



Internet Use Patterns, Internet Addiction, and Anxiety among Youth in Jordan: A Cross-sectional Study

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ARTICLE INFO

Article History:

Received: March 31, 2024

Accepted: May 19, 2024

ABSTRACT

Background: Despite the numerous benefits of Internet use, improper Internet utilization may produce many psychological illnesses, such as Internet Addiction (IA). Young people are considered a vulnerable population for IA. **Purpose:** The current study is conducted to determine the prevalence of IA among youth in Jordan. **Methods:** This study employed a cross-sectional descriptive approach. The final sample consisted of 405 Jordanian young people. The researchers recruited the study participants from two universities and four schools located at different regions in Jordan. The study utilized a self-report questionnaire composed of four sections; Basic Information Questionnaire, Internet Use Patterns Questionnaire, IA Test, and Generalized Anxiety Disorder Assessment. Ethical principles of nursing research were adhered to. The study was conducted during the second semester of 2023/2024 academic year. Descriptive and inferential statistics were used for data analysis. **Results:** The study results revealed that about one third of the participants (n=121, 29.9%) met the criteria for IA. There is a variability among the study participants regarding their online activities, where social media was the main online activity (66.4 %). The study results also reported that there is a positive association between anxiety and IA (r = 0.66; p = 0.001). **Conclusion:** From a Jordanian viewpoint, this study adds to the understanding of IA among youth in the international literature. To mitigate the negative effects of IA, stakeholders must work together interdisciplinarily and with concerted effort. **Implications for Nursing:** Nurses can play an important role in raising awareness about IA among youth and making referral for the affected individuals.

Keywords: Internet, Social media, Internet use, Internet use patterns, Internet addiction, Youth, Anxiety, Jordan.

What does this paper add?

1. Limited studies are available about Internet addiction (IA) among youth in Jordan.
2. This study indicates that IA is a common mental health problem among youth in Jordan.
3. This study addresses the significant association

between IA and anxiety.

4. Using the Internet and social media platforms is prevalent among Jordanian youth.

Introduction

In the era of digital dominance, the use of Internet

becomes essential for millions worldwide, offering unparalleled access to information, communication, and entertainment (Rainie & Wellman, 2019). The proliferation of smart-phones, social media platforms, online gaming, and instant messaging (i.e., a form of online chat including direct transmission of messages through the Internet) has made the Internet an important element of youth lives (Martinovic et al., 2019; Stavropoulos et al., 2021). There is no globally accepted definition of the age group considered as youth. Nevertheless, youth can be described as those individuals aged between 15 years and 24 years (United Nations, 2019). Jordan, like other countries around the world, is witnessing an unexpected increase in Internet usage, raising concerns about potential adverse effects, particularly Internet Addiction (IA) (Al-Gamal et al., 2016). Typically, IA is defined as a condition involving difficulty controlling impulses of using the Internet, resulting in adverse effects on both psychological and physical health (Alzayyat et al., 2015). IA is a complex phenomenon, which needs investigation to understand its prevalence and implications for the well-being of the population of youth (Berezovskaya et al., 2019).

Research on Internet use patterns among the population of youth has been extensive, reflecting the growing importance of digital technologies in young people's lives (Alzayyat et al., 2015; Martínez-Domínguez & Mora-Rivera, 2020; Sharma et al., 2019). Studies consistently showed that young people spend a significant amount of time online (Alzayyat et al., 2015; Bozkurt et al., 2018). They often use the Internet daily and for extended periods, engaging in various activities, such as social networking, gaming, streaming media, and educational purposes (Martínez-Domínguez & Mora-Rivera, 2020). Social media platforms (like Facebook, Instagram, Snapchat, TikTok & Twitter) are among the most frequently visited websites by young people (Guo & Cheung, 2023). They use these platforms for socializing, sharing experiences, maintaining relationships, and seeking entertainment (S.S. 2023). Research highlighted the importance of social media in shaping youth identity, relationships, and self-expression (Chen, 2023). In relation to the method of Internet access, the research addressed that mobile devices have become indispensable tools for communication, entertainment, and accessing online content (Alzayyat et al., 2015).

The study of IA as an emerging condition has drawn

more attention from health care providers and researchers (Kurniasanti et al., 2019). According to the American Psychiatric Association (APA) (1994), the main signs and symptoms of IA can be derived from the criteria similar to pathological gambling found in the fourth edition of Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). These symptoms include restlessness when attempting to cut back on or stop using the Internet, attempts to stop engaging in excessive online activities that fail, cravings, emotional distress, anxiety, and continued use of the Internet despite negative effects on psychological as well as social health (Cai et al., 2022). Additionally, IA has been identified as a topic deserving additional empirical research investigations in the DSM-V appendix (APA, 2013).

