

Factors Affecting Internet Addiction and Health-Promoting Behaviors in Adolescents: A Cross-Sectional Study

Ergenlerde İnternet Bağımlılığı ve Sağlığı Geliştirici Davranışları Etkileyen Faktörler: Kesitsel Bir Çalışma

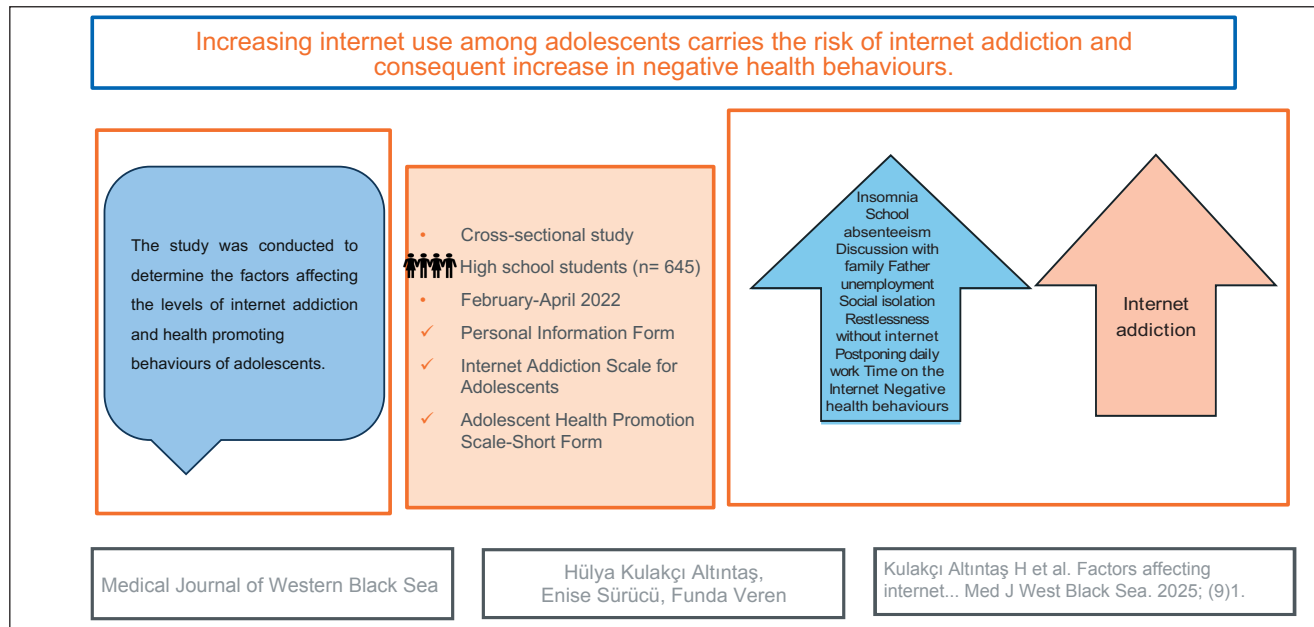
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GRAPHICAL ABSTRACT



ABSTRACT

Aim: This study was designed to determine the internet addiction and health-promoting behavior levels of adolescents and evaluate the factors affecting these variables.

