

Smart phones and medical students: Pleasant distraction or dangerous addiction?

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Abstract

Smart phones are central to communication in the current century. We administered a survey to determine the impact of excessive smart phone use on academic performance, interpersonal relationships and mental health in medical students. During the study, 700 medical students from King Edward Medical University, Lahore, Pakistan, were administered a questionnaire which recorded information about demographics, academic performance, interpersonal relationships and psychological problems. Out of 630 respondents, 255(40.5%) were males and 375(59.5%) were females with a mean age of 21.1±1.8 years. Results showed smart phone use during class lectures was associated with significant reduction in academic performance and problems with interpersonal relationships. Medical students bullied via smart phones were likely to bully others. Excessive use of smart phones was associated with students preferring to communicate emotions through texting rather than verbal communication. Various psychological problems were found prevalent in excessive users of smart phones.

Keywords: Medical students, Smart phone, Academic failure, Interpersonal problems, Psychological problems, Mental health.

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Introduction

Smart phones today with hundreds of built-in applications and continuous internet access have become mobile computers and are now an essential daily need. Although smart phones are convenient for a number of reasons, like connectivity, information access etc., a number of studies have highlighted their effects on mental health.¹

In addition to web browsing, entertainment and communication, smart phones are increasingly becoming an indispensable education tool for all learners.² They are

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now an integral part of our daily lives and this trend is set to get more deeply entrenched. Increasingly, however, researchers are beginning to point out negative aspects of their use, including disruption of social interactions. In addition, researchers have found close associations between their overuse and behavioural problems as well as low mood.³ Medical students and junior doctors exhibit high ownership and usage of smart phones in their learning and work activities and may thus be more vulnerable to these effects.⁴ Several health hazards have been linked to cell phone use, including headaches, physical ill-being, tiredness and exhaustibility.⁵ Sleep disturbances with associated physical and mental problems have been documented in young people who use cell phones excessively for both speaking and text messaging.⁶

Smartphones have given people more control over how, when and where they interact with other people. In addition, cell phones have allowed adolescents to be more autonomous from their parents than was the case earlier.⁷ For many smart phone users, their phone is the first thing they look at when they wake up in the morning and the last thing they check before going to sleep at night. Many smart phone users check their phones hundreds of times a day, simply out of habit. This can result in compulsive usage or even 'phone addiction'.⁸

The current study was planned to examine the patterns of smart phone usage in medical students in order to ascertain their impact on academic performance, interpersonal relationships and mental health. It also planned to find out if students who used smart phones excessively experienced more psychological problems compared to their peers.

Subjects and Methods

The cross-sectional study was conducted in July 2015 at the Department of Psychiatry and Behavioural Sciences, King Edward Medical University, Lahore Pakistan. Using convenience sampling, all medical students from the first to the fifth year of their professional education were included and informed consent was obtained from all subjects. An anonymous, 24-item, structured, self-administered questionnaire in English was developed. Other than demographic information, out of the 24

questions, 14 were binary yes/no questions exploring the utility and perceived effects of smart phone usage on academic performance, sleep, interpersonal relationships, driving, and content of messages. Other questions explored starting age of smart phone use, reasons for carrying, place and time of day for excessive usage, frequency (interval data question) and nature of its use during class, association with relaxation / negative psychological effects and frequency of text messages and access to porn sites (interval data question).

The study was approved by the institutional ethics review board. A pilot study was conducted comprising 10 medical students to rule out any ambiguity in the questionnaire, and minor changes were made in the questionnaire after the pilot study

Data was analysed using SPSS v19. Percentages were calculated for different variables. Descriptive statistics were computed. Chi square test was used to analyse association between the constructs.

Results

Of the 700 medical students approached, 630(90%) responded positively; 255(40.5%) males and 375(59.5%) females. The overall mean age was 21.1 ± 1.8 years. Of the total, 364(57.8%) respondents were living on the campus, while 266(42.2%) were day scholars. Smart phone usage had started between the age of 13 and 18 years for 394(62.5%) participants; 333(52.9%) reported using smart phones for personal needs; 297(47.1%) said they used it due to social pressure. 258(41.0%) students used smart phones primarily between 8pm and 12pm, 110(17.5%) around 4-8pm and 133(21.1%) around 12-4am. Also,

Table-1: General Characteristics and Other Related Variables of Participants (N=630).