The review of literature indicated a rising trend in IA among young people, especially in light of the rapid growth of Internet access, where an increasing number of students are looking for information available online (Lozano-Blasco et al., 2022; Young & De Abreu, 2017). Studies among youth have reported rates of IA from 6% to 79% (Kumari et al., 2022; Marzilli et al., 2020; Zhang et al., 2018). IA among youth has far-reaching consequences, impacting various domains of their lives (Chemnad et al., 2023; Wang et al., 2022). It can hinder academic performance, disrupt family dynamics, strain peer relationships, and exacerbate psychological problems like anxiety as well as depression (Chemnad et al., 2023; Marzilli et al., 2020). Moreover, excessive screen time and sedentary behaviors associated with IA can contribute to physiological illnesses, including obesity, sleep disturbances, in addition to the musculoskeletal issues (Berezovskaya et al., 2019; Nakshine et al., 2022).

Research suggests that the occurrence of the IA problem among youth is affected by the family environment (Cacioppo et al., 2019; Chen, 2020). For example, parents who actively monitor and supervise their young sons' and daughters' Internet use are more likely to prevent excessive use and addiction (Vossen et al., 2024). Moreover, parents serve as role models for the youth, and their own Internet usage patterns can influence the youth behaviors (Wallace, 2022). Strong family communication and support can act as protective factors against IA (Monteiro et al., 2023). On the other hand, family conflict, dysfunction, or lack of support can contribute to the development of IA (Wang et al., 2023).

There are several reasons behind the fact that young people are vulnerable to IA. Students show a natural attraction to Internet and their prominent Internet knowledge has been connected to IA (Alzayyat et al., 2015). Additionally, their online behavior is not subject to external oversight (Derevensky et al., 2019). Young individuals not only undergo the journey of constructing their identities at a specific stage of their lives, but also initiate the formation of close connections with others (Derevensky et al., 2019). Internet can serve as a virtual means for the youth to fulfill their personalities and build their relationships; however, inappropriate practice of these online activities can lead to IA (Akram & Kumar, 2017).

The literature indicated that Jordanian youth suffer from considerable levels of anxiety (Al Sheyab & Ashami, 2023). Moreover, the relationship between anxiety and IA has been a topic of interest in the literature, with numerous studies exploring the nature of this association (Cai et al., 2021; Kutuk, 2023; Li et al., 2019). Research suggests that anxiety and IA often coexist and may influence each other in a bidirectional manner (Lin et al., 2020; Xie et al., 2023; Zhao et al., 2023). Individuals experiencing anxiety symptoms may turn to the Internet as a coping mechanism to alleviate distress or escape from real-life stressors. However, excessive Internet use can exacerbate anxiety symptoms over time, creating a vicious cycle of dependence and psychological distress. Overall, the relationship between anxiety and IA is complex and multifaceted, influenced by a combination of individual, social, and environmental factors (Aziz et al., 2024; Javaeed et al., 2019). Additional investigation is required to clarify the fundamental processes involved and devise specific strategies to effectively manage concurrent symptoms. Additionally, longitudinal studies are crucial for disentangling temporal dynamics and causal pathways linking anxiety and IA over time (Li, 2022; Zhao et al., 2023).

Approximately 35% of Jordan's population is under the age of 25, according to data from the UNICEF Jordan (2021). This indicates that youth comprise a significant segment of the population in Jordan. Moreover, the literature highlights the youth's potential as agents of change, innovation, and development in Jordan (Ian, 2018). Youth in Jordan come from diverse socio-economic backgrounds, ranging from affluent urban families to those living in poverty in rural areas

and refugee camps (UNICEF, 2021). The literature on youth in Jordan addresses the diversity and complexity of their experiences, shaped by socio-economic factors, educational opportunities, social dynamics, and cultural values (Alawad et al., 2020; Kuhnt et al., 2019). Moving forward, addressing the diverse needs and aspirations of Jordanian youth requires a comprehensive approach that addresses structural inequalities while empowering young people to fulfill their potential and contribute positively to society (Jones, 2022).

There's a necessity in Jordan to explore IA among young people. Regrettably, the available research in Jordan on this subject is scarce, primarily concentrating on university students (Al-Gamal et al., 2016; Al-Qudah, 2012, Alzayyat et al., 2015). Among school children, the prevalence of IA was ranging from 6 % to 93 % (Al-Shdayfat et al., 2016; Malak et al., 2017). To the best of the researchers' knowledge, only a limited number of studies in Jordan have reported the prevalence of IA among youth. The literature revealed that insufficient support from the families, depression level, student age, and university year level were factors contributing to IA in Jordan (Alzayyat et al., 2015). Although there's a lack of sufficient studies specifically dedicated to Internet addiction in Jordan, and a dearth of comprehensive data on Internet addiction among Jordanian youth, this study seeks to fill this gap and contribute valuable insights to the existing literature.

Study Purpose and Specific Aims

The purpose of the current study is to determine the prevalence of IA among young people in Jordan. More specifically, this study aims to:

1. Identify Internet use patterns among a sample of youth in Jordan.
2. Determine the prevalence rates of anxiety among the study sample.
3. Examine the relationship between anxiety and IA.

