ ). Among students with Internet addiction, the majority (77.78%) were living in families with unhealthy family functioning (Table 1). As a result, it can be said that with the increase in family dysfunction, the risk of Internet addiction increases in high school students.

Study of the prevalence of internet addiction based on socio-demographic variables (Table 2) showed a statistically significant relationship between Internet addiction and family income ( $P=0.003$ ), father's job ( $P=0.001$ ), gender ( $P=0.050$ ) and the duration of internet usage per day ( $P=0.001$ ). Regarding the relationship between family functioning and socio-demographic factors, the results showed no significant relationship between family functioning and age, mother's education, parents' job, Internet usage history, duration of Internet usage per day, mobile internet connectivity, and internet use by family members, but a significant relationship with gender ( $P=0.001$ ), father's education ( $P=0.004$ ) and family income ( $P=0.001$ ) (Table 3).

In order to investigate the relationship between internet addiction status and family functioning by controlling the effects of socio-demographic variables, a rank-ordered logistic regression analysis was performed. The results showed that the FAD score, gender (male) and the duration of Internet usage per day had a significant effect on Internet addiction (Table 4). In boys, the relative risk of Internet addiction increased by 1.8 times compared to girls ( $OR=1.8$ , 95% CI: 1.26-2.58,  $P=0.001$ ). Moreover, with the increase of Internet usage per day, the risk of Internet addiction increased ( $OR=1.15$ , 95% CI: 1.11-1.20,  $P=0.0001$ ).

## Discussion

The results of this study showed no significant difference between high school girls and boys in terms of Internet addiction. This is consistent with the findings of many other studies [3, 12, 16], but is against the results of some studies [17, 18]. Perhaps the difference between girls and boys in Internet addiction is because of its different effect size on different age and gender groups. There was no significant relationship between internet addiction and parents' educational level. This is against the results of Salehi and Naeem Yavari [19]; However, regarding mother's education, the results of the two studies are similar. There was a statistically significant relationship between Internet addiction and family income among students, where the lower family income increases the risk of Internet addiction. This is also consistent with the findings of Salehi and Naeem Yavari [19].

There was a significant relationship between gender and family functioning, where family functioning was healthier in girls compared to boys. This finding is consistent with the results of Jafari-NadrAbadi [3]. Family functioning had also a significant relationship with father's education but not with mother's education, where the students whose fathers' educational level were lower had poorer family functioning. Family functioning had also a significant relationship with family income, where the students with lower family income had healthier family functioning. Moreover, the results revealed the higher risk of Internet addiction in students with unhealthy family functioning. This is consistent with the results of many studies [3, 11, 20, 21].

This finding suggests that the family plays a decisive educational role where children grow up and learn skills. If children in the family learn how to deal with their problems, roles be defined, there be a good way to control behavior in the family, members be clear and coherent and pay attention to interests of each other and respect

**Table 1.** The relationship between Internet addiction and family functioning in students

Family Function Internet Addiviyon	No. (%)			Sig.*
	Healthy	Unhealthy	Total	
No Internet addiction	193 (39.23)	299 (60.77)	492 (71.2)	0.001
Exposed to Internet addiction	47 (27.74)	143 (75.26)	190 (27.5)	
Addicted to the Internet	2 (22.22)	7 (77.78)	9 (1.3)	
Total	242 (35.02)	449 (64.98)	691 (100)	