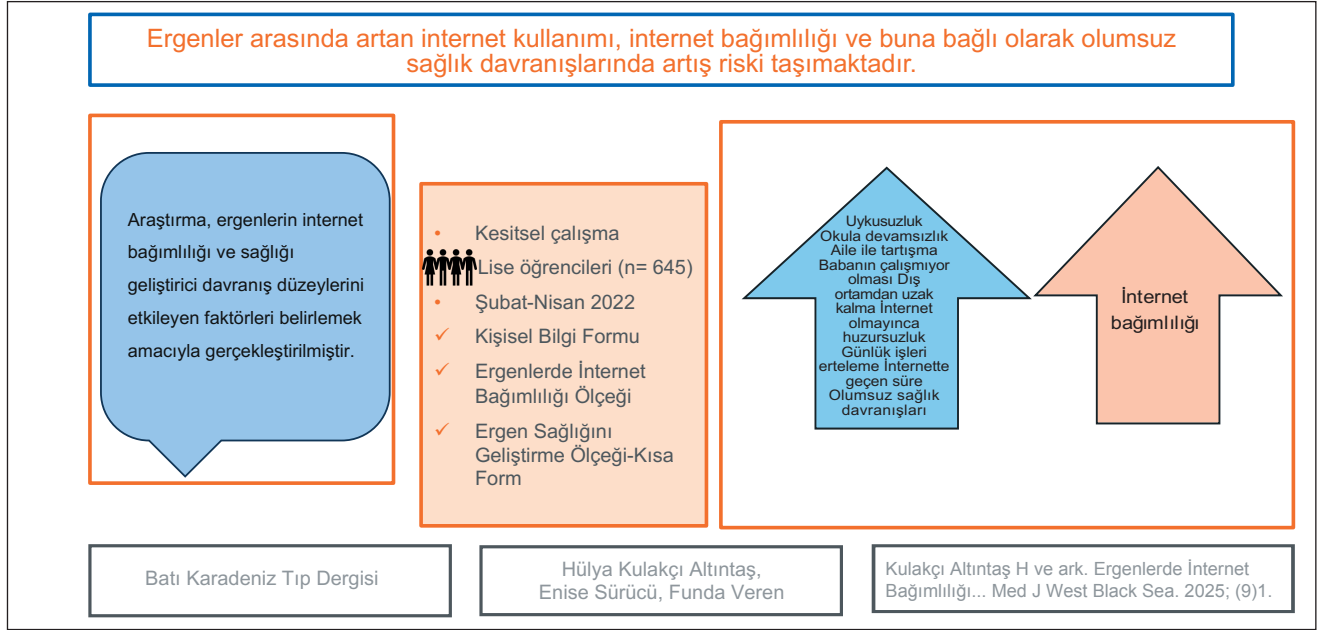
Material and Methods: A cross-sectional design was used in the study, which included students at a high school located in a city in Turkey (n= 645). Data were collected using a Personal Information Form, the Internet Addiction Scale for Adolescents, and the Adolescent Health Promotion Scale-Short Form.

Results: The mean Internet Addiction Scale for Adolescents score of the participants was 20.98 ± 6.75 , while their mean Adolescent Health Promotion Scale-Short Form score was 69.76 ± 13.34 . It was found that experiencing insomnia due to time spent on the internet, being absent from school due to time spent on the internet, arguing with family members due to time spent on the internet, father not working, preferring to spend time on the internet instead of going out with others, feeling restless when not connected to the internet, postponing daily tasks while on the internet, daily time spent on the internet and non-health promoting behaviours significantly increased internet addiction levels.

Conclusion: It was found that as participants spent more time on the internet instead of the outdoor environment and their internet addiction levels increased, their health-promoting behaviours decreased. Increasing internet use among adolescents carries the risk of increasing internet addiction and decreasing health-promoting behaviours in the future.

Keywords: Adolescent, adolescent behavior, internet addiction, health promotion

GRAFİKSEL ÖZET



ÖZ

Amaç: Bu çalışma ergenlerin internet bağımlılığı ve sağlığı geliştirici davranış düzeylerini belirlemek ve bu değişkenleri etkileyen faktörleri değerlendirmek amacıyla planlanmıştır.

Gereç ve Yöntemler: Türkiye'nin bir ilinde bulunan bir lisedeki öğrencilerin (n= 645) dahil edildiği araştırmada kesitsel desen kullanılmıştır. Veriler Kişisel Bilgi Formu, Ergenlerde İnternet Bağımlılığı Ölçeği ve Ergen Sağlığını Geliştirme Ölçeği-Kısa Form kullanılarak toplanmıştır.

Bulgular: Katılımcıların Ergenlerde İnternet Bağımlılığı Ölçeği puan ortalaması 20.98 ± 6.75 , Ergen Sağlığını Geliştirme Ölçeği-Kısa Form puan ortalaması 69.76 ± 13.34 olarak hesaplanmıştır. İnternette geçirilen zaman nedeniyle uykusuzluk yaşamının, internette vakit geçirme nedeniyle okula devamsızlık yapmanın, internette geçirilen zaman nedeniyle aile üyeleriyle tartışmanın, babanın çalışmıyor olması, başkalarıyla dışarı çıkmak yerine internette vakit geçirmeyi tercih etmenin, internete bağlı olmadığında huzursuz hissetmenin, internetteyken günlük işleri erteleme, internette geçirilen günlük sürenin ve sağlığı geliştirici olmayan davranışların internet bağımlılık düzeylerini anlamlı olarak artırdığı bulunmuştur.

Sonuç: Katılımcılar dış ortam yerine internette daha fazla zaman geçirdikçe ve internet bağımlılık düzeyleri arttıkça, sağlığı geliştirici davranışlarının azaldığı tespit edilmiştir. Ergenler arasında internet kullanımının artması, ileride internet bağımlılığını artırma ve buna bağlı olarak sağlığı geliştirici davranışları azaltma riski taşımaktadır.