Methodology

Study Design

This study employed a descriptive cross-sectional design. The time of the study was throughout the second semester of 2023/2024 academic year.

Sampling and Setting

The present research was carried out at two governmental universities and four schools located at

different cities in Jordan (i.e., Amman, Al-Salt & Irbid). These institutions were chosen, because they are situated in big Jordanian governorates and the students of these academic institutions represent heterogeneous social, geographical, and economical backgrounds. The students' classes were the location of data collection, because it is easy to approach a large number of students while they attend their classes.

In order to conduct a study with robust statistical conclusions, the researchers used the 3.1 version of the G power program (Kang, 2021). This software was utilized for conducting the power analysis procedure. The following parameters were used: statistical power was set at 80, significance level (i.e., alpha) at 0.05, with a medium effect size of 0.30 for correlation analysis. The calculated sample size equals 356. Nevertheless, the researchers approached 405 students to avoid the problems of refusal to participation and incomplete questionnaire forms.

The target population included all Jordanian youth aged from 15 years to 24 years. On the other hand, the accessible population included those young students enrolled at the selected schools and universities. In order to recruit the study sample, the strategy of simple random sampling was used. This sampling method is a probability sampling strategy that offers equal opportunity for every person in the population to be chosen within the sample (LoBiondo-Wood & Haber, 2021). Thus, a representative sample was granted. Inclusion criteria included: being enrolled at any class offered by the selected academic institutions during the second semester of 2023/2024 academic year, being from the age group of 15-24 years, capability to comprehend Arabic text, engaging with the Internet for a minimum of two hours daily, and willingness to take part in the research by an informed consent. On the other hand, the exclusion criteria included those young people who had any medical or mental health condition that hindered them from participation in the present study. Certain medical conditions may result in physical limitations that make it difficult or impossible for individuals to participate in research activities (mainly physical tasks required by the study protocol). Moreover, mental health conditions or cognitive impairments can affect individuals' ability to comprehend the study instructions, provide an informed consent, or accurately respond to research measures.

Study Questionnaires

The researchers used four questionnaires in this study; Basic Information Questionnaire (BIQ) for demographic data, Internet Use Patterns Questionnaire for assessing Internet using patterns, Internet Addiction Test (IAT) for Internet addiction variable and Generalized Anxiety Disorder Assessment (GAD-7) for anxiety level. The following sub-sections discussed these questionnaires fully.

Basic Information Questionnaire. The researchers developed BIQ to measure the participants' socio-demographic data. This data included gender, age, education level of the participant, educational level for fathers and mothers, residence place, current occupation, GPA, income, and marital status.

Internet Use Patterns Questionnaire. This questionnaire is designed by the researchers for the purpose of this study. The following steps were followed during the development of the questionnaire. Firstly, the researchers clearly defined the research questions (one of these questions was to measure patterns of Internet use) and identified the key construct or variable that the questionnaire will measure (in this case patterns of Internet use). Secondly, a comprehensive review of existing literature related to the research topic and constructs of interest was conducted. The researchers identified validated scales, instruments, or measurement tools that have been used in previous research studies in order to adapt or modify existing instruments to suit the specific needs of the study. In this study, the researchers depend on these studies: Alzayyat et al. (2015), Martínez-Domínguez and Mora-Rivera (2020), and Vigna-Taglianti et al. (2017). Thirdly, the researchers developed clear and concise items or questions to assess each construct (in this study, 8 items have been developed). The researchers ensured that the language used is understandable to the target population (i.e., the youth) and that the items were phrased in a neutral and non-leading manner. Fourthly, appropriate response formats for each item (in this tool Likert scales & multiple-choice options) were determined. Lastly, the researchers conducted a pilot test of the questionnaire with a small sample of participants from the target population (30 participants).

The questionnaire contains items about Internet usage patterns, daily Internet usage, main online activities, impact of Internet use on the participant's social life, challenges faced in reducing Internet usage,

family perspectives on Internet utilization, interest in accessing information or assistance for regulating Internet usage, and history of seeking assistance for Internet-related problems. It is important to indicate that there was no total score for the 8 items of the questionnaire, as they use different measurement levels for the variables (i.e., some items were nominal like main online activity, some items were ordinal like family attitude toward utilization of the Internet, and other items were intervals like daily Internet usage).

