## **Original Research Article**

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# Is digital or internet addiction a reality: study from King Khalid University Saudi Arabia

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## **ABSTRACT**

**Background:** Internet and digital devices are one of the essentialities of present-day life as we depend on them for information, inter-personal relationships, entertainment and even economic transactions. The number of hours being spent by individuals has been increasing day by day. Due to addictive nature of the problem, internet addiction or digital addiction disorder has been coined. This study was carried among medical students associated with King Khalid University Abha Saudi Arabia, with aim to analyze epidemiological aspects of internet/digital usage among the group specified.

**Methods:** It was a prospective study. 153 subjects responded to online questionnaire sent through Whatsapp. Majority of subjects responding were female medical students, followed by dental students.

**Results:** Results from the study found that about 21.57% of students were using internet for more than 10 hours out of 24 on daily basis. The most common used applications on mobiles was WhatsApp (94.12%). 42.48% of students suffered from sleep disturbance. 44.4% thought that digital devices are very important for their lives.

**Conclusions:** Study reveals a very serious trend in terms of time spent by students on internet and also the adverse health issues due to same, with evidence of dependence in a subset of students. Study recommend that awareness is a key factor as internet usage is more personal but having an impact not only on individual but also on society as well.

**Keywords:** Addiction, Digital devices, Internet

## **INTRODUCTION**

With the advent of this century the human civilization has seen rapid development in all fields of science and technology. However, one of the most common important aspect which has influenced populations across the globe has been "internet" and "digital technology and devices". In reality, internet has brought about a revolution in present day digital world. Internet is reaching an incredible speed of 5G at some places in west and at the same time more and more of the world's population is gaining access to it. At the same time, there has been simultaneous expansion in innovations like smart phones,

laptops, iPods. This combination has rapidly changed the technical ways and approaches to education, business, economics. This revolution has reached to non-technical communities as well. Today, social networking and collaborative services like Facebook, Twitter, Linked-In, YouTube, Wikis have provided common masses a platform to communicate and share interests in many more ways. By virtue of unlimited access to information, the internet can be a source of amusement and generator of new interests.<sup>1</sup> A recent study pointed out numerous advantages of internet use for students, such as wide access to literature, e-learning, online courses, and webinars.<sup>2</sup>

However, on flipside, internet addiction has attracted great interest from the public and scientists alike as more and more people are spending a lot of time on internet, leading to deterioration of physical, mental and social well-being of individual.3 Although originally debated as a "real thing," Dr. Ivan Goldberg satirically theorized it as a disorder and compared its original model to pathological gambling.4 In fact, it was Griffiths, who considered internet addiction to be a kind of technological addiction (such as computer addiction), and one in a subset of behavioral addiction (such as compulsive gambling).<sup>5</sup> A number of terms came up in research like internet addition disorder, compulsive internet use (CIU), problematic internet use (PIU), or Idisorder, all of them representing almost same entity. Research has shown that adolescents are very prone to develop internet addiction.<sup>6</sup> They often visit to websites such as Facebook, Twitter, online chat rooms, gaming websites, and other similar sites which can easily cause addiction and negatively impact student health and standards of learning. In addition, individuals often abandon traditional pastimes and replace them with time spent surfing the internet. This can lead to late bedtime with subsequent sleep loss. Adolescents need time to solve identity crises, affirm their attitudes, and establish social links and professional aims.7 A previous study revealed that university students showed varying degrees of internet addiction,

psychological distress, and depression with respect to sex, age, year of study, and residential status.<sup>8</sup> A recently published study has revealed that college students who used their smartphones more frequently reported higher levels of feeling isolated, lonely, depressed, and anxious-symptoms suggestive of digital addiction.<sup>9</sup>

With this background, authors focused on use of the internet and digital devices among students of a Saudi university. Study aimed to look at time, type, content, health issues and other related aspects among the students in relation to internet usage, as the social set up is such that there are very limited options for entertainment and outdoor activities. This study primarily focused on students in medical and allied health colleges of King Khalid University (KKU).