Characteristics	n (%)
Gender	
Male	255 (40.5)
Female	375 (59.5)
Academic year	
First year	116 (18.4)
Second year	130 (20.6)
Third year	140 (22.2)
Fourth year	119 (18.9)
Fifth year	125 (19.8)
Hostel residence	
Yes	364 (57.8)
No	266 (42.2)
Age of using smart phone	
Below 13 years	20 (3.2)
13-18 years	394 (62.5)
Above 18 years	216 (34.3)
Reason for using smart phone	
Personal needs	333(52.9)
Social pressure	297 (47.1)
Predominant time for using smart phone	
8-12am	42 (6.7)
12-4pm	74 (11.7)
4-8pm	110 (17.5)
8-12pm	258 (41.0)
12-4am	133 (21.1)
4-8am	13 (2.1)
Number of daily text messages sent	
100-300	267 (42.3)
300-500	337 (53.5)
More than 500	26 (4.2)
Sending or receive sleep texts	
Yes	356 (56.5)
No	274 (43.5)

Table-2: Association between Different Constructs (N=630).

Perceived academic failure/ interference with study habits		Yes f(%)	No f(%)	Total	χ^2	Phi			
Using smart phone excessively during class lectures	Yes	466(86.6)	72(13.4)	538	3.75	0.084			
	No	72(78.3)	20(21.7)	92					
	Total	538	92	630					
Interpersonal Problems	Yes f(%)	Yes f(%)	No f(%)	Total	χ^2	Phi			
	Using smart phone excessively during family time	Yes	329(68.5)	151(31.5)			480	4.50*	-0.089
	No	117(78.0)	33(22.0)	150					
Total	446	184	630						
Bully others by smart phone	Yes f(%)	Yes f(%)	No f(%)	Total	χ^2	Phi			
	Being bullied via smart phone	Yes	148(50.0)	148(50.0)			296	21.00***	0.186
	No	106(31.7)	228(68.3)	334					
Total	254	376	630						
Prefer to share emotions through texting	Yes f(%)	Yes f(%)	No f(%)	Total	χ^2	Phi			
	Huge attachment towards using smart phone	Yes	363(73.9)	128(26.1)			491	30.21***	0.223
	No	68(48.9)	71(51.1)	139					
Total	254	376	630						

Note: χ^2 = chi-square, Phi = Effect size * $p < .05$. ** $p < .01$. *** $p < .001$.

Table-3: General Characteristics and Other Related Variables of Participants (N=630).

Characteristics	n (%)
Receiving sexually explicit text messages ("sexts")	
Yes	360 (57.1)
No	270 (42.9)
Accessing porn sites via smart phones	
Daily	175 (27.8)
Twice a week	116 (18.4)
Once a week	127 (20.2)
Never	212 (33.7)
Psychological problems due to smart phones	
Sadness	141 (22.4)
Frustration	249 (39.5)
Hopelessness	87 (13.8)
Irritability	143 (22.7)
Other stresses	10 (1.6)
Travel related accidents due to excessive use of smart phones	
Yes	185 (29.4)
No	445 (70.6)

337(53.5%) students said they used to send 300-500 text messages daily, and 356 (56.5%) reported sending texts while in a state of somnolence (sleep texts) (Table-1).

Using smart phones excessively during class lectures was perceived as being associated with negative interference in terms of study habits, and academic performance as well as on interpersonal and emotional fronts (Table-2).

Overall, 360(57.1%) medical students were involved in sending sexually explicit text messages, also referred to as 'sexting', and 175(27.8%) accessed pornography using smart phones on a daily basis, while 127 (20.2%) did so once a week, and 116(18.4%) twice a week. Of the total, 141(22.4%) medical students reported sadness, 249(39.5%) frustration, 87(13.8%) hopelessness, 143(22.7%) irritability and 10(1.6%) reported other kinds of stresses. Besides, 185(29.4%) medical students reported having had accidents due to excessive use of smart phones while commuting (Table-3).

