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Prevalence of awareness Hazards and Dependence of Smartphone Usage among Students of the Faculty of Computer and Information Technology at Sanaa University

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Abstract: Background: Mobile phone addiction is a type of technological addiction. With regard to large number of mobile users especially among college students in Yemen, dependence of mobile phone is attracting increasing concern. This study examines validity and reliability of the Yemeni college student version of mobile phone addiction scale in college students.

Object: To study the addiction behavior and awareness of mobile phone on Electromagnetic Radiation (EMR) among a college student sample.

Material and method: A cross-sectional study was conducted among undergraduate college students aged ≥18 years studying at Sana'a University, Sana'a, Yemen, from November 1st 2017 until Feb 2nd, 2018.A pretested self-administered questionnaire was used for data collection. The study instrument comprised eight segments, namely, informed consent information, consent acceptance page, demographic details, habituation, mobile phone fact and EMR, mobile phone awareness, psychomotor analysis, Data analyzed using IBM SPSS Version 17.

Results: Totally, 204 individuals participated in the study, of which 42.3% were males and 57.7% were females, between the age group of 20 ->31 years. Nearly 75.9% of the respondents were between the age group of 21 and 25 years. The mean age of the study participants was 22.88 (standard error = 0.24) years.. Around 55%of the study participants use mobile phone for an hour (approximately) and remaining use it for more than an hour. Nearly36.7% checking mobile phones in between sleep, while 27.1% felt inconvenience with mobile phone use. Majority using mobile phone for communication purposes (87.8%), photo shooting (59.7%), entertainment (58.2%), and educational purposes (43.8%). The study results indicate that 86.8% of the participants are aware about EMR and 82.6% of the study participants are aware about the dangers of EMR.

Conclusion: Mobile phone use with increasing adoption promotes an addiction-like behavior that is evolving a public health problem in a large proportion in Yemen.

Keywords: Smartphone, students, behaved, habituation, Awareness, Addiction.

مدى انتشار الوعي بمخاطر استخدام الهاتف الذكي والاعتماد عليه بين طلاب كلية الحاسوب وتكنولوجيا المعلومات بجامعة صنعاء

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الملخص: خلفية: إن الاعتماد والإدمان للهاتف المحمول هو نوع من الإدمان التكنولوجي أو إدمان المواد .فيما يتعلق بعدد كبير من مستخدمي الهواتف المحمولة وخاصة بين طلاب الجامعات في اليمن، فإن إدمان الهاتف المحمول يجذب اهتمامًا متزايدًا .تبحث هذه الدراسة في صحة وموثوقية إصدار الطالب الجامعي اليمني لمقياس إدمان الهاتف المحمول في طلاب الجامعات.

الموضوع: تهدف الدراسة إلى دراسة سلوك الإدمان والوعي للهاتف المحمول بالإشعاع الكهرومغناطيسي على طلاب الجامعة.

المواد والطريقة: أجريت دراسة مقطعية بين طلاب الجامعة اللذين تتراوح أعمارهم فوق 18 عامًا والذين يدرسون في جامعة صنعاء، اليمن، من 1 نوفمبر 2017 وحتى 2فبراير .2018 تم استخدام استبيان تم تدبيره ذاتيًا تم اختباره مسبقًا لجمع البيانات .تتألف أداة الدراسة من ثمانية قطاعات، هي: معلومات الموافقة المستنيرة، صفحة قبول الموافقة، التفاصيل الديموغرافية، التعود، حقائق الهواتف المحمولة والإشعاع الكهرومغناطيسي باستخدام (EMR) تعليم التوعية بالهاتف المحمول، تحليل الحركة النفسية (السلوك القلق)، تم تحليل البيانات SPSS الإصدار1