#### **METHODS**

## Study period

This study was conducted among the students of studying in King Khalid University, Abha, from January 2018 to April 2018. The students enrolled for the study were mainly from Medical college and allied health colleges like nursing, dental. Study was approved by the research committee.

S. no.

KKU, Girls wing, Aseer
KKU, college of dentistr

		KKU, Girls wing,	Aseer Central Hospital	KKU, college of medicine			
Working place/studying place		KKU, college of o	dentistry	KKU, college of den	KKU, college of dentistry		
Working place/studying place		KKU, college of 1	nursing	KKU, college of dentistry			
		Others					
Sex		Male		Female			
Social status		Married		Single	Single		
Age group	15-25	26-35	36-45	46-55 56-65			
Number of hours spent on internet	Less than 1 hour	1-2 hours	2-3 hours	More than 3 hours			
Number of times you check your mobile per hour	Less than 5 times	5-10 times	11-15 times	More than 15 times			
Use the device for (you can	What's app	Facebook	Twitter	Snapchat			
	Instagram	Blogging and vlogging Reading e-book		Education			
choose more than one)	News	Sports YouTube and other watching app		Religion			
	Others		•	•			
	Anxiety	Depression	Addiction	Stomach upset			
Do you have any of the	Headache	Eating disorders	Neck pain	Back pain			
following?	Dry eye	Visual disturbances	Sleep disturbances	Family problem			
	Other health	issue					
How important is digital devices for you?	Very important	Important		Necessary			
Do you think you can live without digital devices?	Yes	No		Cannot answer			

Table 1: Questionnaire.

#### Study design

#### Survey approach

Students who were enrolled in the university for full time courses were chosen for the study. Students received the questionnaire through what's app groups and other social platforms. They were informed that their participation was anonymous and voluntary and that the data would be used for research purposes only. General and particular importance of the research was also explained. Furthermore, the students were notified of the type and duration of the procedures used and informed of the confidentiality of the data gathered and the protection of privacy of the participants. Replying to the questionnaire was taken as voluntary participation. No participant needed to disclose his or her personal details like name, address or email. The questionnaire was sent to more than 300 students within different colleges and both sexes, but unfortunately it was mainly the girls who replied. We received reply from 153 participants only.

## Questionnaire

A team consisting of the rank of assistant professor and students from different specialties framed a questionnaire. The questionnaire was based on the various aspects of internet and digital usage using common questions. It covered basic information like number of hours spent, primary purpose of device being used, any health issues and concern attributable to internet usage. It consisted of total 10 questions with 7 directly related to internet usage (Table 1).

## Collection of data

The questionnaire responses received were entered in Microsoft excel by three student editors. All the data entered was doubly checked.

## Data analysis

The data collected was analyzed with the help of biostatistics department of the University.

#### **RESULTS**

The demographic aspects of study are summarized in Table 2. The total number of 153 students responded to questionnaire out of 300. The majority of students belonged to age group of 18-25 (94.1%). Most of the respondents were females (90.9%). The reason we found was that since female students sent questionnaires and there is limited male female interaction in Saudi Arabia the feedback was mainly from females (Table 2). The majority of subjects were single (93.5%) More than half of the participants (90.8%) were students at Medical school, followed by students of dental school (5.9%) and rest to allied medical sciences branches.

Table 2: Demographic details of 153 participants.

Demographic	Participants (n=153)	No.	%
_	18-25	144	94.1
Age group	26-25	8	5.2
(in years)	>35	1	0.7
Sex	Female	139	90.9
Sex	Male	14	9.1
3.6 '4 3 4 4	Single	143	93.5
Marital status	Married	10	6.5
	Medical	139	90.8
College	Dental	9	5.9
	Applied Med. Science	5	3.3

Table 3: Number of hours spent on internet per day; number of times checking the device and commonly used sites.

