YOBU Sağlık Bilimleri Fakültesi Dergisi
Yıl:2024 Cilt:5 Sayı:3

YOBU Faculty of Health Sciences Journal
Year:2024 Volume:5 Issue:3

ISSN:2718-0972

Araştırma Makalesi/ Research Article

THE RELATIONSHIP BETWEEN INTERNET ADDICTION, SLEEP QUALITY, AND HOPELESSNESS IN ADOLESCENTS

ADÖLESANLARDA İNTERNET BAĞIMLILIĞI, UYKU KALİTESİ VE UMUTSUZLUK ARASINDAKİ İLİŞKİ

***Suzan TEK AYAZ*[1]**

[1] *Associate Professor, Yozgat Bozok University, Akdagmadeni School of Health, Department of Nursing, Yozgat, Türkiye*

Abstract

Objective: Studies have established a relationship between sleep quality, depression, and internet addiction. However, there is a lack of research in the literature that defines the relationship between internet addiction, sleep quality, and hopelessness, which is an early indicator of mental health issues such as depression.

Aim: This study aimed to examine the prevalence of internet addiction, hopelessness, and sleep quality in adolescents and explore the associations among these variables.

Methods: This cross-sectional survey was conducted between January -February 2024 and involved 660 high school students. Data were collected using the Internet Addiction Test, the Pittsburgh Sleep Quality Index, and the Beck Hopelessness Scale. Data analysis employed descriptive statistics, Pearson correlation analysis, and multiple linear regression.

Results: The mean Internet Addiction Test score was 47.92 ± 8.2, indicating that 15.8% of students exhibited dependent internet use. The average Pittsburgh Sleep Quality Index score was 6.82 ± 6.2, with 27.7% of students experiencing poor sleep quality. The mean Beck Hopelessness Scale score was 7.54 ± 8.4. Results revealed a positive moderate correlation between internet addiction and sleep quality, as well as between internet addiction and hopelessness. A positive, weak correlation existed between sleep quality and hopelessness.

Conclusion: Overall, this study confirms the presence of internet addiction, poor sleep quality, and hopelessness among adolescents. Considering the relationship between the prevalence of internet addiction, poor sleep quality, and hopelessness, it is recommended to plan interventions that not only address internet addiction but also aim to improve sleep quality and reduce hopelessness.

Keywords: Internet Addiction, Sleep Quality, Hopelessness, Adolescent

Özet

Giriş: Yapılan çalışmalarla uyku kalitesi, depresyon ve internet bağımlılığı arasında bir ilişki kurulmuştur. Ancak literatürde depresyon gibi ruh sağlığı sorunlarının erken bir göstergesi olan umutsuzluk ile internet bağımlılığı ve uyku kalitesi arasındaki ilişkiyi tanımlayan araştırmaya rastlanamamıştır.

Amaç: Bu çalışma, adölesanlarda internet bağımlılığı, umutsuzluk ve uyku kalitesinin yaygınlığını değerlendirmek ve adölesanlar arasındaki internet bağımlılığı, uyku kalitesi ve umutsuzluk arasındaki ilişkiyi araştırmak amacıyla yürütülmüştür.

Yöntem: Çalışma kesitsel, tanımlayıcı ve korelasyonel tasarımla 660 lise öğrencisi ile 2023-2024 eğitim döneminde yapılmıştır. Verilerin toplanmasında İnternet Bağımlılığı Testi, Pittsburgh Uyku Kalitesi İndeksi ve Beck Umutsuzluk Ölçeği kullanılmıştır. Verilerin analizinde tanımlayıcı istatistikler, Pearson korelasyon analizi ve çoklu doğrusal regresyon analizi kullanılmıştır.

Bulgular: Ortalama internet bağımlılığı puanı 47.92 ± 8.2 olarak bulunmuş olup, öğrencilerin %15.8'inde bağımlı internet kullanımı saptanmıştır. Ortalama uyku kalitesi indeks puanı 6.82±6.2 olup, öğrencilerin %27.7'sinin kötü uyku kalitesine sahip olduğu belirlenmiştir. Umutsuzluk ölçek puan ortalaması 7.54±8.4 olarak bulunmuştur. İnternet bağımlılığı ile uyku kalitesi arasında ve internet bağımlılığı ile umutsuzluk arasında pozitif orta düzeyde bir ilişki bulunmuştur. Uyku kalitesi ile umutsuzluk arasında ise pozitif ve zayıf düzeyde ilişki bulunmuştur.