Anahtar Sözcükler: Ergen, ergen davranışı, internet bağımlılığı, sağlığı geliştirme

INTRODUCTION

Adolescence is the physically healthiest period of human life (1). However, adolescents are particularly vulnerable to the risk of internet addiction during this period. This vulnerability is often accompanied by acquiring bad habits by imitating adults, neglecting health-promoting behaviors, high social demands, and risky behaviors that play an important role in social acceptance (2).

Internet addiction is defined as excessive preoccupation with the internet, increased use of the internet for satisfaction, feeling aggression and tension when no internet access is available, and the negative effects of excessive internet use on work, social, and family life (3). In the literature, 5.1-80.2% of adolescents worldwide have been reported to have internet addiction (4, 5). This ratio ranges within 1.3-22.1% in Turkey, and this result reveals that almost one in every five adolescents are an internet addict (6, 7). In a relevant study, it was reported that nearly half of 348 problematic internet users, who demanded help for internet addiction in Hong Kong between 2012 and 2017, were 12 to 17 years old (8). It was also determined that in the literature, internet addiction has been studied in the context of different variables including sleep (4), psychological factors (4), sociophobia (9), loneliness (10), attention deficit and hyperactivity disorder (11), and social coping (12).

Health-promoting behaviors constitute a concept including attitudes and habits that affect health (13). This concept also includes parameters such as nutrition, social support, undertaking health responsibilities, satisfaction with life, exercise, and stress management. Negative life behaviors such as unhealthy eating habits and inadequate physical activity, which began in high-income populations and have had a global impact so far, pose a long-term threat for adolescent health (1). On the other hand, the risk of adopting an unhealthy lifestyle is 2.29-fold more among adolescents with internet addiction (13). Studies investigating the relationship between internet addiction and health-promoting behaviors and evaluating the effects of internet addiction on health-promoting behaviors have focused on dimensions including nutrition (14), social support (15), physical activity (16), and quality of life (5). However, the creation of time- and cost-effective strategies with a high level of evidence against internet addiction is only possible with the identification of the factors with negative effects on all aspects of health-promoting behaviors. In this context, a limited number of studies was found in the relevant literature to evaluate internet addiction and health-promoting behaviors holistically (2, 17).

It is highly important to continuously update data on research regarding the internet use behaviors of adolescents against the rate of development and change in technology

and identify health-promoting behaviors during this critical period when adolescents create their health capital. Since different factors may play a role in internet addiction and health-promoting behaviors under different socioeconomic conditions, at different places, and at different times, it has been suggested that preventive factors that pose a risk of internet addiction and unfavorable health-related behaviors among adolescents will be beneficial (18,19).

Therefore, this study was carried out to evaluate internet addiction, health-promoting behaviors, and affecting factors in adolescents.

MATERIALS and METHODS

Study Design and Participants

The population of this cross-sectional study included students of a high school located in a city center in Turkey (n=645). The minimum required sample size was calculated as 574 participants based on a similar study in the literature (20) according to adolescent health promotion mean scores, with $\alpha=0.05$, $1-\beta=0.90$, and $d=0.135$. The inclusion criteria were the agreement of the student to participate in the study and the consent of the parents of the student. The exclusion criteria were the presence of any psychiatric disorder and a visual or hearing impairment. All students of the aforementioned high school were invited to participate in the study. Among those, the parents of 45 students did not give consent for their participation. Thus, a total of 600 students were enrolled. Eleven students filled out data collection instruments incompletely or incorrectly. The study was completed with 589 students. The participation rate was 91.3%.

Procedures

This study was completed in accordance with the tenets of the Declaration on Helsinki. Ethical approval was obtained from the Human Research Ethics Committee of Zonguldak Bülent Ecevit University (09.11.2021/99622-335), and written permission was received from the Provincial Directorate of National Education (E-45865702-604.01.01-408326869/07.01.2022). Written informed consent was obtained from the families of the students. Verbal consent was received from the students.

Data were collected between 15 February and 22 April 2022. After the necessary permissions were obtained, the school administrators were met, and days and hours suitable for data collection were determined. Informed consent forms were sent to parents with the students in closed envelopes. The students were told to deliver the envelope to their teachers the next day. The students who were allowed to participate in the study by their parents were informed about the purpose of the study. Those who were willing to participate were given the data collection instruments, and

data collection was completed based on the self-reports of the participants under the supervision of the researchers. The application of the data collection instruments took approximately 20 minutes.

Measures

A personal information form, the Internet Addiction Scale for Adolescents, and the Adolescent Health Promotion Scale-Short Form were used to collect the data in this study (21, 22). Permission was granted from the developers of the Internet Addiction Scale for Adolescents and the Adolescent Health Promotion Scale-Short Form for their use.