	No.	%						
Number of hours spent on internet per day								
<2 hrs	36	23.53						
2-5	62	40.52						
5-10	22	14.38						
>10	33	21.57						
Range	1-14							
Mean	4.21							
SD	3.22							
Number of times you check y	your mobile p	er hour						
<1	39	25.49						
1-3	45	29.41						
4-6	36	23.53						
6-10	21	13.73						
>10	12	7.84						
Use your device for								
What's app	144	94.12						
Twitter	115	75.16						
Education	103	67.32						
Videos	87	56.86						
Games	42	27.45						
News	41	26.80						
Sports	21	13.73						
Religion	19	12.42						
Facebook	12	7.84						
Others	25	16.34						
Total	153	100.0						

More than one answers.

Regarding duration of usage, 23.53% participants stated that they used internet for an average of 2 hours. 40.52% respondents used internet from 2-5 hours per day followed by 14.38% respondents stated that they were using internet for 5-10 hours per day. Strikingly about 21.57% respondents were using internet for more than 10 hours and (Table 3). Authors found that about checking mobile phones per hour, 29.41% of subjects checked their

phones 1-3 times per hour, 25.49% check their phones 1 time per hour, 23.53% of subjects checked their phones 4-6 times per hour, 13.37% of subjects checked their phones 6-10 time per hour while 7.84% of subjects used their phones for more than 10 times per hour (Table 3). In response to common usage of internet we got more than one answer. Authors found that percentage of the most common used applications on mobiles was what's app (94.12%), followed by twitter (75.16%). 67.32% used phones for education and 56.86% used phones for watching videos (Table 3).

Table 4: Distribution of the studied group regarding any of following symptoms.

Do you have any of following symptoms	Number of participants	%
Sleep disturbance	65	42.48
Anxiety	53	34.64
Dry eye	48	31.37
Headache	47	30.72
Visual disturbance	44	28.76
Back pain	38	24.84
Depression	37	24.18
Neck pain	31	20.26
Eating disorder	25	16.34
Stomach upset	22	14.38
Family disturbance	22	14.38
Any other health issue	9	5.88
Total	153	100.0

More than one answers.

Regarding symptoms, the summarized results are given in Table 4. Most of the participants (42.48%) suffered from sleep disturbance, followed by anxiety (34.64%), dry eye (31.37%), headache (30.72%) and visual disturbance (28.76%) (Figure 1). Study revealed that most of the subjects (43.1%) suffered from at least 3 complains, 21.6% suffered from 4 complains and 19% suffered from 2 complains while only 6.5% suffered from 5 complains and 11.8% suffered from one complain (Table 5).

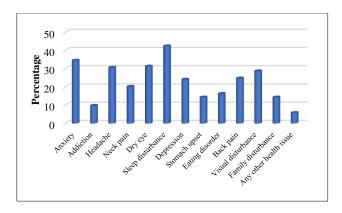


Figure 1: Distribution of the studied group regarding different symptom.

Table 5: Distribution of the studied group regarding the number of complain.

Number of complains	No.	%
One	18	11.8
Two	29	19.0
Three	66	43.1
Four	33	21.6
Five	10	6.5
Total	153	100.0

Table 6: Distribution regarding importance of digital devices in studied group.

How much is need for these digital devices for you?	No.	%
Very important	68	44.4
Important	52	34.0
Necessary	33	21.6
Total	153	100.0

Most of the subjects (44.4%) thought that digital devices are very important for their lives, 34% of subjects thought it is important for their life and 21.6% rated digital devices as necessary for their life (Table 6).

Table 7: Relation between number of symptoms and number of hours spent on internet per day.