Sonuç: Bu çalışmanın genel sonuçları, adölesanlar arasında internet bağımlılığı, kötü uyku kalitesi ve umutsuzluğu doğrulamaktadır. İnternet bağımlılığının yaygınlığı ile düşük uyku kalitesi ve umutsuzluk arasındaki ilişki göz önüne alındığında, sadece internet bağımlılığını değil aynı zamanda uyku kalitesini artırmak ve umutsuzluğu azaltmak için müdahalelerin planlanması önerilmektedir.

Anahtar Kelimeler: İnternet Bağımlılığı, Uyku Kalitesi, Umutsuzluk, Adölesan

ORCID ID: 0000-0002-4969-9348
Sorumlu Yazar: Suzan Tek Ayaz, Yozgat Bozok University, Akdagmadeni School of Health, Department of Nursing, Yozgat, Türkiye
E-mail: suzan.tek@yobu.edu.tr
Geliş tarihi/ Date of receipt: *22.02.2024* **Kabul tarihi / Date of acceptance***: 05.08.2024*

INTRODUCTION

Similar to worldwide trends, the number of adolescents with internet addiction is also rising in Turkey (1,2). In Turkey, there are more than 35 million internet users, with a significant portion comprising adolescents (2, 3). Adolescents utilize the internet as a tool for accessing information, socializing, and coping with negative emotions (4). On the other hand, excessive undisciplined internet usage contributes to the emergence of internet addiction. Internet addiction (IA), categorized as Internet Gaming Disorder in the DSM-5, is generally defined as the inability to control the desire for excessive internet use, an escalating need for time spent online, a diminishing significance of time spent offline, the occurrence of symptoms such as extreme irritability, tension, and restlessness during periods of abstinence, and the gradual disruption of one's professional, social, and familial life (5). IA has been associated with adverse health outcomes, including feelings of hopelessness, depression, poor sleep quality, and mood disturbances (6-8). The adolescence period, marked by rapid biopsychosocial changes, intensified self-reflection about one's self and future, heightened emotional fluctuations, and increased uncertainty, constitutes a vulnerable phase in life for these adverse health outcomes. Furthermore, young internet users are at a higher risk of developing IA compared to older users (7). During adolescence, there is an increase in symptoms of hopelessness, and the feeling of hopelessness is a significant predictor of adolescent depression (9). In a recent integrative data analysis, it was found that feelings of hopelessness in adolescents increase the likelihood of receiving a clinical diagnosis of depression by a factor of ten (10). A meta-analysis study has confirmed a positive association between depression and IA. Recent research has identified a correlation wherein adolescents exhibiting depressive disorders face an elevated susceptibility to IA, while those already experiencing IA demonstrate an increased vulnerability to depressive disorders (11). Given the strong positive relationship between hopelessness, depression, and IA, recognizing hopelessness may be a crucial step in the early diagnosis and prevention of both depression and IA.

In recent years, due to the widespread availability and easy accessibility of technological devices, many adolescents engage in various online activities before bedtime (8). This behavior may result in increased time spent online and, consequently, a reduction in overall sleep duration. Within this cycle, there is a heightened risk of Internet Addiction (IA) among adolescents, accompanied by a decline in sleep quality. Notably, research has consistently highlighted the importance of sleep quality as a significant factor associated with IA (8, 12).

Adolescents' developmental characteristics and the environmental context in which they live can make them disproportionately vulnerable to IA (9), potentially leading to significant implications for their well-being and future aspirations. Previous studies have consistently highlighted the correlation between sleep quality, depression, and IA (13,14). However, there remains a gap in the literature concerning the relationship between feelings of hopelessness, an early indicator of mental health issues such as depression, and internet addiction, as well as sleep quality. Hence, this study was conducted to assess the prevalence of internet addiction, feelings of hopelessness, and sleep quality among adolescents, aiming to explore the association between internet addiction, sleep quality, and feelings of hopelessness within this demographic.

METHODS

Design and Sample

This research employed a cross-sectional, descriptive, and correlational methodology during the 2023-2024 academic year. In a city located in the central region of Turkey, a questionnaire was administered via Google Forms through WhatsApp to high school students aged between 15 and 18 years. The population of the study comprised 7,458 students enrolled in a total of 16 high schools. Based on a known population sample calculation, the minimum sample size for the study was determined to be 378 students, with a 95% confidence interval and a 5% margin of error. Considering that web-based surveys typically have a lower response rate when compared to other survey methods, a 50% response rate probability was taken into

account, and a sample of 756 students was planned to be included (15). Schools (six highschool) were selected using a random number table. Using stratified sampling, classes were selected after determining the number of classes to be taken from each level (9-12 classes). The classes were chosen using a simple random number table. Forms were then distributed to all students in the selected classes, resulting in a total of 780 students receiving the forms via WhatsApp groups. Filling out the questionnaires was reminded again by the teachers in the classroom environment on report card day. Out of these 780 students, 660 completed the forms fully and accurately, resulting in an 85% response rate.