النتائج: شارك في الدراسة 204 أفراد، منهم 42.3% ذكور و 57.7% إناث، بين الفئة العمرية 31 -< 20 سنة .كان ما يقرب من 75.9% من المستطلعين بين الفئة العمرية 21 و 25 سنة .كان متوسط عمر المشاركين في الدراسة(22.88 خطأ قياسي) 0.24 = سنة .حوالي 95% من المشاركين في الدراسة كانوا يستخدمون الهواتف الذكية، واستخدم معظم المشاركين في الدراسة الهاتف المحمول لأكثر من 5 سنوات .حوالي 55%من المشاركين في الدراسة يستخدمون الهاتف المحمول لمدة ساعة تقريبًا ويستمرون في استخدامه لأكثر من ساعة . ما يقرب من 36.7%من المشاركين في الدراسة لديهم عادة فحص الهواتف المحمولة بين النوم، في حين أن 27.1% يشعروا بعدم الراحة مع استخدام الهاتف المحمول .غالبية المشاركين كانوا يستخدمون الهاتف المحمول لأغراض الاتصال 87.8%، التصوير 59.7 %، والترفيه حوالي% 58.2 ،والأغراض التعليمية / الأكاديمية .43.8%ومن المشاركين في لدراسة تشير نتائج الدراسة إلى أن 86.8% من المشاركين يدركون معلومات عن الإشعاع الكهرومغناطيسي و 82.6% يدركون مخاطر تلك الإشعاعات.

استنتاج: استخدام الهاتف المحمول مع زيادة اعتماد الهواتف الذكية يعزز السلوك الشبيه بالإدمان الذي يتطور كمشكلة صحية عامة بنسبة كبيرة في اليمن الهاتف الذكي، الطلاب، تصرف، التعود، الوعي استخدام الهاتف المحمول مع زيادة اعتماد الهواتف الذكية يعزز السلوك الشبيه بالإدمان الذي يتطور كمشكلة صحية عامة بنسبة كبيرة في اليمن.

الكلمات المفتاحية: الهاتف الذكي، الطلاب، تصرف، التعود، الوعي والإدمان.

Introduction

Mobile/hand phones are powerful letter devices, first demonstrated by Motorola in 1973, and made commercially available from 1984(1). In the last few years, hand phones have become integral to our lives. The number of mobile cellular subscriptions is constantly increasing yearly. In 2016, there were more than seven billion users worldwide. The percentage of internet users also increased globally 7- fold from 6.5% to 43% between 2000 and 2015. The Internet use and Population Statistics in Yemen in 2000, the use was 15,000 analyze 17,900,000 and in 2018, the usage was 7,031,784 analyses 28,915,284(2).

The rapid growth of mobile phone ownership has transformed telecommunications in Yemen over the past decade. By the International Telecommunications Union (ITU), there were more than11.1 million Mobile phone subscribers in the country at the end of 2010. A decade earlier, mobile phones were virtually unheard of in the country. As recently as 2002, there were only 32,000 mobile phone subscribers.

The government statistics show that 46% of Yemenis owned a mobile phone in 2010 and sales were still increasing. Most of the population is now reachable by mobile phone, and the mass importation of cheap handsets from China has made them affordable for everyone. Mobile coverage is provided by four network operators; MTN, Yemen Mobile, Sabafon and Y company, with the 1st three; each control about one-third of the local market. The Y network is much smaller. Tele Yemen is one of the country's main internet service providers (ISP). Yemen Net offers' internet access by dial- up, ADSL, leased line and WI-max. (3).

Recently, most of the global populations (especially college and university students), use smart phones, due to its wide range of applications. While beneficial in numerous ways, smart phones have disadvantages such as a reduction in work efficacy, personal attention social nuisance, and psychological addiction. Currently, the addiction to smart phones among students is 24.8%–27.8%, and it is progressively increasing yearly (4).

A mobile phone is becoming an integral part of students in managing critical situations and maintaining social relationships (5). This behavior may reduce thinking capabilities, affect cognitive functions, and induce dependency. The signs of Smartphone addiction are constantly checking the phone for no reason, feeling anxious or restless without the phone, waking up during the night to check the mobile and communication updates, delay in professional performance as a result of prolonged phone activities, and distracted with Smartphone applications.

Among Asian population A mobile phone is the most dominant portal of information and communication technology. A mental impairment resulting from modern technology has come to the attention of sociologists, psychologists, and scholars of education on mobile addiction (4,5,6). Mobile phone addiction and withdrawal from a mobile network may increase anger, tension, depression, irritability, and restlessness, which may alter the physiological behavior and reduce work efficacy. Hence, the present study was planned to study the habituation modes & addiction behavior of mobile phone usage by university students.

Literature review:

Very few studies have been conducted to find out the smart phone usage habits of college students.

Researchers have reviewed major studies conducted in this area.