	Num	ber of com	plains								
	One	One		Two		e	Four or more		Total		P value
	(n=18	3)	(n=29)		(n=66)		(n=43)				
Number of hours spent on internet per day	No.	%	No.	%	No.	%	No.	%	No.	%	
<2 hours	18	100.0	7	24.1	11	16.7	0	0.0	36	23.53	
2-5	0	0.0	14	48.3	36	54.5	12	27.9	62	40.52	
5-10	0	0.0	8	27.6	10	15.2	4	9.3	22	14.38	0.0001*
>10	0	0.0	0	0.0	9	13.6	24	55.8	33	21.57	

Authors found that there was a direct and significant relationship between the number of hours spent on internet and the number of psychological complains with a significant relationship (Table 7). Similarly, a significant relationship existed between the complains and the higher number of times checking their mobile (Table 8).

Table 8: Relation between number of symptoms and number of times you check your mobile per hour.

	Number of psychological complain										
	One	One		Two		Three		Four or more			P value
	(n=1	8)	(n=29)		(n=66) (n=		(n=43)	(n=43)			
Number of times you check your mobile per hour	No.	%	No.	%	No.	%	No.	%	No.	%	
<1	18	100.0	20	69.0	1	1.5	0	0.0	39	25.49	
1-3	0	0.0	8	27.6	27	40.9	10	23.3	45	29.41	
4-6	0	0.0	1	3.4	20	30.3	15	34.9	36	23.53	0.001*
6-10	0	0.0	0	0.0	18	27.3	3	7.0	21	13.73	
>10	0	0.0	0	0.0	0	0.0	12	27.9	12	7.84	

#### **DISCUSSION**

The use of internet in a healthy manner is defined as achieving a desired goal within an appropriate time period without experiencing intellectual or behavioral discomfort.<sup>10</sup> Over the years, ever increasing use of internet for work and leisure activities has led to its omnipresent presence across all activities of the day and this has disguised the boundaries between functional and dysfunctional internet use. This manifold uses of internet such as establishing risk-free social connections with strangers, free expression of thoughts, possibility to access prohibited content, involvement in unique games, and use of numerous other functions in privacy has led to exponential rise in the use of internet. 11-13 Some individuals cannot control their use of internet, whereas others can limit their use. Internet addiction (IA) can be described as an individual's inability to control his or her own use of internet causing disturbances and impairment fulfillment of work, social, and personal commitments. 14-16 Goldberg was the first person who coined a term for pathological use of internet, " internet addiction disorder (IAD)". Digital addiction is similar to other addictions; those suffering from it exhibit compulsive behavior and use the virtual fantasy world as a substitution for real-life human connection. Even though all true effects are not known, but it is now established fact that the life of addicted users does lead to social isolation, anxiety, depression, immune system disruption, brain damage and even death. But despite all this the appropriate classification of internet addiction is still controversial. It was classified as impulse-control disorder or as obsessive-compulsive disorder or as behavior addiction.<sup>17</sup> The inclusion of internet gaming disorder in the appendix of the updated version of the diagnostic and statistical manual for mental disorders (DSM-5) encourages further research.<sup>18</sup>

Kandell defined internet addiction as "a psychological dependence on the Internet, regardless of the type of activity once logged on". He stated that college students as a group appear more vulnerable in developing a dependence on the internet than any other segment of society, because college students have a strong drive to develop a firm sense of identity, to develop meaningful and intimate relationships, usually have free and easily accessible connections, and their internet use is implicitly

if not explicitly encouraged. Erik Peper, and Richard Harvey, of San Francisco State University in California write that "When students enter a classroom, during class breaks, or after class, they are continually texting, scrolling, clicking, or looking at their smartphone instead of engaging with the people next to them, The same habits exist outside the classroom, whether they are leaning against the walls in the hallways, walking between classes, eating pizzas, or standing on the bus". The researchers have equated smartphone overuse to other forms of substance abuse, pointing out that behavioral addiction leads to the formation of neurological connections in the brain.