Internet Addiction Test. This tool was constructed by Young (1998) in order to recognize IA and evaluate its severity. More specifically, IAT was designed to measure indicators of IA that overlap with recognized compulsive behaviors like gambling, food consumption, and sexual activity, while also identifying distinct symptoms particular to individuals experiencing IA. Building upon the foundation laid by the Internet Addiction Diagnostic Questionnaire (IADQ), the questions included in the Internet Addiction Test (IAT) were derived from prior studies investigating different facets of online activities. These studies aimed to identify traits that distinguish regular Internet users from those who exhibit compulsive behavior online. The 20-question IAT evaluates traits and actions linked with the excessive use of the Internet, encompassing compulsiveness, seeking escape, and dependency. The questions also evaluate difficulties concerning occupational, personal, and social performance resulting from Internet usage. Test takers rate each statement on a scale of 0 to 5, utilizing a Likert scale, for referring to the level of endorsement of that specific behavior. The range from 20 to 100 represents the final score of the whole IAT scale. The cut-off point of 50 signifies IA (Alzayyat et al., 2015). Participants can be classified into several categories as follows: a score of twenty to forty nine means belonging to the group called “an average online user; normal Internet user”, a score of fifty to seventy nine denotes belonging to the group of those individuals who are “experiencing occasional or frequent problems because of the uncontrolled use of the Internet; moderate IA,” and a score of eighty to one hundred means belonging to the group of people who “have significant problems in their life due to the uncontrolled Internet use; severe IA”. Young modified pathological gambling criteria (as proposed in DSM-IV) in order to develop IAT. The IAT is globally recognized as the most extensively employed scale for assessing IA and has been translated into numerous languages. It has

been reported that IAT has good psychometric properties, including reliability and validity (Alzayyat et al., 2015). In the present study, IAT demonstrated an acceptable internal consistency reliability (Cronbach’s alpha = 0.85).

Generalized Anxiety Disorder Assessment. This tool was developed for the purpose of assessing anxiety manifestations (Byrd-Bredbenner et al., 2020). GAD-7 was constructed using the DSM- IV criteria for generalized anxiety disorder. It is composed of 7 questions addressing feelings of nervousness, anxiety, worry, trouble in relaxing, restlessness, irritability, and fear. The GAD-7 includes items that evaluate anxiety severity of individual for the past fourteen days. The GAD-7 scale is 4-point Likert scale (score for each item ranges from 0 to 3). The final total score of GAD-7 ranged from 0-21. It is important to indicate that those individuals who have lower total scores on this scale may perceive less severity of anxiety. The total score of the GAD-7 can be categorized into four groups; non-minimal anxiety group ($0 \leq \text{GAD-7} \leq 4$), mild level of anxiety group ($5 \leq \text{GAD-7} \leq 9$), moderate level of anxiety group ($10 \leq \text{GAD-7} \leq 14$) and severe anxiety level group ($\text{GAD-7} \geq 15$). The cut-off point of 8 of GAD-7 indicates that the person has generalized anxiety disorder. Plummer et al. (2016) reported that GAD-7 has a specificity of 76% and a sensitivity of 92% as a tool for identifying cases with generalized anxiety disorder. Both validity and reliability of GAD-7 were examined by previous researchers and the results revealed that this tool has validated psychometric properties (Byrd-Bredbenner et al., 2020). In this study, the Cronbach’s alpha equals 0.90. This score is indicating excellent internal consistency reliability.

Translation and Conducting of a Pilot Study. The researchers translated both IAT and the GAD-7 has been translated into Arabic language in order to facilitate data collection. Translation was based on Brislin's (1986) model. This is a well-known translation model that is useful for preparing tools for cross-cultural research. Brislin’s model includes three steps: (a) Forward translation. This step occurred through two translators who are native speakers of the target language (i.e., Arabic) and have a deep understanding of the cultural nuances and linguistic conventions of both languages. Then, the researchers provided each translator with a copy of the original English version of the research instrument and instructed them to translate it into Arabic independently, (b) Back-translation. In this step, two

language experts translated from the target language (i.e., Arabic) back to the original language (i.e., English) to check for discrepancies. (c) Comparison between the back-translated and the original versions. After translation, the researchers conducted a pilot study to pretest the translated instrument with a small sample of Arabic-speaking individuals (30 participants). The objective of piloting was to assess the translated-instrument comprehensibility, acceptability, and cultural relevance. The pilot-study results indicated that the tool is clear and suitable to be used with the Jordanian youth.

Ethical Considerations

Principles of ethical treatment of human-research participants were followed and upheld. The research ethics committees (i.e., IRBs) of the chosen academic institutions evaluated the project, and ethical clearances were secured prior to the collection of data (Ministry of Education IRB, number 2024456, University of X IRB, number 2024 876, and University of Y IRB, number 2024594). Every participant was informed and gave his/her consent to participate in the study voluntarily. It is important to indicate that the researchers obtained adolescent's assent and their parents signed an informed consent form (parent's consent) for those participants under the age of 18. The participants were also made aware of their freedom to leave the study at any time and without consequences. The answers of the participants were kept private. Because of the nature of the study, participants were told not to continue answering the questionnaire if they showed signs of emotion (such as sobbing or frowning), and a mental health counselor was available to provide assistance if needed.