Aoki and Downes (2003) focused on the social and psychosomatic aspects of cell phone usage among college students. They argued that necessity in modern times, cost efficiency when compared to landline phone, safety or security, and dependency are the reasons for adoption of smart phones. Butt and Phillips (2008) exposed the relationship between the personality of a mobile phone user and the amount of time spent on the mobile phone and also the preference of using text or making call for communication.

Zulkefly and Baharudin (2009) studied mobile phone use particularly for the students of University of Putra Malaysia. They have determined various factors related to its use and impact on student's psychological health.

Farrell (2012) established a pattern in the usage of mobile phones and estimated the age of the mobile phone user by analyzing their call data record. He has shown that mobile user's age is based on the ages of the people they call and the intensity of their relationship.

Smart phones can help students improving to learn more by using academic apps, online courses, open sources, and improved networking by means of q/a sites, discussion forums, blogs etc. On the other hand, phones have been proven to distract students in the classroom as discussed by Shrivastava, and Muscat (2014). Sarraute, Blanc, and Burroni (2014) detected substantial inconsistencies in mobile phone usage among the subgroups of Mexican population for different age and gender. Patel and Rathod (2011) conducted an exploratory study for mobile usage habits of students commuting from rural area to nearby towns. They discussed the reasons for buying a phone, brand preferences and perceptions regarding service quality.

Smartphone usage pattern:

Smartphone addicts spend considerable time using their smart phone. The daily use duration of a smart phone is one of the most significant indicators of smart phone addiction. Torrecillas (2007) reported that 40 percent of adolescents and adults use smart phones for more than 4 hours a day to make calls and send messages. In addition, such people showed more problems in psychosocial, health, and techno- logical dimensions, and they exhibited more preoccupation with smart phones and smart phone overuse as compared with those who used a smart phone for less than 4 hours per day (Alijomaa et al., 2016).

The causes of smart phone use can be attributed to the technological and content-related features of a smart phone. Regarding technological features, Oulasvirta et al. (2012) reported that the motivation of smart phone use is triggered by accessibility, portability, easiness of operation, connectedness, user interface, design, music and video player, navigation, and so forth. In Europe, smart phone users touched their phones about 10 to 200 times a day, for a mean duration of 10–250 seconds, and they used up 1–1000 megabyte (MB) data per day (Falaki et al., 2010). Oulasvirta et al. (2012) suggested that smart phone addiction increased owing to the habit of checking the phone on hearing a notification sound or message. With reference to content-related features, Van Deursen et al. (2015) reported that social smart phone use is one of the risk factors increasing smart- phone addiction. Salehan and Negahban (2013) suggested that the predictive variable for smart phone addiction is the use of social networking services (SNSs). Park and Lee (2012) reported that smart phone addicts prefer to use SNSs, which could explain why females are more addicted to smart phones than males are. Song et al. (2004) classified the types of

Internet use in relation with addictive behaviors. One type is process-related gratifications, which are acquired during consuming or presuming media. Pleasurable experiences function as rewards and increase the risk of habitual or addictive behaviors. Another type of Internet use is social usage. Smartphone addicts spend most of their time on their smart phone for social purposes (Li and Chung, 2006; Lopez-Fernandez et al., 2014). Furthermore, exces- ive use of SNSs can negatively impact one's academic performance (Enriquez, 2010; Junco, 2012). In relation gaming, one study reported that the use of a smart phone for gaming and the use of multiple apps for gaming were potential risk factors for smart phone addiction, because, in smart phone gaming, it is easy to interact with other players through other social networking apps. Smartphone gaming, with or without the use of multiple apps, increases the risk of smart- phone addiction (Liu et al., 2016).

A study on the relative effects of content types on smart- phone addiction showed that, among smart phone contents such as study, entertainment, SNS, and game, except for study-related content, the other three contents were significant predictors of smart phone addiction. SNS had the strongest predictive effect on smart phone addiction, followed by entertainment, and gaming (Jeong et al., 2016; Salehan and Negahban, 2013).

Smartphone addiction:

Smartphone addiction is considered to be rooted in Internet addiction due to the similarity of the symptoms and negative effects on users. Internet addiction is defined as an impulse control disorder, characterized by pathological Internet use (Goldberg, 1996; Young, 1998). Smartphone addiction could be categorized as a behavioral addiction, such as Internet addiction. Behavioral and chemical addictions have seven core symptoms in common, that is, salience, tolerance, mood modification, conflict, withdrawal, problems, and relapse (Grant et al., 2010; Griffiths, 2005). These common points are not integrally researched, but each symptom has been found in smart phone addiction studies. For instance, Lin et al.(2014) reported four features of smart phone addiction, that is, compulsion, functional impairment, tolerance, and withdrawal. Bianchi and Phillips (2005) suggested that smart phone overuse associated with psychological symptoms constitutes a form of behavioral addiction. Smartphone addiction is also considered a technological addiction that involves human—machine interaction (Griffiths, 1995).