In order to compare this result with other studies, we could not find any previous study dealing with these factors, however we found many leading news agencies have conducted surveys about digital dependence so we compared mainly with them. In this study authors got maximum responses from female students only. However, previous studies reveal that for public institutes there was no gender differences in the amount of time spent on the Internet, however at private institutions males spent significantly more time online than females  $(p = 0.019)^{20}$  The Telegraph News UK published an article, "a decade of smartphones". 21 The article provides a survey on digital usage, the main points of relevance to our research include that on an average the maximum usage of internet in age group of 16-24 is 34.3 hours per week, we find that in majority of students in this study belonged to age group of 18-25 (94.1%), but to authors surprise 35% students were using internet for more than 5 to 10 hours in a single day. They found that the young also check their phones every 8.6 minutes, more frequently than any other age group. Authors find that the repeated checking was almost same or less in this study, but it can be because the person is already working on phone for long durations so does not check phone repeatedly. Regarding the apps or websites used there is quite variation but in general it is usually Facebook, What's app, Instagram, twitter which are commonly used world over almost same is case with our group as well. However, a good point worth noting is that 67.32% admitted that they use internet for educational purpose as well.

This study revealed that most common issue among students was sleep disturbance. It is also established by a review article that significantly shorter total sleep time with greater mobile device screen time were reported in 10/12 studies, with 5/5 reporting greater subjective daytime tiredness or sleepiness.<sup>22</sup> Regarding anxiety which was seen in about 34.64% subjects, a moderate evidence of association has been established already.<sup>23</sup> Dry eyes and visual disturbances were also a major presentation in the study group. A research paper has already established that a significant increase in blurring of vision (p<0.05) was reported by users of mobile phone possession >2 years compared to users of mobile phone possession <2 years. In users of mobile phones, women significantly (p<0.05) complained more often of inflammation in the eyes than men24. About 30.72% students complained of headache. The headache associated with mobile phones is called HAMP (headache associated with mobile phone). It is defined as defined HAMP as a headache attack during MP use or within 1 hour after MP use. A study concluded that HAMP usually showed stereotyped clinical features including mild intensity, a dull or pressing quality, localization ipsilateral to the side of MP use, provocation by prolonged MP use and often accompanied by a burning sensation.<sup>25</sup>

Authors found that most of the subjects (41.8%) answered that they can't live without their devices. Authors also found from in this study that more time that was spent on mobile and other digital devices more were the psychological issues.

Research has revealed that the tech industry's desire to increase profits through clicks gleaned from notifications, vibrations, and other phone alerts as a major contributor to digital addiction.<sup>26</sup> However, smartphone users can train themselves away from constant use by turning off notifications, responding to email and texts only at specific times, and scheduling uninterrupted periods to focus on self-reflection and regeneration, researchers explained. "There is a simple aphorism that says: 'pay attention to shift intention," the researchers wrote, "suggesting that training related to better intentional behaviors may allow breaking the cycle of smartphone addiction." Jolynn Tumolo.

Study reveals that internet addiction is a reality having adverse effects on students in terms of time spent and associated adverse effects. Although the sample of study is small but we recommend that the need of hour is to act at three different levels. Students at individual level need to be educated about proper use of internet and digital devices at the induction phase only when they are very receptive. At University level, proper software or applications need to be made so that students and staff can have access to relevant website and apps only within the university campus. At society level, the educational and health sector needs to play a vital role so that masses are made aware about the individual, social and health

issues associated with improper and overuse of digital technology.

There are two major shortcomings in this study. The first one is that the sample size is low and represents trends in a very specific group of students. The second one is that authors did not look into internet usage and impact on student grades and other educational achievements. Authors really feel any further studies can be quite helpful in understanding this new aspect of digital revolution and decide is it boon or bane.

#### CONCLUSION

Study reveals a very serious trend in terms of time spent by students on internet and also the adverse health issues due to same in a statistically significant way, with evidence of dependence in a subset of students.

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Institutional Ethics Committee

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