Data-collection Procedure

Two classes were selected randomly from each institution. This is done through obtaining class lists or rosters from the university's academic departments or administrative offices. These lists include information, such as course codes, class schedules, and student enrollment numbers. Then, the researchers applied the random selection procedure to the class lists to randomly choose two classes from each university. In this study, the researchers used simple random sampling by assigning a unique identifier to each class (e.g. class code or number) and using a random-number generator to select two classes from the list. The researchers met the instructor/lecturer of those selected classes and

briefed the study purpose for them. The researchers agreed with the instructors about the appropriate time for data collection during the students' classes.

In this study, 15 students were selected randomly from each class using simple random sampling. The student selection was done through obtaining a complete roster of students enrolled in each participating class. The roster includes the names or student IDs of all students registered in the class. Next, the researchers assigned a unique identifier (i.e., a sequential number) to each student on the class roster. Lastly, the researchers used a random-number generator to generate 15 random numbers within the range of the total number of students in each class.

The lecturers introduced the researchers to the students and left the classes. The researchers approached those selected students and explained the study for them. Those students who met the eligibility criteria and agreed to participate in the study were given informed consent. Then, the researchers distributed the study questionnaires to the students and collected the completed questionnaires. The response rate is calculated by dividing the number of participants/respondents by the total number of surveys sent (Holtom et al., 2022). In this study, 405 questionnaire forms were distributed and 405 filled questionnaire forms were collected. Thus, the response rate was 100 %.

Data Analysis

The researchers used Statistical Package for Social Sciences (SPSS), version 26 for data analysis. Both descriptive and inferential statistics were utilized. Descriptive statistics, including mean and standard deviation statistics, were employed to describe the demographics of the sample, patterns of using the Internet, IAT results and anxiety data. Moreover, measures of condense data, including frequencies, percentages, and tabulation, were used to describe the major study variables. Inferential statistics, including Pearson measure of correlation, were used to measure the correlation between anxiety and IA scores. Underlying assumptions of correlation (i.e., linearity and normality) were checked initially. The significance level was set at ≤ 0.05 . Questionnaires with missing data were pair-wisely deleted.

Results

Characteristics of the Study Sample

Table 1 presents the demographics of the study

sample. According to the study results, the participants' ages ranged from 15 years to 24 years ($M = 19.38$; $SD = 2.06$), their monthly income ranged from 100 JD to 1000 JD ($M = 481.91$; $SD = 157.13$), and their GPAs ranged from 50 % to 94 % ($M = 69.13$; $SD = 6.91$). The results revealed that most of the participants were females ($n = 231, 57 \%$), single ($n = 390, 96.3 \%$), undergraduate

students ($n = 224, 55.3 \%$), lived in urban areas ($n = 311, 76.8 \%$), and unemployed ($n = 346, 85.4 \%$). In relation to parents' education levels, the results showed that most of the fathers have college or university educational backgrounds ($n = 163, 40.2 \%$), while most of the mothers have high-school certificates ($n = 178, 44 \%$).

Table 1. Characteristics of the study sample (n = 405)

Variable		Mean	SD
Age		19.38	2.06
Income		481.91	157.13
GPA		69.13	6.91
Variable		Frequency	Percent
Gender	Male	174	43 %
	Female	231	57 %
Marital Status	Single	390	96.3 %
	Married	11	2.7 %
	Divorced	4	1 %
Educational Level of Participants	Intermediate School	126	31.1 %
	High School	52	12.8 %
	Undergraduate (BSC)	224	55.3 %
	Postgraduate	3	0.7 %
Educational Level of Fathers	Illiterate	10	2.5 %
	Elementary School	26	6.4 %
	Intermediate School	66	16.3 %
	High School	163	40.2 %
	College or University	119	29.4 %
	Postgraduate	21	5.2 %
Educational Level of Mothers	Illiterate	11	2.7 %
	Elementary School	25	6.2 %
	Intermediate School	48	11.9 %
	High School	178	44 %
	College or University	127	31.4 %
	Postgraduate	16	4 %
Residence	Urban	311	76.8 %
	Rural	94	23.2 %
Current Occupation	Unemployed	346	85.4 %
	Employed	59	14.6 %

Prevalence Rates and Levels of IA

The scores of IA perceived by Jordanian youth in the present study ranged from 0 to 100 (mean = 39.20, SD = 21.99). Of the 405 participants, about one third ($n = 121, 29.9\%$) met the criteria for IA. In order to explore the level of IA, the researchers divided the participants into three groups. Almost a half of the participants (52.1%) fit into the normal Internet user group ($20 \leq IAT \leq 49$), a quarter of the participants (23%) demonstrate a moderate level of addiction ($50 \leq IAT \leq 79$), and only a few participants (4.9 %) are

in the group of severe addiction level ($IAT \geq 80$).

The item analysis of IAT is summarized in Table 2. Eleven percent of the participants reported that they always say "just a few more minutes" when online. Moreover, 10% of the participants found that they always stay online longer than they intended. On the other hand, only 4.7 % of the participants reported that they always choose to spend more time online over going out with others. Similarly, only 4.7 % of the participants reported that they always become defensive or secretive when anyone asks them what they do online.