Smartphone addiction is considered as the inability to control the smart phone use despite negative effects on users. The use of a smart phone not only produces pleasure and reduces feelings of pain and stress but also leads to failure to control the extent of use despite significant harmful consequences in financial, physical, psychological, and social aspects of life (Shaffer, 1996; Van Deursen et al., 2015; Young, 1999). Addiction to media has been characterized as excessive or poorly controlled preoccupations, and compulsive needs or behaviors that lead to impairment (Demirci et al., 2014; Shaw and Black, 2008). A study reported that media addicts could not manage real-life activities (Greenfield,

1999; Young, 2007). The people using the Internet longer had poor social support and higher levels of loneliness (Nie and Erbring, 2000). Children using the cell phone displayed more behavioral problems such as nervousness, temperament, mental distraction, and indolence, and these problems worsened if the children began using a cell phone at an early age (Divan et al., 2012).

Awareness regarding the severity of smart phone addiction has already been reflected in clinical science and praxis. The Diagnostic and Statistical Manual of Mental Disorders (DSM-5, American Psychiatric Association (APA), 2013) introduced the diagnostic criteria for Internet gaming disorder and encouraged further research for listing it as a formal diagnosis. Oulasvirta et al. (2012) reported that the awareness of problems with repeated use of smart- phones was underestimated, and only a few reported that they were aware of it. The few respondents reported repeated usage of a smart phone as annoying, addicting, "a trap," and distracting. They were aware that repeated use could lead to addiction; however, they were not aware of the severity of the repeated and intense use of a smart phone. If one is aware of the risks posed by smart phone addiction, one would do something against it. The awareness of the severity of smart phone addiction can, therefore, play a role in preventing it.

Life satisfaction pertains to the normal evaluation of one's surroundings, and subjective happiness or personal contentment (Diener et al., 1985; Scheufele and Shah, 2000). Addiction to media could increase depressive symptoms and substance use, and it could decrease well-being (Ha and Hwang, 2014; Yoo et al., 2014). Samaha and Hawi (2016) showed that smart phone addiction is not directly linked to life satisfaction, but it is linked via perceived stress and academic performance.

Research Problem:

Our problem research was;

- What is the prevalence of smart phone usage, There behavioral stress and addiction in Students College aged groups?
- What are common age groups among students using smart phone?
- How frequent ratio (time duration) using smart phone between males &female? What they use smart phone for?
- How many students know about hazards awareness from prolonged used of smart phones and what are they think of ?
- What different awareness felt by smart phone users?
- What different habitual used between students and their gender?
- What are the addiction behavior thinking and feeling after using smart phones?
- Would the addiction group have more psychological and physical problems as compared with the normal user group?

Study Importance:

- To know about different results about problem study questions and general study results.
- The purpose of the current study is to explore the usage of smart phone by college students studying in Sana'a university The main objective is to study age and gender related differences in habits of smart phone users.

The incidental objectives are:

1- To study association between demographics of respondents and their addiction of using mobile phone
2- To study association between demographics of students and their perception about/of using mobile phone.
3- To study the difference in opinion of students about their preference of using mobile phone for various tasks like talking, social networking, playing games, managing emails and listening music

Methods:

A cross-sectional study was conducted among a sample at college of computer science & technology& Faculty of Engineering, Sana'a University, Sana'a, Yemen... The study was conducted between November1st2017untilFeb2nd,2018. The study participants were invited through personal communications to fill the Performa survey form.The study instrument comprised eight segments, namely, informed consent information, consent acceptance page, demographic details, habituation, mobile phone fact and electromagnetic radiation (EMR) details, mobile phone awareness education, psychomotor (anxious behavior) analysis, and health issues. If any of the participants were not willing to continue in the study, he/she can stop/withdrawal from this study.

Totally, 225 participants were informed about the study and 204 were actually participated in the study. The demographic details of the study participants are summarized in table1.The incomplete forms were excluded from the study. The participants' details were maintained confidentially.