Personal Information Form

This form was prepared by the researchers after their review of the relevant literature, and it included questions evaluating the demographic characteristics of the students and their internet and technological device use characteristics (2, 17).

Internet Addiction Scale for Adolescents

This scale was developed by Tas (2019) to identify internet addiction among adolescents. It consists of 9 items and a single factor. Scale items are assessed by a Likert-type grading method with the response options of “1=never, 2=rarely, 3=sometimes, 4=generally, and 5=always”. The lowest and highest scores that can be obtained from the scale are 9 and 45. There is no inversely scored item in the scale. High scores show high levels of internet addiction. The Cronbach’s alpha coefficient of the scale was reported as 0.81 (22). Cronbach alpha coefficient was calculated as 0.84 in this study.

Adolescent Health Promotion Scale-Short Form

The Adolescent Health Promotion Scale-Short Form was developed by Chen et al. in 2014 (23). This scale consists of 6 subscales and a total of 21 items. Its subscales are nutrition (items 1, 2, and 3), social support (items 4, 5, 6, and 7), health responsibility (items 8, 9, 10, and 11), life appreciation (items 12, 13, 14, and 15), exercise (items 16, 17, and 18), and stress management (items 19, 20, and 21). Each item is scored on a Likert-type scale with the response options of “1=never, 2=sometimes, 3=occasionally, 4=mostly, and 5=always”. The score of any specific subscale is calculated by the sum of the scores of all items in that subscale, and the total scale score is calculated by the sum of all subscale scores. The lowest and highest scores that can be obtained from the scale are 21 and 105. Higher scores indicate more positive health-promoting behaviors. Among the reported internal consistency coefficients of the scale, McDonald’s omega was 0.90, and Cronbach’s alpha was 0.91 (23). The validity and reliability study of the Adolescent Health Promotion Scale-Short Form was carried out by İnci and Celik in 2021(21). The internal consistency coefficients

of the Turkish version were 0.54-0.78 for McDonald’s omega and 0.56-0.78 for Cronbach’s alpha in terms of the subscales, and both McDonald’s omega and Cronbach’s alpha were reported to be 0.88 for the overall scale (21). In this study, Cronbach’s alpha coefficients for the subscales were found to be between 0.51 and 0.77, and Cronbach’s alpha for the overall scale was determined as 0.86.

Data Analysis

The sample size needed to conduct the study was calculated via the G*Power version 3.1.9.4 program. The data collected in the study were analyzed using the SPSS 25.0 (Statistical Package for the Social Sciences, Chicago, Illinois). Descriptive statistics including mean data, standard deviations and percentages were used to describe demographic data and the internet addiction and health-promoting behaviors scores. Multiple regression analysis was conducted to assess the influence predictors of internet addiction and health-promoting behaviors. To determine the factors affecting internet addiction and health-promoting behaviors, the independent variables found significant in the univariate analyses and were suitable for the model were included in the model simultaneously using the “enter” method, and the multiple regression analysis was applied. Class, age, grade point average, daily time spent on the internet, internet addiction, and health-promoting behaviors were continuous variables. Categorical data were coded as 0 or 1 for the multiple regression analysis. The analysis results were standardized by model summary R, R^2 , adjusted R^2 , and F, and they are presented as β and standard error values. Statistical significance was assessed based on the threshold of $p < 0.05$.

RESULTS

The mean age of the participants was 15.84 ± 1.22 , with a range of 13-18, and 54.7% of the participants were female (Table 1). It was determined the participants spent a mean time of 3.94 ± 1.96 hours per day (Min:0.50, Max:15) on the internet.

Internet addiction levels and predictive factors

The mean Internet Addiction Scale for Adolescents score of the participants was 20.98 ± 6.75 . As a result of the analysis, a significant regression model was found ($F(9,558) = 78.412$, $p < 0.001$), and 55% of the total variance in the dependent variable was found to be explained by the independent variables ($\text{adj}R^2 = 0.551$). Accordingly, internet addiction was positively and significantly associated with experiencing insomnia due to time spent on the internet is positive and significant ($\beta = 0.212$, $t(558) = 6.747$, $p < 0.001$); being absent from school due to spending time on the internet is positive and significant ($\beta = 0.093$, $t(558) = 3.173$, $p < 0.01$); arguing with family members due to time spent

Table 1: Sociodemographic and descriptive characteristics of the participants.