Table 2. Item analysis for IAT (n=405)

Item number	Item	Not Applicable n (%)	Rarely n (%)	Occasionally n (%)	Frequently n (%)	Often n (%)	Always n (%)
1	How often do you find that you stay online longer than you intended?	43 (10.6)	66 (16.3)	150 (37)	75 (18.5)	28 (6.9)	43 (10.6)
2	How often do you neglect household chores to spend more time online?	54 (13.3)	108 (26.7)	100 (24.7)	72 (17.8)	41 (10.1)	30 (7.4)
3	How often do you prefer the excitement of the Internet to intimacy with your partner?	114 (28.1)	79 (19.5)	112 (27.7)	40 (9.9)	37 (9.1)	23 (5.7)
4	How often do you form new relationships with fellow online users?	78 (19.3)	124 (30.6)	93 (23)	58 (14.3)	30 (7.4)	22 (5.4)
5	How often do others in your life complain to you about the amount of time you spend online?	83 (20.5)	111 (27.4)	94 (23.2)	58 (14.3)	30 (7.4)	29 (7.2)
6	How often do your grades or schoolwork suffer because of the amount of time you spend online?	64 (15.8)	97 (24)	114 (28.1)	64 (15.8)	33 (8.1)	33 (8.1)
7	How often do you check your e-mail before something else that you need to do?	78 (19.3)	86 (21.2)	98 (24.2)	77 (19)	28 (6.9)	38 (9.4)
8	How often does your job performance or productivity suffer because of the Internet?	60 (14.8)	118 (29.1)	105 (25.9)	72 (17.8)	26 (6.4)	24 (5.9)
9	How often do you become defensive or secretive when anyone asks you what you do online?	113 (27.9)	101 (24.9)	90 (22.2)	52 (12.8)	30 (7.4)	19 (4.7)
10	How often do you block out disturbing thoughts about your life with soothing thoughts of the Internet?	55 (13.6)	105 (25.9)	107 (26.4)	71 (17.5)	39 (9.6)	28 (6.9)
11	How often do you find yourself anticipating when you will go online again?	64 (15.8)	99 (24.4)	112 (27.7)	74 (18.3)	32 (7.9)	24 (5.9)
12	How often do you fear that life without the Internet would be boring, empty, and joyless?	70 (17.3)	90 (22.2)	94 (23.2)	78 (19.3)	41 (10.1)	32 (7.9)
13	How often do you snap, yell, or act annoyed if someone bothers you while you are online?	77 (19)	95 (23.5)	113 (27.9)	59 (14.6)	36 (8.9)	25 (6.2)
14	How often do you lose sleep due to being online?	50 (12.3)	103 (25.4)	102 (25.2)	74 (18.3)	43 (10.6)	33 (8.1)
15	How often do you feel pre-occupied with the Internet when off-line, or fantasize about being online?	68 (16.8)	99 (24.4)	103 (25.4)	84 (20.7)	29 (7.2)	22 (5.4)
16	How often do you find yourself saying "just a few more minutes" when online?	46 (11.4)	74 (18.3)	113 (27.9)	89 (22)	39 (9.6)	44 (10.9)
17	How often do you try to cut down the amount of time you spend online and fail?	54 (13.3)	90 (22.2)	105 (25.9)	80 (19.8)	38 (9.4)	38 (9.4)
18	How often do you try to hide how long you've been online?	91 (22.5)	89 (22)	104 (25.7)	61 (15.1)	40 (9.9)	20 (4.9)
19	How often do you choose to spend more time online over going out with others?	95 (23.5)	98 (24.2)	101 (24.9)	58 (14.3)	34 (8.4)	19 (4.7)
20	How often do you feel depressed, moody, or nervous when you are off-line, which goes away once you are back online?	89 (22)	87 (21.5)	93 (23)	57 (14.1)	48 (11.9)	31 (7.7)

Patterns of Internet Use among Jordanian Youth

Information concerning patterns of Internet use among the study participants is summarized in Table 3. The results revealed that one third of the study participants (35.1 %) have an average daily Internet usage of 4 hours to 6 hours. Using the Internet for social media was the main online activity (66.4 %). About a quarter of the study participants (26.9 %) reported that they sometimes encounter challenges associated with decreasing Internet usage. Approximately one third of the

participants (28.4%) agreed that Internet usage has a detrimental impact on their social life and one third (37%) of the participants' families have a moderately negative attitude toward the utilization of the Internet. Most of the study participants are familiar with IA as a health concern (78.5%) and most of the study participants (77.8 %) reported that they are accessing information or receiving assistance to regulate Internet usage. About a half of the participants (64.4 %) reported that they never seek assistance for problems of Internet utilization.