In collaboration with the Provincial Directorate of National Education, communication was established with the teachers of the selected classes. A WhatsApp group was created, managed by the researcher, to facilitate the exchange of information and surveys with the teachers. Information and consent texts regarding the purpose of the research, withdrawal rights, and the assurance of confidentiality of their information were sent to the parent and student WhatsApp groups managed by the teachers, and their approval was awaited. Parents who gave their consent were provided with consent forms and surveys through the WhatsApp application for their children. Students who indicated their consent by marking the checkbox and completed the surveys in full were included in the research.

Inclusion criteria were being between the ages of 15-18, being enrolled in the school where the research was conducted, having obtained parental consent and willing to participate in the study. Exclusion criteria included students who had already been diagnosed with certain mental illnesses, such as depression.

Data Collection Tools

Personal information data were collected through the demographic information form. Data regarding IA, sleep quality, and hopelessness were collected using three internationally recognised and reliable questionnaires: the Internet Addiction Test (16, 17), the Pittsburgh Sleep Quality Index (18, 19), and Beck Hopelessness Scale (20, 21), respectively, at a pre-determined point in time.

Demographic information form

Data related to personal information were collected for the Demographic Information Form through a pre-examined, approved, self-administered, structured survey. The questionnaire, consisting of 10 questions, was designed to record information such as age, gender, daily internet usage duration, and the purpose of internet usage (4,7,8). The demographic information form was administered to 10 students to assess its clarity, and it was determined that no revisions were necessary; these 10 students were not included in the sample.

The Internet Addiction Test

The Internet Addiction Test (IAT), made up of 20 components and applying a six-point Likert scale, requires participants to opt for one of the following options: ‘Never,’ ‘Rarely,’ ‘Sometimes,’ ‘Often,’ ‘Very Often,’ and ‘Always.’ These options match with scores of 0, 1, 2, 3, 4, and 5, in that sequence. The range of attainable scores on this scale spans from 20 to 100. Internet usage is categorized as follows: aggregate points between 20 and 49 signify normal internet usage, points between 50 and 79 denote risky internet usage and points surpassing 80 suggest dependent internet usage. The Turkish adaptation of the IAT was conducted by Bayraktar in 2006, accompanied by a Cronbach’s Alpha internal consistency coefficient of 0.91 (17). In this investigation, the Cronbach’s Alpha reliability value was determined to be 0.89.

The Pittsburgh Sleep Quality Index

The Pittsburgh Sleep Quality Index (PSQI) consists of a total of 24 questions, with 19 answered by the individual and 5 by their partner or roommate. Only the responses provided by the individual are considered when calculating scores. The scale, which is

scored from 0 to 21, with higher scores indicating poorer sleep quality, has a cutoff score of 5 to determine poor sleep quality. In the validity and reliability study conducted by Agargün and colleagues (1996), the reliability coefficient of the scale was determined to be 0.80 (18,19). In this study, the Cronbach's alpha reliability coefficient was found to be 0.73.

Beck Hopelessness Scale

Beck Hopelessness Scale (BHS) developed by Beck and colleagues (1974), is designed to assess an individual's level of hopelessness regarding the future. Studies on the validity and reliability of the scale were conducted by Durak (1994) (20, 21). The BHS includes 11 'true' and 9 'false' items, with a score of '1' assigned for each correct response and '0' for each incorrect response according to the scale key. The score range for the scale is 0-20. As scores increase, it is accepted that the individual's level of hopelessness also increases (20,21). The original Cronbach's Alpha coefficient of the scale was found to be 0.86, while in this study, the Cronbach's Alpha coefficient was calculated as 0.80.

Data Analysis

The data was analyzed utilizing the IBM SPSS version 22.0 software. Descriptive statistics were employed to examine the demographic details of the participants. To investigate the correlation among the scales, Pearson correlation analysis was implemented. To discern the statistical association between the traits of adolescents and internet addiction, sleep quality, and hopelessness, multiple linear regression was utilized. A p-value of 0.05 was deemed to indicate statistical significance.