\*Chi-squared test

**Table 2.** Prevalence of internet addiction in students based on socio-demographic variables

Variables	No. (%)			Sig.	
	No Addiction	Addicted	Exposed to Addiction		
Age (y)	14	4 (100)	0 (0.0)	0 (0.0)	0.398**
	15	114 (73.5)	41 (26.5)	0 (0.0)	
	16	215 (73.1)	74 (25.2)	5 (1.7)	
	17	128 (67.7)	59 (31.2)	2 (1.1)	
	18	29 (63.0)	15 (32.6)	2 (4.3)	
	19	2 (66.7)	1 (33.3)	0 (0.0)	
Gender	Male	193 (66.3)	93 (32.0)	5 (1.7)	0.050*
	Female	299 (74.8)	97 (24.3)	4 (1.0)	
Father's education	Junior high school	83 (67.5)	39 (31.7)	1 (0.8)	0.507**
	High school diploma	188 (68.4)	82 (29.8)	5 (1.8)	
	Bachelors' degree	137 (75.7)	42 (23.2)	2 (1.1)	
	Masters' degree and higher	84 (75.0)	27 (24.1)	1 (0.9)	
Mother's education	Junior high school	71 (62.3)	41 (36.0)	2 (1.8)	0.408**
	High school diploma	248 (72.3)	90 (26.2)	5 (1.5)	
	Bachelors' degree	124 (73.8)	43 (25.6)	1 (0.6)	
	Masters' degree and higher	49 (74.2)	16 (24.2)	1 (1.5)	
Family income(\$)	<125	20 (71.4)	7 (25.0)	1 (3.6)	0.003*
	125-250	37 (71.2)	14 (26.9)	1 (1.9)	
	250-375	55 (79.7)	13 (18.8)	1 (1.4)	
	375-500	82 (56.2)	62 (42.5)	2 (1.4)	
	>500	298 (75.3)	94 (23.7)	4 (1.0)	
Mother's job	Worker	0 (0.0)	1 (100)	0 (0.0)	0.486*
	Housekeeper	347 (72.6)	125 (26.2)	6 (1.3)	
	Employed	107 (70.9)	42 (27.8)	2 (1.3)	
	Self-employed	38 (62.3)	22 (36.1)	1 (1.6)	
Father's job	Worker	34 (79.1)	8 (18.6)	1 (2.3)	0.001**
	Housekeeper	1 (25.0)	2 (50.0)	1 (25.0)	
	Employed	221 (74.7)	72 (24.3)	3 (1.0)	
	Self-employed	236 (67.8)	108 (31.0)	4 (1.1)	
Internet usage history (y)	1-4	168 (73.4)	59 (25.8)	2 (0.9)	0.801**
	5-8	279 (70.8)	109 (27.7)	6 (1.5)	
	9-12	42 (64.6)	22 (33.8)	1 (1.5)	
	13-16	2 (100)	0 (0.0)	0 (0.0)	
Duration of Internet usage per day (n)	0-4	323 (81.8)	70 (17.7)	2 (0.5)	0.001**
	5-10	132 (58.7)	89 (39.6)	4 (1.8)	
	11-15	21 (48.8)	21 (48.8)	1 (2.3)	
	16-20	9 (56.3)	5 (31.3)	2 (12.5)	
	21-24	6 (54.5)	5 (45.5)	0 (0.0)	
Mobile internet connectivity	Yes	443 (70.4)	178 (28.3)	8 (1.3)	0.320*
	No	49 (79.0)	12 (19.4)	1 (1.6)	
Internet use by family members	None	10 (83.3)	2 (16.7)	0 (0.0)	0.677**
	1	62 (71.3)	25 (28.7)	0 (0.0)	
	2	420 (70.9)	163 (27.5)	9 (1.5)	

\* Chi-squared test; \*\* Fisher's exact test

**Table 3.** Level of family functioning in students based on socio-demographic variables

Variables	No. (%)		Sig.	
	Healthy Family Functioning	Unhealthy Family Functioning		
Age (y)	14	2 (50.0)	2 (50.0)	0.115**
	15	58 (37.4)	97 (62.6)	
	16	111 (37.8)	183 (62.2)	
	17	52 (27.5)	137 (72.5)	
	18	19 (41.3)	27 (58.7)	
	19	0 (0.0)	3 (100)	
Gender	Male	81 (27.8)	210 (72.2)	0.001*
	Female	161 (40.3)	239 (59.8)	
Father's education	Junior high school	31 (25.2)	92 (74.8)	0.004**
	High school diploma	87 (31.6)	188 (68.4)	
	Bachelors' degree	76 (42.0)	105 (58.0)	
	Masters' degree and higher	48 (42.9)	64 (57.1)	
Mother's education	Junior high school	35 (30.7)	79 (69.3)	0.064**
	High school diploma	111 (32.4)	232 (67.6)	
	Bachelors' degree	73 (43.5)	95 (56.5)	
	Masters' degree and higher	23 (34.8)	43 (65.2)	
Family income (\$)	<125	6 (21.4)	22 (78.6)	0.001*
	125-250	3 (5.8)	49 (94.2)	
	250-375	17 (24.6)	52 (75.4)	
	375-500	43 (29.5)	103 (70.5)	
	>500	173 (43.7)	223 (56.3)	
Mother's job	Worker	0 (0.0)	1 (100)	0.212*
	Housekeeper	163 (34.1)	315 (65.9)	
	Employed	62 (41.1)	89 (58.9)	
	Self-employed	17 (27.9)	44 (72.1)	
Father's job	Worker	12 (27.9)	31 (72.1)	0.293**
	Housekeeper	2 (50.0)	2 (50.0)	
	Employed	114 (38.5)	182 (61.5)	
	Self-employed	114 (32.8)	234 (67.2)	