Table 3. Patterns of Internet use among Jordanian youth (n=405)

	Variable	Frequency	Percent
1	Average daily Internet usage (hours)		
	2 to 3 hours	138	34.1 %
	4 to 6 hours	142	35.1 %
	7 to 9 hours	75	18.5 %
	10 or more hours	50	12.3 %
2	Main online activity		
	Social media	269	66.4 %
	Gaming	21	5.2 %
	Shopping	21	5.2 %
	News	15	3.7 %
3	Challenges associated with decreasing Internet usage		
	Never	52	12.8 %
	Rarely	103	25.4 %
	Sometimes	109	26.9 %
	Often	88	21.7 %
4	Always	53	13.1 %
	Detrimental impact of Internet usage on social life		
	Strongly disagree	36	8.9 %
	Disagree	106	26.2 %
	Neutral	96	23.7 %
5	Agree	115	28.4 %
	Strongly agree	52	12.8%
	Familiarity with IA as a health concern		
	Yes	318	78.5 %
	No	87	21.5 %
6	Family attitude toward utilization of the Internet		
	Highly negative	56	13.8 %
	Moderately negative	150	37 %
	Neutral	120	26.9 %
	Moderately positive	62	15.3 %
7	Highly positive	17	4.2 %
	Accessing information or receiving assistance to regulate Internet usage		
	Yes	315	77.8 %
8	No	90	22.2 %
	Seeking assistance for problems of Internet utilization		
	Yes	144	35.6 %
	No	261	64.4 %

Level of Anxiety among Jordanian Youth

The scores of GAD-7 perceived by Jordanian youth in the present study ranged from 0 to 21 (mean = 9.34, SD = 5.70). Of the 405 participants who fully completed the questionnaires, about one half of the participants (n= 225, 55.6%) met the criteria for generalized anxiety disorder. In order to explore the level of anxiety, the researchers divided the participants into four groups. A quarter of the participants (23.5%) fit into the non-minimal anxiety group ($0 \leq \text{GAD-7} \leq 4$), about 30.3% of the participants demonstrate a mild level of anxiety

($5 \leq \text{GAD-7} \leq 9$), about one quarter of the participants (23.2%) demonstrate a moderate level of anxiety ($10 \leq \text{GAD-7} \leq 14$) and about one quarter of the participants (23%) have a severe anxiety level ($\text{GAD-7} \geq 15$).

The item analysis of GAD-7 is summarized in Table 4. Nineteen percent of the participants reported that they always feel nervous, anxious, or on edge. Moreover, 17.5 % of the participants found that they are always not able to stop or control worrying. On the other hand, 15.8 % of the participants reported that they are always so restless that it is hard for them to sit still.

Table 4. Item analysis for GAD-7 (n=405)

Item number	Item	Not at all n (%)	Several days n (%)	More than a half of the days n (%)	Every day n (%)
1	Feeling nervous, anxious, or on edge.	96 (23.7)	157 (38.8)	76 (18.8)	76 (18.8)
2	Not being able to stop or control worrying.	88 (21.7)	147 (36.3)	99 (24.4)	71 (17.5)
3	Worrying too much about different things.	65 (16)	156 (38.5)	115 (28.4)	69 (17)
4	Trouble in relaxing.	91 (22.5)	148 (36.5)	100 (24.7)	66 (16.3)
5	Being so restless that it is hard to sit still.	121 (29.9)	133 (32.8)	87 (21.5)	64 (15.8)
6	Becoming easily annoyed or irritable.	93 (23)	143 (35.3)	99 (24.4)	70 (17.3)
7	Feeling afraid, as if something awful might happen.	113 (27.9)	142 (35.1)	92 (22.7)	58 (14.3)

Correlation between Anxiety and IA

The results of Pearson correlation between anxiety and IA showed that there is a significant positive correlation between IA and anxiety ($r = 0.66$; $p = 0.001$).

Discussion

The study conducted a cross-sectional survey to explore the prevalence of IA among youth in Jordan. The study found a significant prevalence of IA among Jordanian youth (with a prevalence rate of 29.9%), with a considerable proportion exhibiting symptoms indicative of problematic Internet use. This study finding is consistent with those of previous Jordanian studies on different populations (Al-Gamal et al., 2016; Alzayyat et al., 2015; Malak et al., 2017). For example, Alzayyat et al. (2015) found that 40% of the university students in Jordan met the criteria for IA. Moreover, Malak et al. (2017) reported that the prevalence of severe IA among Jordanian school students was 6.3%, which is similar to our result (4.9 % had a severe level of IA in our study). These finding underscore the growing concern regarding excessive Internet usage among the youth population in Jordan. On the other hand, the prevalence rate observed in this study aligns with or exceeds rates reported in similar studies conducted in other countries (Aderinto, 2022; Hassan et al., 2020; Zhang et al., 2018). For instance, Hassan et al. (2020) showed that the prevalence rate of IA among youth in Bangladesh was 27.1%, which is similar to our result. These findings indicate that IA is a pervasive issue transcending geographical boundaries.