Ethical Considerations

Necessary permissions for the conduct of this study were secured from the Provincial Directorate of National Education (18.12.2023/2895). The Yozgat Bozok University Ethics Committee approved the research with decision number 10/32 on January 17, 2024. Before answering the study questions, informed consent was obtained from parents and adolescents through a consent form containing information about the purpose of the study, the right to withdraw from the study, and the confidentiality of personal information. Throughout the study, measures were taken to protect the rights, privacy, and confidentiality of the participants, and personal information was kept confidential.

RESULTS

A recent study encompassed 660 individuals aged 15 to 18 (M= 16.31, SD=1.08). Among these individuals, 58.8% (n = 388) were male, and 29.1% (n = 192) were in the 9th grade. It was found that 44.5% of adolescents had 2-4 hours of daily internet usage, while 35.2% (n = 232) primarily used the internet for social media, and 49.5% (n = 327) accessed the internet through mobile devices. Additionally, 64.1% of adolescents (n = 423) reported accessing the internet before bedtime. (Table 1).

Table 1. Some descriptive characteristics of the students

Variables	N	%
Age (M ± SD) 16.31 ±1.08		
≤16 year	354	53.9
>16 year	306	46.1
Grade		
9th grade	192	29.1
10th grade	173	26.2
11th grade	166	25.2
12th grade	129	19.5
Gender		
Male	388	58.8
Female	272	41.2
Daily internet connection duration		
<2 h	174	26.4
2-4 h	294	44.5
5-7 h	113	17.1
>8 h	79	12.0
Internet usage purpose		
Social media	232	35.2
Movie/music	103	15.6
Education	91	13.8
Games	138	20.9
Communication	96	14.5
Type of device used for Internet Access		
Just a desktop computer	35	5.3
Just mobile devices	327	49.5
Desktop computer + mobile devices	298	45.2
Accessing the internet before bedtime		
Yes	423	64.1
No	237	35.9

N= Sample size; %= Frequency, h= Hour; SD= Standard deviation

The mean Internet Addiction Test score was 47.92 + 8.2, with a rate of 15.8% (n=104) indicating dependent internet use. The average PSQI score was 6.82±6.2, and 27.7% (n=183) of students had poor sleep quality. The BHS Score averaged at 7.54±8.4 (Table 2).

Table 2. Means of Internet Addiction Test, Pittsburgh Sleep Quality Index, and Beck Hopelessness Scale

Scale	N	%	M±SD	Min-Max
IAT				
Normal internet use	497	75.3	39.68 ± 9.7	*20-49*
Risky internet use	59	8.9	63.77 ± 8.2	*50-79*
Dependent internet use	104	15.8	86.49 ± 7.3	*80-100*
Total	660	100	47.92 ± 8.2	20-100
PSQI				
<5	477	72.3	4.57 ± 3.7	0-4
>5	183	27.7	9.54 ± 7.9	5-18
Total	660	100	6.82 ± 6.2	0-21
BHS	660	100	7.54 ± 8.5	0-20

N= Sample size, %=Frequency, M= Mean, SD= Standard deviation, Min= Minimum, Max= Maximum, IAT= The Internet Addiction Test; PSQI= The Pittsburgh Sleep Quality Index; BHS= Beck Hopelessness Scale

A moderate positive correlation was observed between IA and sleep quality (r = 0.328, p < 0.001). There was a positive moderate correlation between IA and hopelessness (r = 0.392, p < 0.001). Furthermore, as summarized in Table 3, a positive weak correlation was observed between the quality of sleep and feelings of hopelessness (r = 0.258, p < 0.001).

Table 3. Correlation between the mean scores of Internet Addiction Test, Pittsburgh Sleep Quality Index, and Beck Hopelessness Scale

Scales	IAT	BHS	PSQI
IAT	1		
BHS	0.392*	1	
PSQI	0.328*	0. 258 *	1

*p<0.001, IAT= The Internet Addiction Test; PSQI= The Pittsburgh Sleep Quality Index; BHS= Beck Hopelessness Scale

IA was higher in males (b = 5.94, 95% CI: 0.14, 11.83, p < 0.05). Additionally, the usage time for IA of 5-7 hours (b = 7.64, 95% CI: 0.34, 11.87, p < 0.05) and over 8 hours (b = 14.82, 95% CI: 7.78, 20.14, p < 0.05) was notably significant. Furthermore, IA was higher in individuals who used the internet for gaming purposes (b = 7.11, 95% CI: 0.65, 12.29, p < 0.05) and those who connected to the internet before bedtime (b = 6.46, 95% CI: 0.11, 11.75, p < 0.05). Sleep quality was poorer in individuals who utilized the internet exceeding eight hours (b = 3.08, 95% CI: 0.68, 5.54, p < 0.05) and those who connected to the internet before bedtime (b = 0.74, 95% CI: 0.12, 1.71, p < 0.05). Additionally, individuals who exceeded eight hours of internet usage (b = 0.91, 95% CI: 0.13, 1.78, p < 0.05) had higher hopelessness scores (Table 4).