The researcher (with the help of female professional data collectors) distributed the questionnaire to students after they had finished their academic sessions. The questionnaires were collected on the same day.The data was verified by hand, then coded and entered into a personal computer

Questionnaire:

The questionnaire included items on demographic variables, smart phone addictive behavior, and risk factors for smart- phone addiction. The participants responded to questions on smart phone use patterns, such as the duration of daily smart- phone use; commonly used content of a smart phone, such as game, SNS, music, or learning; and the purposes of the con- tent used, such as fun/stress reduction, communication with people, accessing latest information, or passing time. Regarding smart phone

content, we asked more about the SNS and game that were used most frequently (e.g. Face book, Twitter, Kakaostory, Band, Instagram, or others), the duration and purpose of SNS and game use, the time slot of gaming.

Data Analysis

We asked respondents how they use mobile phone (4 questions), what are their product's perception (4 questions), some personal details (3 questions), and how they rate common usages of mobile phone (1 question-5 options).

Table (1) Demographic Details of the Study Participants

Particulars	Categories	Number of Participant%
Age group(years)& their qualification:	<20 fresh college student	30 (14.7%).
	21-25 undergraduate	155 (75.98%).
	26-30 graduated	10 (4.9%).
	>31 others	9 (4.41%).
Gender of Participated	Male	86 (42.3%).
	Female	113 (57.7%).
Number of participant		204
Number of participant enrolled		225

Statistical analysis Frequency of the data was calculated and the data were analyzed using two-sided Chi-square test with Yates's continuity correction.

Illustration of the Table1(Results): Totally, 204 individuals participated in the study, of which 42.3% were males and 57.7% were females, between the age group of 20 ->31 years. Nearly 75.9% of the respondents were between the age group of 21and 25 years.

The mean age of the study participants was 22.88 (standard error = 0.24) years. About 95% of the study participants were using smart phones, Most of the study participants used mobile phone for more than 5 years. Around 55% of the study participants use mobile phone for an hour (approximately) and remaining use it for more than an hour. Nearly36.7% of the study participants have the habit of checking mobile phones in between sleep, while 27.1% felt inconvenience with mobile phone use.

Table (2) Mobile phone usage analysis of Habituation:

Habituation	Participant's n (%)
Most frequently used application by	
study participants (multiple election)	
Communications	**178(87.7%)**
Photo	**122(59.7%)**
Entertainments	**119(58.2%)**

Habituation	Participant's n (%)
Media	118(57.7%)
Education	89(43.6%)
Game	77(37.7%)
Sports	37(18%)
Reading news and books	77(37.7%)
Feeling inconvenience	
Yes	55(27%)
No	149(72.9%)
Frequency of mobile phone checking	
(time)	
0-10	53(25.8%)
11-20	54(25.7%)
21-30	97(47.5%)
Checking mobile phones in between	
Sleep Yes	67(36.7%)
No	130(36.3%)
Duration of mobile usage day(h)	
<1	131(64.2%)
1-2	39(19.1%)
>3	34(16.66%)
Number of years mobile phone usage	
by study participants (years)	
<5	132(64.3%)
6-10	37(18.13%)
10-15	35(14.3%)
Number of cell phone used by the study	
Participants	
1	112(55%)
>1	92(45%)
Type of mobile phone usage	
Smartphone	195(95.4%)
Normal/basic phone	9(4.41%)

EMR: Electro Magnetic radiation

Majority of the respondents were using mobile phone for communication purposes (87.8%), photo shooting (59.7%), entertainment(58.2%), and educational/academic purposes (43.8%). Habits of

mobile phone usage among the study participants are summarized in table 2. The study results indicate that 86.8% of the participants are aware about EMR and 82.6% of the study participants are aware about the dangers of EMR.

The prolonged use/exposure to EMR may cause De Quervain's syndrome, pain on wrist and hand, and ear discomfort. Among the study participants, 46.2% were having awareness on De Quervain's syndrome, 53.8% were feeling ear discomfort, and 25.9% were having mild-to-moderate wrist/hand pain. Almost 34.5% of the study participants felt pain in the wrist or at the back of the neck while utilizing smart phones(table 3a).