Variables		No. (%)		Sig.
		Healthy Family Functioning	Unhealthy Family Functioning	
Internet usage history (y)	1-4	68 (29.7)	161 (70.3)	0.130**
	5-8	150 (38.1)	244 (61.9)	
	9-12	24 (36.9)	41 (63.1)	
	13-16	0 (0.0)	2 (100)	
Duration of Internet usage per day (h)	0-4	151 (38.2)	244 (61.8)	0.268**
	5-10	72 (32.0)	153 (68.0)	
	11-15	13 (30.2)	30 (69.8)	
	16-20	4 (25.0)	12 (75.0)	
	21-24	2 (18.2)	9 (81.8)	
Mobile internet connectivity	Yes	223 (35.5)	406 (64.5)	0.449*
	No	19 (30.6)	43 (69.4)	
Internet use by family members	None	4 (33.3)	8 (66.7)	0.697**
	1	27 (31.0)	60 (69.0)	
	2	211 (35.6)	381 (64.4)	

\*Chi-squared test; \*\*Fisher’s exact test

the positive and negative emotions of each other, the family can perform its role better and the children can have lower problems. Many adolescents may experience over-use of internet due to poor social skills, anxiety, escaping from loneliness, social isolation or other psychological health problems [22-24]. However, in well-functioning families, such cases are less common. Therefore, in addition to increasing the media awareness and knowledge of themselves, family members need to take care of their functions and strengthen them.

This study results showed that gender and the duration of Internet usage per day had a negative and positive significant effect on Internet addiction, respectively. Indicating that with the increase of Internet usage per day, the risk

of Internet addiction increases. Ahmadi et al. also stated that Internet addiction has a significant relationship with gender [25]; however, one study reported the girls’ more dependence on the Internet [3]. The results of the present study are consistent with most previous studies where the rate of Internet addiction were reported higher in boys than in girls [17, 18].

Family-related factors play an important role in adolescents’ addiction to the Internet; families with poor functional behaviors lead their children to the excessive use of the Internet in various ways. In addition to wrong educational methods that are the main ways of how to deal with children, parents’ more or less control over their children can cause them to become more dependent on the

**Table 4.** Effect of family functioning on Internet addiction controlled by socio-demographic variables

Model	β	SE	Sig.	Odds ratio	95% CI	
					Lower	Upper
Family assessment device score	0.022	0.007	0.001	1.02	1.01	1.04
Duration of internet usage per day	0.142	0.020	0.0001	1.15	1.11	1.20
Gender (boy to girl)	0.590	0.183	0.001	1.80	1.26	2.58

Internet to ignore parents and negative emotions. Parents who do not play their roles properly and do not communicate well with their children can increase their Internet dependence. Young stated that 85% of students experienced a decline in their study habits after the excessive use of the Internet, and their grades dropped significantly [12]. Therefore, it can be said that poor family functioning causes children to overuse the Internet and, as a result, become addicted to it which can cause their academic failure.

The results of this study can be used by families, school principals, teachers, and therapists. The results, while confirming the negative effects of Internet addiction on family functioning, emphasized the importance of the family environment in reducing the excessive use of the Internet. Through educational programs and holding management workshops, school principals can create a proper culture of the Internet and social media usage and by providing the necessary training in schools to the students, their parents and teachers, can cause a healthy level of family functioning and, therefore, prevent Internet addiction in students.

Psychotherapists, using psychological techniques and psychotherapy, can change, correct and treat emotional and behavioral problems in students, and strengthen and develop positive personality in them. It is necessary to establish active counseling centers to help and provide services to the families. Further studies are commended by using others variables such as social skills, parenting style, and mental health, and addressing the harms that can be caused by Internet addiction.

## Ethical Considerations

### Compliance with ethical guidelines

This study was extracted from a MSc. thesis of the first author and the Ethics Committee of Guilan University of Medical Sciences approved the study (Code: IR.GUMS.REC.1398.308).

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### Authors' contributions

Conceptualization: Nasrin Mokhtari; Methodology, writing original draft, funding acquisition, and resources, Supervision: All authors; Investigation: Zahra Harsej and Nasrin Mokhtari; Editing & review: Farzaneh Sheikholeslami and Nasrin Mokhtari.

## Conflict of interest

The authors declared no conflict of interest.

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