DISCUSSION

This study assessed the rates of IA, sleep quality, and hopelessness among adolescents and explored the relationships between IA, hopelessness, and sleep quality.

Based on the main outcomes, the following six points are elaborated:

IA and related variables: The results indicated that 15.8% of adolescents had IA. International literature reports IA rates ranging from 0.6% to 50% (22). In this age group, certain studies conducted in Turkey have documented IA rates ranging from 12.7% to 21.1% (23-24). IA was higher in males. The results of studies regarding the relationship between gender and IA vary. Similarly to the study by Karaca et al. (2021), IA was found to be higher in males, whereas in the study by Çelebioğlu et al. (2020), it was higher in females (25, 26).

No statistically significant difference in IA among adolescents was detected based on age and grade levels in this study. Findings regarding the relationship between age and grade levels with IA vary in the literature.

Table 4. Associations of Students' Characteristics with Internet Addiction Test, Pittsburgh Sleep Quality Index, and Beck Hopelessness Scale

Dependent Variable	**IAT**		**PSQI**		**BHS**	
	B	95% Cl	B	95% Cl	B	95% Cl
Gender (reference: male)	5.94 *	0.14, 11.83	1.46	-3.02, 5.93	1.17	-0.07, 2.40
Daily Internet connection duration (reference: 2-4 h)						
5-7 h	7.64*	0.34, 11.87	3.62	-1.31, 8.55	0.3	-1.04, 1.64
>8 h	14.82*	7.78, 20.14	3.08*	0.68, 5.54	0.91*	0.13, 1.78
Internet usage purpose (reference: Gaming)	7.11*	0.65, 12.29	-0.96	-5.10, 3.20	0.3	-0.82, 1.42
Accessing the internet before bedtime (reference: Yes)	6.46 *	0.11, 11.75	0.74*	0.12, 1,71	1.46	-3.02, 5.93

Stepwise Method Statistically * P < 0.05. b: Unstandardized Coefficients. IAT= The Internet Addiction Test; PSQI= The Pittsburgh Sleep Quality Index; BHS= Beck Hopelessness Scale; h= Hour

While some studies report a decrease in IA rates with higher grade levels, contrary to the findings of many studies that found a progressive increase in IA with age, accompanied by adverse outcomes (26,27), some studies do not observe any age differences (28). The variation in these findings could stem from the use of different assessment tools or cross-cultural differences. Comparing research results conducted with standard scales can be useful in elucidating the relationships between variables. Recent study, it was observed that nearly half of the adolescents connected to the internet for 2-4 hours, and those who connected for 5-7 hours and over 8 hours had higher internet addiction scores. Öztürk and Ayaz-Alkaya reported (2021) that 93% of adolescents connected to the internet for more than 3 hours in their study (29). Based on the findings of the present study, as the daily internet usage time increases, IA also increases, which is consistent with the literature (26). The relationship between the purpose of internet usage and IA was identified. In this study, a significant proportion of adolescents were found to utilize the internet for social media purposes, while those who used it for gaming displayed higher IA scores.

A study conducted by Balhara et al. (2020) investigated the effects of online gaming on mental health and demonstrated that heightened engagement and prolonged sessions of online gaming adversely affected the mental well-being of adolescents (7). Although demographic variables such as age and gender show variations in research related to IA, it is consistent in the literature that addiction scores are higher in individuals who connect to the internet for extended periods, especially for gaming purposes. Prioritizing interventions for online gaming, in addition to efforts to reduce internet usage time, may be effective in reducing IA.

Hopelessness and related variables: According to the results of this research, mild-level hopelessness has been identified in adolescents. Studies examining whether hope changes during adolescence indicate an increase in hopelessness symptoms during adolescent years, and hopelessness is an inseparable component of adolescent depression (9, 30). However, Bolland (2003) found that age was not related to feelings of hopelessness in male adolescents, while for female adolescents, there was a negative relationship between age and hopelessness (31). In the current study, no relationship between hopelessness and age or gender was found. Considering the inconsistent research findings, it is recommended that further studies be conducted to assess adolescents' levels of hopelessness to enhance the comparability of our results.