Variables	Findings (n=589)	
Class (n=589)		
9 th grade	138	(23.4)
10 th grade	153	(26.0)
11 th grade	143	(24.3)
12 th grade	155	(26.3)
Age (year±SD, Min.- Max.)	15.8±1.2	(13-18)
Gender (n=587)		
Female	321	(54.7)
Male	266	(45.3)
Education level of the mother (n=586)		
Illiterate	5	(0.9)
Literate with no formal degree	123	(21.0)
Elementary school	105	(17.9)
Secondary school	213	(36.3)
High school	140	(23.9)
Employment status of the mother (n=580)		
Employed	205	(35.3)
Unemployed	375	(64.7)
Education level of the father (n=579)		
Illiterate	4	(0.7)
Literate with no formal degree	57	(9.8)
Elementary school	82	(14.2)
Secondary school	274	(47.3)
High school	162	(28.0)
Employment status of the father (n=574)		
Employed	523	(91.1)
Unemployed	51	(8.9)
Order of the child in the family (n=588)		
Oldest child	321	(54.6)
Middle child	127	(21.6)
Youngest child	140	(23.8)
Family type (n=589)		
Nuclear family (mother, father, and children)	496	(84.2)
Extended family (mother, father, children, and relatives)	60	(10.2)
Broken family (absence of mother or father)	33	(5.6)
Grade point average (Last semester) (Mean±SD, Min.- Max.)	84.2±7.7	50-100

Data were shown as n (%).

min-max=minimum-maximum values.

on the internet is positive and significant ($\beta=0.265$, $t(558)=8.865$, $p<0.001$); father not working ($\beta=0.059$, $t(558)=2.087$, $p<0.05$); preferring to spend time on the internet instead of going out with others is positive and significant ($\beta=0.124$, $t(558)=4.167$, $p<0.001$); feeling uneasy when not connected to the internet positively and significantly ($\beta=0.208$, $t(558)=6.722$, $p<0.001$); postponing daily tasks while on the internet was positively and significantly associated ($\beta=0.178$, $t(558)=6.059$, $p<0.001$); daily time spent on the internet positively and significantly ($\beta=0.199$, $t(558)=6.398$, $p<0.001$), health-promoting behaviours level negatively and significantly ($\beta=-0.083$, $t(558)=-2.762$, $p<0.01$) (Table 2). The independent variables of mother's education level, father's education level, family type, father's internet use status, mother's internet use status and grade point average were excluded from the model since they did not show significant predictive power.

Health-promoting behaviors level and its predictive factors

The mean Adolescent Health Promotion Scale score of the participants was 69.76 ± 13.34 . Their mean scores on the subscales were found to be 9.55 ± 2.21 for nutrition, 14.24 ± 3.48 for social support, 13.07 ± 3.80 for health responsibility, 14.52 ± 3.56 for life appreciation, 8.68 ± 3.36 for exercise, and 9.70 ± 2.83 for stress management. As a result of the analysis, a significant regression model was found ($F(4,576)=22.310$, $p<0.001$), and 13% of the variance in the dependent variable was found to be explained by the independent variables ($\text{adj}R^2=0.128$). Accordingly, having a computer of one's own positively and significantly ($\beta=0.089$, $t(576)=2.287$, $p<0.05$); preferring to spend time on the internet instead of going out with others is negatively and significantly ($\beta=-0.095$, $t(576)=-2.327$, $p<0.05$); daily time spent on the internet negatively and significantly ($\beta=-0.125$, $t(576)=-2.836$, $p<0.01$); internet addiction level negatively and significantly ($\beta=-0.235$, $t(576)=-5.173$, $p<0.001$) (Table 3). Postponing daily tasks while on the internet, experiencing insomnia due to time spent on the internet, being absent from school due to spending time on the internet, arguing with family members due to time spent on the internet, feeling uneasy when not connected to the internet independent variables were excluded from the model since they did not predict the results at a significant level. Figure 1 summarizes the factors affecting the internet addiction levels and health-promoting behaviors of the participants.

DISCUSSION

There has been an increase in the time adolescents spend online due to their preference of the world on the internet, which can be accessed via many channels, as a leisure time activity today (24). As indicated in many studies related to this subject, time spent on the internet poses a risk factor

Table 2: Predictors of internet addiction.

Independent variables	B	SE	Beta β	t	p	VIF
Constant	14.646	1.270		11.528	0.000*	
Experiencing insomnia due to time spent on the internet	2.896	0.429	0.212	6.747	0.000*	1.242
Being absent from school due to spending time on the internet	3.621	1.141	0.093	3.173	0.002*	1.078
Arguing with family members due to time spent on the internet	3.535	0.399	0.265	8.865	0.000*	1.133
Father's employment status	1.394	0.668	0.059	2.087	0.037*	1.021
Preferring to spend time on the internet instead of going out with others	2.131	0.511	0.124	4.167	0.000*	1.115
Feeling uneasy when not connected to the internet	2.898	0.431	0.208	6.722	0.000*	1.211
Postponing daily tasks while on the internet	2.657	0.438	0.178	6.059	0.000*	1.092
Daily time spent on the internet	0.691	0.108	0.199	6.398	0.000*	1.226
Health-promoting behaviours level	-0.041	0.015	-0.083	-2.762	0.006*	1.140
R	0.747					
R ²	0.558					
AdjR ²	0.551					
F	78.412					
Model (p)	0.000*					
Durbin watson	1.880					

SE: standard error of coefficient, β :standardized regression coefficient, **R²:** proportion of variation in dependent variable explained by regression model, **p:** the level of statistical significance, *p<0.05.