Discussion

Increasing smart phone usage, especially in teenagers and pre-teenagers, is a worldwide phenomenon.⁹ According to our results, most of the respondents started using smart phones at age 13-18 years. One study conducted in the United States revealed 78% of adolescents aged 12-17 owned a cellular phone and almost 47% of them had smart phones.⁹ Smartphones have become less of a status symbol and more of a fashion statement, and they have also created an unspoken social dependence.¹⁰

In our study, 258 (41.0%) students reported using smart

phones mostly around 8-12pm, while a majority of medical students sent 300-500 text messages daily. In the US, one study revealed 78% of teenagers owned cell phones and one-third sent more than 3,000 text messages a month.¹¹ Short message service (SMS) / text messaging has become more popular among young people compared to previous generations. Text messaging is seen as a comfortable, easy and effective means of communication by younger people.¹²

Results showed that using smart phones during class lectures was significantly associated with academic failure among medical students. Activities associated with the use of smart phone, like playing video games and high level of internet use, has been associated with lower grade point average (GPA) and higher levels of anxiety respectively.^{13,14} Conversely, lower levels of internet use have been associated with better academic performance.¹⁵ However, what the student does online should be taken into consideration.¹⁶ In Zimbabwe, a study revealed commonly cited negative effects of cell phone use in education included chatting and texting when students should have been studying.¹⁷

The results also showed that excessive smart phone use during family time caused interpersonal problems. It has been suggested that the use of cell phones has a negative effect on social relationships, grammar and increased social anxiety.¹⁸ Furthermore, people with social anxiety are more sensitive in interpersonal relationships and struggle to communicate face to face.¹⁹

In the current study, medical students who were being bullied by anyone via smart phone were likely to bully others through smart phone usage. Over 25% adolescents and teens have been bullied repeatedly through their cell phones or the internet. Over 80% teenagers use a cell phone regularly, making it the most popular form of technology and a common medium for cyber-bullying. About half of all young people have experienced some form of cyber-bullying, and 10-20% experience it regularly. Victims often respond by sending mean messages back to the bully, becoming bullies themselves.²⁰

The results showed that excessive attachment to smart phones forced students to share emotions and ideas through texting rather than verbal communication. Communicating predominantly through text message means individuals are not required to interact with others face-to-face. While this is convenient, it is changing the way individuals are interacting with others not only in a social setting, but also in how they are maintaining their existing relationships, and building

new ones.²¹ Some studies suggest that people who prefer to communicate exclusively via text messaging may have underdeveloped social skills, and excessive text messaging may have a negative impact on social skill development.¹²

Results showed that a majority of medical students, both male and female, was involved in sending sexually explicit text messages to others and a majority of them was accessing porn sites using smart phones. In the US, one study reported that approximately one-third of the participants were sending a sexually explicit image of themselves in high school to someone else using a cell phone. Those who reported more texting use in general, and those who spent more time with friends in an unsupervised setting were significantly more likely to report 'sexting'.²²

Our results showed that excessive use of smart phones was associated with many psychological problems, including sadness, frustration, hopelessness, irritability and other stresses. Thus unhealthy use of cell phones and computers may be linked to stress, sleep disorders and depressive symptoms.

According to our results, 185(29.4%) medical students reported accidents due to excessive use of smart phones during commute. In Europe, the use of cell phones reportedly causes 26% car accidents, and 5% of cell phone-related crashes occur because the driver is texting. The majority of the accidents involve drivers who get distracted while talking on handheld or hands-free cell phones.²³

The current study was limited to students of a single centre and the results cannot be generalised to all such settings in the country. Prospective cohort studies investigating the effects of smart phones on social relationships over time, as well as their long-term effects on mental health are needed.

Conclusion

In its short history, smart phones have already had a definitive impact on the way individuals interact with one another. They affect social functioning as well as family relationships and educational achievement levels of individuals.