Many of the study participants also agreed that mobile phone usage causes fatigue (12% agreed; 68% strongly agreed), sleep disturbance (16.9% agreed; 118(58%)% strongly agreed), and psychological disturbance (10.8% agreed; 54.8% strongly agreed)-table 3b. The study participants were having level 6 of awareness on mobile phone usage and EMR.

The behavioral analysis of the Smartphone usage revealed that 70.4% of the study participants use Smartphone longer than intended and 66.5% of the study participants are Engaged for longer duration with Smart phone. Nearly 57.7% of the study participants exercise control using their phones only for specific important functions. More number of study participants (58.2%) felt uncomfortable without mobile and were not able to withstand not having a Smartphone, feeling discomfort with running out of battery (73.8%), felt anxious if not browsing through their favorite Smartphone application (41.1%), and 50.4% of the study.

Table (3a) Awareness Hazards of using smart phone Analysis:

Specific quarry	Yes/ No	Participant's n (%)
Feeling torment /pain in the wrists or at the back of the neck while utilizing a smart phone	Yes	**70(34.4%)**
	No	**134(65.6%)**
Having any pain on wrist and hand because of a smart phone use	Yes	**53(25.9%)**
	No	**151(74%)**
Feeling of any ear discomfort while using mobile phone	Yes	**110(53.8%)**
	No	**179(87.7%)**
Awareness on De quervain's syndrome/ texting thumb	Yes	**94(46.1%)**
	No	**25(12.2%)**
Awareness on danger of EMR	No idea	**85(41.6%)**
	Yes	**169(82.6%)**
	No	**36(17.5%)**
Awareness about EMR	Yes	**178(86.9%)**
	No	**26(13%)**
Place of hand phone keeping	In the bag	**76(37.2%)**
	Around pelvic area	**125(61.1%)**
	Around your neck	**3(1.6%)**

Table (3b) Hazards of awareness of using smart phone Analysis:

Particulars	Agree (%)	Strong Agree
Thinking that cell phone usage causing mental/psychological disturbance	22(10.8%)	112(54.90%)
Thinking that cell phone usage causing Gastrointestinal Tract disturbance	4(2%)	60(29.41%)
Thinking that cell phone usage causing sleep disturbance	35(16.9%)	118(58%)
Thinking that mobile phone usage causing fatigue	25(12%)	139(68%)

Table (4) Addiction Behavior Analysis Data of Mobile Phone

Particulars	Participants n (%)	
	Yes	No
Feeling dependent on the use of Smartphone	152(74.3)	53(25.7)
Having any health issues due to use of Smartphone	30(14.7)	175(85.3)
Feeling impatient and fretful when not conserving Smartphone	98(47.9)	107(52.1)
Having my Smart phone in my Mind even when I am not using it	60(29.3)	145(70.7)
Feeling discomfort when your Smartphone is running out of battery	151(73.8)	54(26.2)
Feeling anxious if you not check your favorite Smartphone application	84(41.1)	121(58.9)
I will never quit using my Smart phone even though my daily life styles are affected by It	103(50.4)	102(49.6)
Having control on using phone on specific objectives	118(57.7)	87(42.3)
Missing planned work because of Smartphone use	75(36.7)	130(63.3)
Feeling of missing normal Social life using Smartphone	57(27.9)	148(72.1)
Experiencing difficulties in regular day-to-day life(such as problems in completing job assignments)	65(31.5)	140(68.5)
Won't be able to withstand of not having smart phone	119(58.2)	86(41.8)
Finding too much of time are engaged with Smartphone	136(66.5)	69(33.5)
Utilization of Smartphone longer than intended	144(70.4)	61(29.6)
Awareness on time spend in Smartphone	124(60.88)	80(39.12)

participants declared that they would never quit using smart phones even though their daily lifestyles were being affected by it. The study also revealed another important finding that 74.3% of Smartphone users are feeling dependency on the use of Smartphone. The Addiction behavior analysis

data of mobile phone are summarized in table 4. The study results also suggest that female participants were having more awareness than male participants ($P < 0.001$)- table 5a. were more dependent on smart phones than male participants ($P < 0.05$)(table 5b).

Female participants were ready to quit using smart phones, if it affected daily lifestyle compared with male participants ($P < 0.05$)-table 5b.habituation of mobile phone use and addiction behavior.