Table 3: Predictors of health-promoting behaviors.

Independent variables	B	SE	Beta β	t	p	VIF
Constant	81.864	1.925		42.519	0.000*	
Having a computer of one's own	2.495	1.091	0.089	2.287	0.023*	1.010
Preferring to spend time on the internet instead of going out with others	-3.245	1.395	-0.095	-2.327	0.020*	1.107
Daily time spent on the internet	-0.845	0.298	-0.125	-2.836	0.005*	1.283
Internet addiction level	-0.464	0.090	-0.235	-5.173	0.000*	1.369
R	0.366					
R ²	0.134					
AdjR ²	0.128					
F	22.310					
Model (p)	0.000*					
Durbin watson	2.067					

SE: standard error of coefficient, β :standardized regression coefficient, **R²:** proportion of variation in dependent variable explained by regression model, **p:** the level of statistical significance, *p<0.05.

for addiction, and an increase has been observed in addiction levels as this time increases (25). Adolescents use their time on the internet mostly in non- academic contexts including chatting, entertainment, games, social network connections, shopping, and monetization tools (6). In addition to the risk of internet addiction, this non-academic use also causes an increase in school success and school absenteeism rates (26, 27). The adolescents included in this study were found to have moderate levels of internet addiction based on their responses to the measurement instrument

that was used. In addition to this, further analyses yielded evidence that daily time spent on the internet and absenteeism from school to spend time on the internet increase internet addiction levels. Especially school nurses should provide information to adolescents about the advantages of phones without an internet connection, alternative forms of communication, and leisure time activities to reduce the time they spend on the internet. Similarly, encouraging the use of stimulating applications in screen time control (e.g., timers, notifications, restrictions) can be beneficial. With the

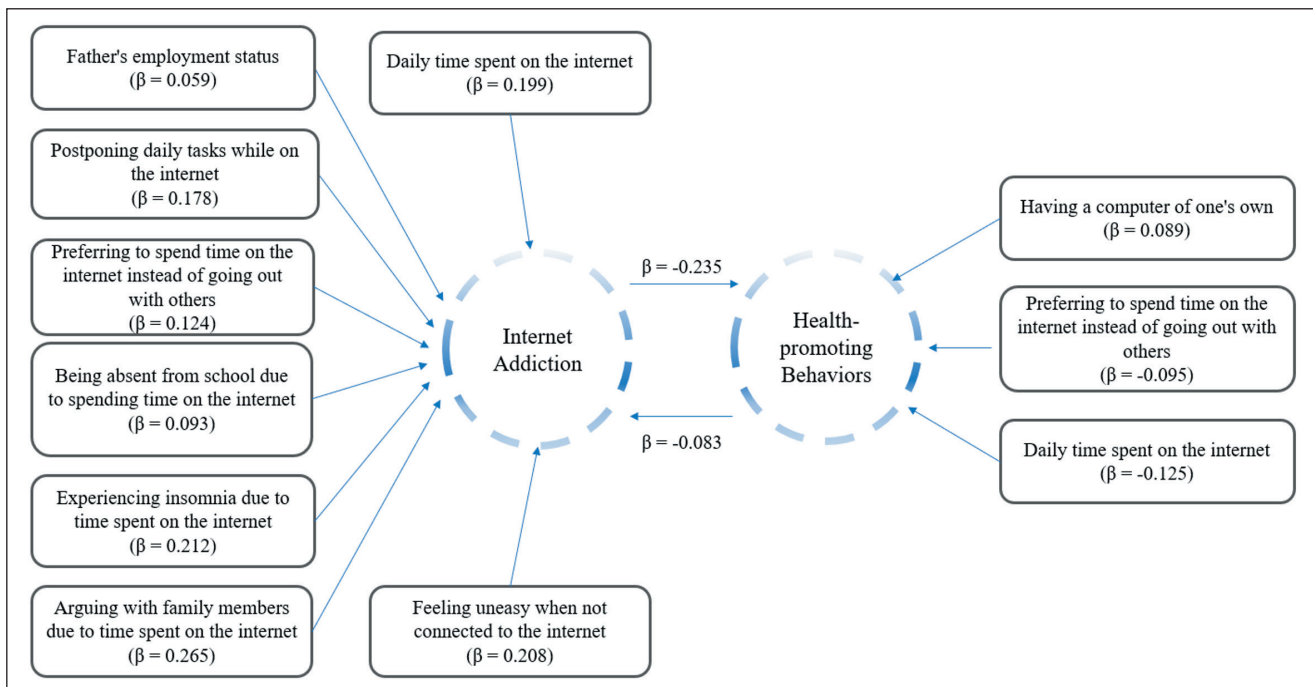


Figure 1: Predictive factors of internet addiction and health-promoting behaviors.