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References

- Hoffner CA, Lee S. Mobile phone use, emotion regulation, and well-being. *Cyberpsychol Behav Soc Netw*. 2015; 18:411-6.
- Jamal A, Tamsah MH, Khan SA, Al-Eyadhy A, Koppel C, Chiang MF. Mobile phone use among medical residents: A cross-sectional multicenter survey in Saudi Arabia. *JMIR Mhealth Uhealth*. 2016; 4:e61.
- Roser K, Schoeni A, Foerster M, Rösli M. Problematic mobile phone use of Swiss adolescents: is it linked with mental health or behaviour? *Int J Public Health*. 2016; 61:307-15.
- Payne KF, Wharrad H, Watts K. Smartphone and Medical related App use among Medical Students and junior doctors in the United Kingdom (UK): a regional survey. *BMC Med Inform Decis Mak*. 2012; 12:121.
- Schoeni A, Roser K, Rösli M. Symptoms and Cognitive Functions in Adolescents in Relation to Mobile Phone use during Night. *PLoS One*. 2015; 10:e0133528.
- Munezawa T, Kaneita Y, Osaki Y, Kanda H, Minowa M, Suzuki K, et al. The association between use of mobile phones after lights out and sleep disturbances among Japanese adolescents: a nationwide cross-sectional survey. *SLEEP*. 2011; 34:1013-20.
- Blair BL, Fletcher AC. "The only 13-year-old on planet earth without a cell phone": Meanings of cell phones in early adolescents' everyday lives. *J Adolescent Res*. 2011; 26:155-77.
- Oulasvirta A, Rattenbury T, Ma L, Raita E. Habits make smartphone use more pervasive. *Ubiquitous Computing*. 2012; 16:105-14.
- Madden M, Lenhart A, Duggan M, Cortesi S, Gasser U. Teens and technology 2013. Pew Research Center. [Online] 2013 [Cited 2015 August 15]. Available from: URL:<http://www.pewinternet.org/Reports/2013/Teens-and-Tech.aspx>.
- Ashiq H, Mahmood MT, Siraj SA. Use of mobile communication and its affect on social capital of college going teenager. *Inter J Res Humanities Arts Literature*. 2013; 1:45-60.
- Jamal A, Sedie R, Haleem KA, Hafiz N. Patterns of use of 'smart phones' among female medical students and self-reported effects. *J Taibah Univer Med Sci*. 2012; 7:45-9.
- Thompson L, Cupples J. Seen and not heard? Text messaging and digital sociality. *Soc Cultural Geography*. 2008; 9:95-108.
- Jackson LA, Von EA, Fitzgerald HE, Witt EA, Zhao Y. Internet use, videogame playing and cell phone use as predictors of children's body mass index (BMI), body weight, academic performance, and social and overall self-esteem. *Computers Human Behav*. 2011; 27:599-604.
- Beranuy M, Oberst U, Carbonell X, Chamarro A. Problematic Internet and mobile phone use and clinical symptoms in college students: The role of emotional intelligence. *Computers Human Behav*. 2009; 25:1182-7.
- Chen YF, Peng SS. University students' Internet use and its relationships with academic performance, interpersonal relationships, psychosocial adjustment, and self-evaluation. *Cyberpsychol Behav*. 2008; 11:467-9.
- Chen SY, Tzeng JY. College female and male heavy internet users' profiles of practices and their academic grades and psychosocial adjustment. *Cyberpsychol Behav Soc Netw*. 2010; 13:257-62.
- Kahari L. The effects of Cell phone use on the study habits of University of Zimbabwe First Year Faculty of Arts students. *Inter J Educ Res*. 2013; 10:1-12.
- Lee D, Moon J, Kim YJ, Mun YY. Antecedents and consequences of mobile phone usability: Linking simplicity and interactivity to satisfaction, trust, and brand loyalty. *Information Management*. 2015; 52:295-304.
- Billieux J, Linden MV, Rochat L. The role of impulsivity in actual and problematic use of the mobile phone. *Applied Cognitive Psychology*. 2008; 22:1195-210.
- Donegan R. Bullying and cyberbullying: History, statistics, law,

- prevention and analysis. *Elon J Undergrad Res Communis*. 2012; 3:33-42.
21. Hong FY, Chiu SI, Huang DH. A model of the relationship between psychological characteristics, mobile phone addiction and use of mobile phones by Taiwanese university female students. *Computer Human Behav*. 2012; 28:2152-9.
 22. Prather KM, Vandiver DM. Sexting among teenagers in the United States: A retrospective analysis of identifying motivating factors, potential targets, and the role of a capable guardian. *Inter J Cyber Criminal*. 2014; 8:21-35.
 23. Horsman J, Conniss LR. Investigating evidence of mobile phone usage by drivers in road traffic accidents. *Digital Invest*. 2015; 12:S30-7.
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