Sleep quality and related variables: Approximately one-third of adolescents were observed to have poor sleep quality. This result is consistent with the literature. Studies conducted in various countries have reported the prevalence of poor sleep quality in adolescents to range from 15.2% to 26% (30, 32). The study has revealed a developmental

trend of decreasing sleep duration from childhood to adolescence and a tendency for later bedtimes (33). Current data indicate that today's adolescents sleep less than previous generations, with evidence from 20 countries suggesting a reduction of more than one hour per night over the past 100 years (34). All these findings underscore the need to prioritize sleep issues during adolescence and emphasize the necessity for school- or family-based interventions in this regard.

The relationship between IA and sleep quality: The findings indicated a positive correlation between sleep quality and IA. The results align with those of Lin et al. (2019), who conducted a cross-sectional study, and Kokka et al. (2021), who conducted a systematic review, supporting a positive association between sleep quality and IA (35, 36). Adolescents, particularly when facing sleep problems, such as difficulty falling asleep, are prone to engaging in prolonged internet use. Indeed, within this study, adolescents who accessed the internet before bedtime exhibited elevated internet addiction scores. Numerous research data on the duration, frequency, and reasons for adolescents connecting to the internet before falling asleep support the necessity of interventions related to sleep hygiene.

Relationship between IA and hopelessness: In this study, a positive correlation between hopelessness and IA was uncovered. Consistent with the results of the present study, Yu and Shek (2018) found that IA significantly predicted adolescents' hopelessness (37). In a study by Alpaslan et al. (2016), it was found that adolescents with major depression who were also internet addicted had high hopelessness scores (6). These findings are consistent with the results of a meta-analysis study demonstrating the relationship between depression and IA (38). Depression, characterized by negative emotions, may result in an individual feeling detached from both their inner self and the surrounding environment, particularly in situations of hopelessness. Adolescents are susceptible to cultivating internet addiction (IA) through online connections as a means of escaping negative emotions. Early detection of hopelessness and planning interventions is crucial in preventing problems such as depression and suicide, which can be associated with IA.

The relationship between hopelessness and sleep quality: A notable finding of this study is the positive correlation observed between sleep quality and feelings of hopelessness. In other words, adolescents who experience hopelessness also have poor sleep quality. Numerous studies have noted the association between poor sleep quality and adolescents' feelings of hopelessness, depression, and even suicidal behaviours (36-38). When adolescents undergo extended periods of insufficient sleep or sleep deprivation, their capacity for emotional regulation diminishes, resulting in notable symptoms such as hopelessness, depression, apathy, and anxiety (7, 36, 38). Adolescents have a propensity to postpone their sleep patterns due to their biological age, which suggests relatively diminished impulsivity management, adaptability in coping, and drive for accomplishment, rendering them susceptible to adverse emotions like melancholy (39). A randomized controlled trial has shown that sleep deprivation can effectively reduce depression symptoms through a cognitive-behavioural therapy-based sleep hygiene intervention program (39). The current findings suggest a need for interventions primarily focused on improving sleep quality and reducing hopelessness in adolescents due to the observed relationship between the prevalence of poor sleep quality and hopelessness.

CONCLUSION

The overall results of this study confirm internet addiction, poor sleep quality, and hopelessness among adolescents. Furthermore, the study reveals a moderate positive correlation between internet addiction and sleep quality, as well as a weak positive correlation between sleep quality and

hopelessness. Adolescents with internet addiction tend to have poorer sleep quality and higher levels of hopelessness. Therefore, the more frequently students access the internet, the higher the likelihood of experiencing an increase in hopelessness levels and poor sleep. Given the relationship between the prevalence of IA, low sleep quality, and hopelessness, it is recommended to include interventions not only to address internet addiction but also to improve sleep quality and reduce hopelessness.

Based on the results of this study, several practical and research recommendations can be made for healthcare professionals, especially nurses. Nurses can develop individual and family counseling strategies to address adolescents' internet usage habits, sleep patterns, and feelings of hopelessness. Families can be educated to monitor and support their children's sleep quality and overall mental well-being. Psycho-educational workshops in schools can teach strategies for regulating internet use and improving sleep hygiene. Support groups can be established for adolescents facing similar problems, providing them with a platform to share experiences and find mutual support. Health professionals can adopt a multidisciplinary approach to conduct further applied research, develop intervention strategies in these areas, and integrate current findings into clinical practice. Early intervention projects can identify and support at-risk students.

Limitations

The use of a cross-sectional design in this study may be a limitation as it measures IA prevalence, hopelessness, sleep quality, and their relationships at a single time point. Additionally, although there are valid and reliable instruments for diagnosing IA, hopelessness, and sleep quality, the use of self-report measures could potentially lead to reporting bias and misrepresenting the actual prevalence.