The study revealed diverse patterns of Internet use among Jordanian youth, encompassing a wide range of online activities, including social networking, gaming, shopping, and academic pursuits. Additionally, the participants used Internet for different periods of time. This variability underscores the multifaceted nature of

Internet usage among youth, influenced by individual preferences, socio-cultural factors, and technological affordance. Understanding these patterns is essential for identifying potential risk factors associated with problematic Internet use and developing targeted interventions to promote healthy digital habits. For example, spending a disproportionate amount of time online, especially to the detriment of other activities such as work, school, socializing, or sleep, is a common risk factor for IA (Kósa et al., 2022).

Moreover, feeling pre-occupied or obsessed with online activities, such as social networking, gaming, or online shopping, can be a sign of IA (Bisen & Deshpande, 2018).

The study revealed a significant positive association between IA and anxiety among Jordanian youth. This finding is consistent with those of previous research suggesting a bidirectional relationship between problematic Internet use and mental health issues, particularly anxiety (Lin et al., 2020; Xie et al., 2023; Zhao et al., 2023). For instance, Xie et al. (2023) found that there was a statistically significant positive correlation between anxiety and AI ($r = 0.39$; $p < 0.01$) among Chinese college students. The Internet offers a platform for social interaction, information seeking, and entertainment, but excessive usage may exacerbate feelings of stress and worry, contributing to heightened anxiety levels among vulnerable individuals (Dien et al., 2023; Stanković & Nešić, 2022).

Several mechanisms may explain the observed association between IA and anxiety among youth in Jordan. Excessive Internet use can disrupt daily routines, interfere with sleep patterns, and lead to social withdrawal, all of which are known contributors to anxiety symptoms (Chern & Huang, 2018; Kokka et al., 2021; Shirasaka et al., 2016). Moreover, certain online activities, such as social networking and gaming, may

perpetuate feelings of inadequacy, comparison, and fear of missing out (FOMO), further exacerbating anxiety among susceptible individuals (Pedalino & Camerini, 2022; Tandon et al., 2022). Additionally, the omnipresence of cyberbullying and online harassment poses significant stressors for youth, potentially amplifying anxiety symptoms and fostering a sense of insecurity in digital spaces (Santre, 2023).

Implications for Nursing

This study has several implications for nursing, particularly in the context of Jordan and potentially more broadly. Nurses can play a vital role in assessing and screening young individuals for IA and anxiety symptoms using validated screening tools. Nursing administrators can use the findings of the research study to inform the development and implementation of policies related to Internet use and mental health among youth in Jordan. Nursing educators can incorporate content related to Internet addiction and anxiety into nursing curricula to ensure that students are equipped with knowledge and skills to address these issues in practice. Universities can enhance their student support services to address IA and anxiety among youth. Moreover, universities can establish partnerships and collaborations with healthcare providers, community organizations, government agencies, and other stakeholders to address IA and anxiety among youth holistically. School nurses can offer individual and group counseling sessions for students struggling with IA and anxiety. School nurses can facilitate referrals to mental health services and resources for students in need of specialized treatment for IA and anxiety. Youth can use the research findings to reflect on their own Internet use patterns and assess whether they may be at risk for IA or experiencing symptoms of anxiety. Parents can use the research findings to establish clear boundaries and limits around Internet use in homes. By setting rules about screen time, device usage, and online activities, parents can promote healthy digital habits and prevent excessive Internet use among their young sons and daughters. Longitudinal studies are needed to elucidate the trajectory of IA over time and identify potential risks and protective factors. Furthermore, comparative studies across diverse populations are required to examine

cross-cultural variations in the prevalence of IA.

Limitations

The reader should acknowledge the following four limitations of the study. Firstly, the cross-sectional design precludes causal inference, limiting our ability to establish temporal relationships between variables. Secondly, self-report measures introduce the possibility of response bias and social-desirability effects, which may have influenced the accuracy of data collected. Future research could incorporate objective measures, such as behavioral observation or physiological assessments, to complement self-reported data. Thirdly, the study sample was recruited from governmental universities and schools. Therefore, the sample is not representative to all Jordanian youth, especially those who study at private universities and schools. Lastly, the study focused exclusively on youth in Jordan, thereby limiting the generalizability of findings to other age groups or cultural contexts.

Conclusion

The study's conclusions highlight the critical need for all-encompassing approaches to combating IA in Jordan's youth population. This study adds to our understanding of the prevalence rate of IA. Furthermore, this study advances our knowledge of the complex interaction between technologies and outcomes related to mental health by clarifying the mechanisms underlying the association between Internet use and anxiety. Going forward, reducing the negative effects of IA and advancing the well-being of young populations will require interdisciplinary cooperation and coordinated efforts by all stakeholders.

Acknowledgements

The authors dedicate this academic work for the Jordanian students who inspired them to conduct this study.

Funding or Sources of Financial Support

The study received no financial support from any source.

Conflict of Interests

No conflict of interests is to be declared by the authors.

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