help of these applications, adolescents can review their internet usage habits, set their own limits and gain motivation to reduce their screen times.

Sleep problems due to time spent on the internet are another factor affecting internet addiction (4). Regarding this subject, it was found by Kocas and Sasmaz (2018) that high school students with internet addiction had 2.31 times lower quality of sleep (28). Moreover, insufficient sleep was found to lead to higher levels of media exposure (29). In this study, four of every 10 adolescents were reported to experience sleep problems due to their prolonged use of the internet. In addition, an increase in school absenteeism was also observed on the basis of sleep problems (30, 31). In this study, further analyses confirmed that sleep deprivation due to time spent on the internet and school absenteeism due to time spent on the internet increased internet addiction. Awareness training on sleep hygiene to be provided by school nurses is important for enhancing the sleep quality of adolescents and regulating their sleep cycles. It will be useful to include information about pre-sleep habits, sleep environment, sleep duration, and sleep disorders in the content of this training. Mobile applications that can monitor and control sleep durations can also contribute to the sleep hygiene of adolescents. These applications can help adolescents monitor their sleep patterns, achieve sleep goals, and recognize sleep problems. It is thought that improving sleep hygiene will reflect positively on the academic and health indicators of adolescents.

The internet environment provides virtual social support when the adolescent cannot receive sufficient support from social support mechanisms that are important in the development of self-esteem such as family, friends, and teachers (20). The search for virtual social support is increasing, especially among adolescents who have internet addiction in their families and those who have arguments with their families regarding the purpose and duration of their internet use (8, 32). This situation causes social withdrawal and alienation from outdoor activities in adolescents (33) and paves the way for the transfer of social relationships to the virtual world (34). In addition, familial problems tire the adolescent psychologically and he/she searches for external support mechanisms (35). According to the results of a study, adolescents whose fathers are unemployed have an increased risk of having problems related to internet addiction. It is thought that the resulting negative picture is sustained by adolescents spending their time indoors or maintaining their online presence when they are outdoors. In fact, individuals with internet addiction have difficulty in transitioning to their daily work (36) and there is an increase in their desire to use the internet while they are busy with daily work (37). In the management of this issue with ineffective approaches such as blocking internet access, a state of deprivation is experienced, as in other types of addiction (38), and aggressive behaviors can be exhibited at later stages (39). At the same time, the time spent in front of the screen has a negative effect on each dimension of health-promoting behaviours, especially asocialisation and decreased physical activity in

adolescents (40). Further analyses conducted in this study provided important evidence that having arguments with the family due to the time spent on the internet, adolescents whose fathers do not work, the desire to connect to the internet instead of participating in social activities, disrupting daily tasks due to the time spent on the internet and feeling uneasy when not connected to the internet increase the effects of internet addiction. Accordingly, there is a need for different arguments about what adolescents can put in place of the internet in their lives. In line with the current need, it is recommended to plan activities such as including social responsibility projects that will increase the interaction of adolescents with the environment in school health programs and the establishment of technology detox days.

Health-promoting behaviors are based on the concepts of protection from diseases, early diagnosis/treatment, and rehabilitation. The control of health-promoting behaviors is under the responsibility of individuals, and peer relationships and the social environment are determinants in the formation of these behavior patterns. In this period, while adolescents are striving to have knowledge about every subject with their efforts to form an identity, their self-control and cognitive control are in the developmental stage on the other hand (41). Here, adolescents transition from parent-controlled health practices to the period of taking personal health responsibilities. For this reason, adolescence has critical importance for the acquisition of health-promoting behaviors. Although the measurement tools used in the literature are different, the common view is that the health-promoting behaviors of adolescents are not at the desired level (17). In this study, adolescents were found to have moderate levels of health-promoting behaviors based on the measurement tool used. Many relevant studies have also reported that adolescents have moderate levels of health-promoting behaviors (42).