Competing interests

The author has no competing interests to declare.

Funding

The author received no financial support for the research, authorship, and/or publication of this article.

Acknowledgements

I would like to thank the Provincial Directorate of National Education for supporting us during the research process and all the students who participated in the research.

REFERENCES

1. International Telecommunication Union. Global Connectivity Report. 2022. Available From: https://situdreports.wpengine.com/statistics/2022/05/30/gcr-chapter-9

2. Türkiye İstatistik Kurumu. Hanehalkı Bilişim Teknolojileri (BT) Kullanım Araştırması, 2023. Available From: https://data.tuik.gov.tr/Bulten/Index?p=Hanehalki-Bilisim-Teknolojileri-(BT)-Kullanim-Arastirmasi-2023-49407

3. TC Kültür ve Turizm Bakanlığı. Türkiye'de İnternet Kullanımı Yüzde 1750 Arttı. 2022. Available From: https://sgb.ktb.gov.tr/TR-15252/turkiyede-internet-kullanimi-yuzde-1750-artti.html#:~:text=T%C3%BCrkiye%2C%20yakla%C5%9F%C4%B1k%2078%20milyonluk%20n%C3%BCfusunun,oran%C4%B1%20y%C3%BCzde%2044'%C3%BC%20ge%C3%A7

4. El Fiky R, Mansour M, Fekry M, ElHabiby M, Elkholy H, Morsy M. Occurrence of problematic Internet use and its correlates among Egyptian adolescent students in international schools in Cairo. Middle East Current Psychiatry. 2022;29(1):1-10.

5. Young KS. Internet addiction: A new clinical phenomenon and its consequences. American Behavioral Scientist. 2004;48(4):402-415.

6. Alpaslan AH, Soylu N, Kocak U, Guzel HI. Problematic Internet use was more common in Turkish adolescents with major depressive disorders than controls. Acta Paediatrica. 2016;105(6):695-700.

7. Balhara YPS, Singh S, Bhargava R. The pattern of problematic internet use and mental health-related internet use among psychiatric outpatients at a tertiary care center. Tzu-Chi Medical Journal. 2020;32(2):198.

8. Karki K, Singh DR, Maharjan DKCS, Shrestha S, Thapa DK. Internet addiction and sleep quality among adolescents in a peri-urban setting in Nepal: A cross-sectional school-based survey. PLoS ONE. 2021;16(2):e0246940.

9. Shek DT, Liang LY. Psychosocial factors influencing individual well-being in Chinese adolescents in Hong Kong: A six-year longitudinal study. Applied Research in Quality of Life. 2018;13:561-584.

10. Liu Q, Martin NC, Findling RL, Youngstrom EA, Garber J, Curry JF, et al. Hopelessness and depressive symptoms in children and adolescents: An integrative data analysis. Journal of Abnormal Psychology. 2021;130(6):594.

11. Ye XL, Zhang W, Zhao FF. Depression and Internet Addiction among Adolescents: A Meta-Analysis. Psychiatry Research. 2023;115311.

12. Dondi A, Fetta A, Lenzi J, Morigi F, Candela E, Rocca A, et al. Sleep disorders reveal distress among children and adolescents during the Covid-19 first wave: Results of a large web-based Italian survey. Italian Journal of Pediatrics. 2021;47:130.

13. Öz BO, Miniksar DY. Çocuk ve Ergenlerde İnternet Bağımlılığının Uyku Kalitesi Üzerine Etkisi. Turkish Journal of Child & Adolescent Mental Health. 2023;30(2).

14. Kocamaz D, Badat T, Maden T, Tuncer A. Üniversite Öğrencilerinde Akıllı Telefon Kullanımının, Uyku Kalitesi ve Depresyon ile İlişkisi. Journal of Exercise Therapy and Rehabilitation. 2020;7(3):253-259.

15. Van Mol C. Improving web survey efficiency: the impact of an extra reminder and reminder content on web survey response. International Journal of Social Research Methodology. 2017;20(4):317-327.

16. Young KS, Rodgers RC. The relationship between depression and Internet addiction. Cyberpsychol Behaviour. 1998;1:25–28.

17. Bayraktar F, Gün Z. Incidence and correlates of Internet usage among adolescents in North Cyprus. Cyberpsychol Behaviour. 2006;10(2):191-197.

18. Buysse DJ, Reynolds CF, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. Psychiatry Research. 1989;28(2):193-213.