Table (5a) Habituation Comparison Usage of Smart Phone Between Genders:

Particulars	Response	%Male	%Female	Level of significant
Feeling torment /pain in the wrist's	Yes	30(35.3)	40(33.9)	0.8564
	No	56(64.7)	78(66.1)	
Having any pain on wrist hand because of the smart phone use	Yes	12(26.o)	30(25.8)	0.9702
	No	64(74.0)	88(74.2)	
Feeling of any ear discomfort while using mobile phone	Yes	11(13.3)	14(11.4)	
	No	75(86.7)	104(88.6)	0.6798
Awareness on De Quatrain's syndrome/texting thumb	Yes	40(46.2)	54(46.2)	
	No	47(53.8)	64(53.8)	0.9910
Awareness on the danger bout EMR	Yes No	70(80.9) 17(19.1)	99(91.5) 19(8.5)	0.5143
Awareness about EMR	Yes No	70(80.9) 17(19.1)	108(91.5) 10(8.5)	0.0043
Feeling inconvenience	Yes No	27(30.6) 60(69.4)	29(24.6) 89(75.4)	0.2117
Checking mobile phone in between sleep	Yes No	35(39.9) 52(60.1)	42(34.3) 78(65.7)	0.2940

Table (5b) Comparison of addiction behavior between gender using Smartphone

Particulars	Response	Male%	Female%	Level of significant
Having any health issues due to use of Smartphone	Yes No	14(16.2) 73(83.8)	16(13.6) 102(86.4)	0.5485
Feeling dependent on the use of Smartphone	Yes No	60(68.8) 27(31.2)	93(78.4) 26(21.6)	0.0373
I will never quit using my Smartphone even though my daily lifestyles are affected by it	Yes No	50(57.2) 37(42.8)	54(45.3) 65(54.7)	0.0229

Particulars	Response	Male%	Female%	Level of significant
Feeling anxious if you not check your favorite Smartphone application	Yes No	40(45.7) 47(54.3)	45(37.7) 74(62.3)	0.1302
Feeling discomfort when your Smartphone is running out of battery	Yes No	63(72.3) 24(27.7)	89(75.0) 30(25.0)	0.2069
Having my Smartphone in my mind even when I am not using it	Yes No	29(32.9) 58(67.1)	32(26.7) 87(73.3)	0.2069
Feeling impatient and fretful when not conserving Smartphone	Yes No	45(51.4) 42(48.6)	54(45.3) 65(54.7)	0.2623
Won't be able to withstand of not having Smartphone	Yes No	51(58.4) 36(41.6)	69(58.1) 50(41.9)	0.9466

were compared between both genders of the study participants and are summarized in Table 5a and b, respectively. About 75 (36.6%) participants checked mobile phone in-between.

Table (6) Habituation Comparison Usage of Smart Phone Between Genders:

Particulars	Response	Male%	Female%	Level of Significant
Experiencing difficulties in regular day- to-day life (such as problems in completing job assignments)	Yes No	28(32.4) 59(67.6)	37(30.9) 82(69.1)	0.8404
Having control on using phone on specific objectives	Yes No	50(57.2) 37(42.8)	69(58.1) 50(41.9)	0.9477
Missing Planned Work because of Smartphone Use	Yes	28(32.4)	47(39.8)	0.1491
	No	59(67.6)	71(60.2)	
Feeling of Missing normal social life using Smartphone	Yes No	24(27.7) 63(72.3)	33(28.0) 85(72.0)	0.9608
Awareness on time spend in Smartphone	Yes	51	74	0.4330
	No	36	44	
Utilization of Smartphone longer than	Yes No	61(70.5) 61(70.5)	83(70.3) 35(29.7)	0.9684
intended Finding too much of time are engaged With Smartphone	Yes No	54(62.4) 33(37.6)	82(89.5) 36(30.5)	0.1647

Discussion:

The study results suggest that a significant number of the participants had addiction to mobile phone usage, but were not aware on it, as mobile phones have become an integral part of life. Mobile phone abuse is rising as an important issue among the world population including physical. Problems such as eye problems, muscular pain, and psychological problem such as tactile and auditory delusions(6).Along with mobile phone, availability of Wi-Fi facility in residence place and work premises also increases mobile phone dependence. The continuous and constant usage of mobile phone reduces intellectual capabilities and work efficacy. A study conducted in Chinese population (160 million out of the total 1.3 billion people) showed that people affected by mobile phone dependence have difficulty in focusing on work and are unsociable, eccentric, and use phones in spite of facing hazards or having knowledge of harmful effects of this form of electro magnetic pollution(7).