The increasing popularity of internet use creates an obstacle to practicing health-promoting behaviors among adolescents as in all age groups. In this study, the finding that health-promoting behaviors and internet addiction mutually and negatively affected each other negatively was important. Previous studies in the literature have revealed that there is a relationship between internet addiction and risky health behaviors (4, 43), and internet usage negatively affects the health-promoting behaviors of adolescents (2). For instance, Tran et al. reported that Vietnamese adolescents with internet addiction experienced self-care problems, and their rates of having difficulties in performing daily routines were higher (5). In the study by Hendekci and Aydin Avci, it was determined that nutritional exercise behaviors of adolescents were negatively affected as their internet addiction levels increased; however, those who used the internet for information and educational purposes had healthy diets and meal plans (14). In a different study, it is also stated that

technology-based health applications provide motivational support for health-enhancing behaviours (44). The increase in time spent on the internet every day, which was found in this study, also showed a negative effect on health-promoting behaviors, as well as increasing internet addiction levels. Similarly, it was found that bringing a tablet with a mobile internet connection to a gym decreased the physical activity intensity of adolescents by 17% and increased their sedentary behaviors by 54% in the study by Kobak et al. (16). In addition, further analyses in this study revealed that having one's own computer had a positive effect on health-promoting behaviours. The findings obtained in this study indicated that the inadequacy of parents and adolescents in terms of digital literacy is the source of the problem. Therefore, in order to bring the health-promoting behaviours of adolescents to the desired level, the time spent online should be reduced, effective leisure time management should be established and the time spent online should be supported with controlled and health-promoting content. Studies in which online and leisure time management is enriched with health-promoting activities and practices and strengthened with social support mechanisms such as family and friends are important in terms of continuity and applicability.

In this study, the form of internet use was not questioned, and a distinction between generalized and specific internet use was not made. Therefore, there may have been differences among the participants regarding how and for what they used the internet. In the study, the level of internet addiction was determined using a self-report scale rather than clinical and diagnostic measures, and this may have created social acceptability bias. Since the study did not include a community-based group, it is not possible to generalise the results due to the influence of socio-cultural and economic factors on internet addiction and health-promoting behaviours.

According to the results of this study, it was determined that adolescents have moderate level of internet addiction and moderate level of health promoting behaviours and these two concepts affect each other negatively. It was found that experiencing insomnia due to time spent on the internet, absenteeism from school due to time spent on the internet, arguing with family members due to time spent on the internet, father not working, preferring to spend time on the internet instead of going out with others, feeling restless when not connected to the internet, postponing daily tasks while on the internet, daily time spent on the internet and non-health promoting behaviours significantly increased internet addiction levels. It was found that as the time the participants spent on the internet instead of spending time outside and internet addiction levels increased, their health-promoting behaviours decreased significantly, while having a personal computer significantly increased health-promoting behaviours.

According to the results of this study, with an increase in internet use and a decrease in health-promoting behaviors, there is a risk of internet addiction rising to high levels in the future. To reach the Sustainable Development Goals and Healthy People 2030 goals, it is necessary to take urgent measures against internet addiction in adolescents and encourage health-promoting behaviors. It is recommended to establish early and preventive measures such as adolescent-specific prevention programs, education, skill development, behavioral change, and intervention strategies for these two problems that threaten global health, and it is recommended to encourage the participation of families in these programs. It is thought that especially in school health services, short and medium-term action plans developed by a multidisciplinary team under the leadership of a school health nurse will provide effective results in the long term. For future research, qualitative or representative cohort studies in which the effect of internet addiction on health-promoting behaviors is evaluated within the socio-cultural structure and according to different forms of internet usage are recommended.

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Author Contributions

Concept: **Hülya Kulakçı Altıntaş, Enise Sürücü, Funda Veren**, Design: **Hülya Kulakçı Altıntaş, Enise Sürücü, Funda Veren**, Data collection and processing: **Hülya Kulakçı Altıntaş, Enise Sürücü, Funda Veren**; Analysis and interpretation: **Hülya Kulakçı Altıntaş, Enise Sürücü, Funda Veren**, Literature search: **Enise Sürücü, Funda Veren**, Writing: **Hülya Kulakçı Altıntaş, Enise Sürücü**, Approval: **Hülya Kulakçı Altıntaş, Enise Sürücü, Funda Veren**.

Conflicts of Interest

The authors have no conflict of interest to declare.

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Ethical Approval

This study was completed in accordance with the tenets of the Declaration on Helsinki. Ethical approval was obtained from the Human Research Ethics Committee of Zonguldak Bülent Ecevit University (09.11.2021/99622-335), and written permission was received from the Provincial Directorate of National Education (E-45865702-604.01.01-408326869/07.01.2022). Written informed consent was obtained from the families of the students. Verbal consent was received from the students.

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