19. Agargun MY, Kara H, Anlar O. The validity and reliability of the Pittsburgh Sleep Quality Index. Turk Psikiyatri Dergisi. 1996;7(2):107-115.

20. Beck AT, Weissman A, Lester D, Trexler L. The measurement of pessimism: the hopelessness scale. Journal of Consulting and Clinical Psychology. 1974;42(6):861-865.

21. Durak A. Beck hopelessness scale (BHS) validity and reliability study. Turk Psikoloji Dergisi. 1994;9:1–11.

22. Bickham DS. Current research and viewpoints on internet addiction in adolescents. Current Pediatrics Reports. 2021;9:1-10.

23. Akdeniz B, Gunduz M, Calli S, Demirdogen Sen E, Yavuz M. Parental Attachment and the Theory of Mind Abilities as Predictors of Internet Addiction in Turkish Adolescents. Psychiatry and Clinical Psychopharmacology. 2020;30(3):222-229.

24. Cam HH, Top FU. Prevalence and risk factors of problematic internet use and its relationships to self-esteem and health-related quality of life: Data from a high-school survey in Giresun Province, Turkey. Journal of Addictions Nursing. 2020;31(4):253-260.

25. Karaca A, Demirci N, Caglar E, Unlu HK. Correlates of Internet addiction in Turkish adolescents. Children and Youth Services Review. 2021; 126, 106050.

26. Çelebioğlu A, Aytekin Özdemir A, Küçükoğlu S, Ayran G. The effect of Internet addiction on sleep quality in adolescents. Journal of Child and Adolescent Psychiatric Nursing. 2020;33(4):221-228.

27. Lin MP. Prevalence of Internet Addiction during the COVID-19 Outbreak and Its Risk Factors among Junior High School Students in Taiwan. International Journal of Environmental Research and Public Health. 2020; 17(22):8547.

28. Moreno-Guerrero AJ, Gómez-García G, López-Belmonte J, Rodríguez-Jiménez C. Internet addiction in the Web of Science database: A review of the literature with scientific mapping. International Journal of Environmental Research and Public Health. 2020;17(8):2753.

29. Ozturk FO, Ayaz-Alkaya S. Internet addiction and psychosocial problems among adolescents during the COVID-19 pandemic: A cross-sectional study. Archives of Psychiatric Nursing. 2021;35(6):595-601.

30. Zhou Z, Shek DT, Zhu X. The importance of positive youth development attributes to life satisfaction and hopelessness in mainland Chinese adolescents. Frontiers in Psychology. 2020;11:553313.

31. Bolland JM. Hopelessness and risk behavior among adolescents living in high-poverty inner-city neighborhoods. Journal of Adolescence. 2003;26(2):145–158.

32. Liang, M., Guo, L., Huo, J., & Zhou, G. (2021). Prevalence of sleep disturbances in Chinese adolescents: A systematic review and meta-analysis. Plos one, 16(3), e0247333.

33. Mitchell JA, Morales KH, Williamson AA, Huffnagle N, Ludwick A, Grant SF, Dinges D, Zemel BA. Changes in sleep duration and timing during the middle-to-high school transition. Journal of Adolescent Health. 2020;67(6), 829-836.

34. Matricciani L, Olds T, Petkov J. In search of lost sleep: secular trends in the sleep time of school-aged children and adolescents. Sleep Medicine Reviews. 2012;16:203-211.

35. Lin PH, Lee YC, Chen KL, Hsieh PL, Yang SY, Lin YL. The relationship between sleep quality and internet addiction among female college students. Frontiers Neuroscience. 2019;13:599.

36. Kokka I, Mourikis I, Nicolaides NC, Darviri C, Chrousos GP, Kanaka-Gantenbein C, Bacopoulou F. Exploring the effects of problematic ınternet use on adolescent sleep: a systematic review. International Journal of Environmental Research and Public Health. 2021; 18(2):760.

37. Yu L, Shek DTL. Testing longitudinal relationships between internet addiction and well-being in Hong Kong adolescents: cross-lagged analyses based on three waves of data. Child Indicators Research. 2018;11:1545–1562.

38. O'Callaghan VS, Couvy-Duchesne B, Strike LT, McMahon KL, Byrne EM, Wright MJ. A meta-analysis of the relationship between subjective sleep and depressive symptoms in adolescence. Sleep Medicine. 2021;79:134-144.

39. Egbegi DR, Bella-Awusah T, Omigbodun O, Ani C. A controlled trial of cognitive behavioural therapy-based strategies for insomnia among in-school adolescents in southern Nigeria. Child and Adolescent Psychiatry and Mental Health.2021;15:1-11.