The statement "I will never quit using my Smartphone even though my daily lifestyles are affected by it" was statistically significant (P = 0.0229). These points to a trend of mobile phone addiction among the respondents, Extensive use of technology can lead to addiction(3,4,5,7). The use of, social networking services SNS mobile applications is a significant predictor of mobile addiction. Their result showed that the use of SNS mobile applications is affected by both SNS network size and SNS intensity of the user. It has implications for academia as well as governmental and non-profit organizations regarding the effect of mobile phones on individual's and public health (8). The health risks associated with mobile phones include increased chances of low self-esteem, anxiety or depression, bullying, eye strain and "digital or mobile phone thumb," motor vehicle accidents, nosocomial infections, lack of sleep, brain tumors and low sperm counts, headache, hearing loss, expense, and dishonesty(6,7,9). The prevalence of cell phone dependence is unknown, but it is prevalent in all cultures and societies and is rapidly rising (10).

Relapse rate with mobile phone addiction is also high, which may also increase the health risk and affect cognitive function. Sahin et al. studied mobile phone addiction level, sleep quality in576 university students, and found that sleep quality worsens with increasing addiction level (11).

The statement "Feeling dependent on the use of smart phone" was also statistically significant (P = 0.0373), Richard et al(12). also explored this among 404 university students regarding their addiction to smart phones. Half of the respondents were overtly addicted to their phones, while one in five rated themselves totally dependent on their smart phones. Interestingly, higher number of participants felt more secure with their phones than without.

More than half of the respondents reported using their phones as an escapism. This study revealed an important fact that people are not actually addicted to their smart phones per-se; however, it is to the entertainment, information, and personal connections that majority of the respondents were addicted to (4,9,13). On 2015 statistical report from the British Chiropractic Association concluded, that 45% of young people aged 16– 24 years suffered with back pain. Long-term usage of smart phone may

also cause incurable occipital neuralgia, anxiety and depression, monophobia, stress, eyesight problem, hearing problems, and many other health issues and at the mean time Thoméeetal. collected data from4156adults aged between 20 and 24 years and observed no clear association between availability demands or being awakened at night and the mental health outcomes (14).

A study conducted among university students of Shahrekord, Iran, revealed that 21.49% of the participants were addicted to mobile phones, 17.30% participants had depressive disorder, 14.20% participants had obsessive- compulsive disorder, and 13.80% had interpersonal sensitivity (6).

In this study we Compare it to similar study time consuming with smart phone done with the third grade of middle school in 17 cities in South Korea (15); The average age was 15 years in both groups, and 60 percent of them were from a dual income family and The risk group for smart phone addiction used a smart- phone for an average of 313.13 minutes per day, which was33.17 minutes longer than that of the normal user group in addition there is 30—40 percent of the respondents used web surfing and instant mobile messenger contents the most, and more than 20 percent of the respondents used music, games, and social networking.

The Over use of mobile phone can lead to reduced quality of interpersonal relationships and lack of productivity in daily life(10,12).

Our opinion from this study seems that ,this is a new topic research title in Yemen specially among university students using smart phones although majority of our students they may aware about EMR but the social behavior affected more than knowledge behavior and that may lead to health problems.

CONCLUSION:

This study suggests that most of the study participants are aware about mobile phone/radiation hazards and many of them developed dependent behavior with Smartphone. One- fourth of the study population is having a feeling of wrist and hand because of Smartphone usage, which may lead to further physiological and physiological complications.

Limitations:

- Cluster sampling from a close /specific wider population (students) base could have provided a more clear idea regarding the topic of interest among collage – students mainly.
- Increasing the period and number of study phases was not possible due to logistical issues.
- Impact of smart phone addiction on sleep pattern could have been studied in-depth.

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Conflicts of interest:

There are no conflict of interest.

Recommendations:

- Keep distance between your body & cell phone.
- Don't use your phone when there is weak signals.
- Try to not to carry your cell phone on/close to your body all time.
- Don't keep your cell phone on while sleep near to you.
- Better to use your home/office corded line for the long time conversation and use text message instead of.
- Avoid Using Your Cell Phone Inside Spaces That Are Surrounded By Metal Like A Car, Elevator, Bus, Train Or Airplane.
- As this radiation has been shown to damage sperm and ovaries (save your fertility).
- Read carefully your cell phone manual.

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