

Mobile Phone Use by Resident Doctors: Tendency to Addiction-Like Behaviour

Munish Aggarwal, Sandeep Grover, and Debasish Basu

Department of Psychiatry, Postgraduate Institute of Medical Education and Research, Chandigarh, India

Corresponding author: Dr Sandeep Grover, Assistant Professor, Department of Psychiatry, Postgraduate Institute of Medical Education & Research, Chandigarh 160012, India; Email: drsandeepg2002@yahoo.com

Abstract

Background: There has been a revolution in the field of information and communication with the advent of multipurpose mobile phones. They have become an essential part of our life. However, concerns have been expressed regarding the potentially adverse consequences of excessive mobile phone use as well, including its health, social and financial aspects. Aim of this study was to explore the pattern of mobile phone use among resident doctors and evaluate the same using substance dependence criteria.

Methods: Resident Doctors were asked to complete a 23-item questionnaire, specifically designed for the present study based on the ICD-10 dependence syndrome criteria and CAGE questionnaire.

Results: A total of 415 resident doctors were approached, out of which 192 responded. Eighty two percent of the resident doctors have been using mobile phone for more than five years and 72% of them have been using it for more than an hour every day. Making and receiving calls was the main purpose of use among 90% of the resident doctors, followed by texting and for using Internet services. Nearly forty percent of the participants fulfilled the ICD-10 substance dependence criteria, while 27.1% of the subjects scored two or more on the CAGE questionnaire. Finally, 23.4% of the subjects self-rated themselves to be "addicted" to mobile phones.

Conclusion: Of those with excessive use of mobile phones, some may be addicted to their use. This may impact the work performance and they may have health consequences for them (German J Psychiatry 2012; 15(2): 50-55).

Keywords: mobile phone dependence, health consequence, prevalence

Received: 8.12.2011

Revised version: 17.5.2012

Published: 9.7.2012

Introduction

Mankind has made tremendous technological advance over thousands of years from "Stone Age" technology to the present day information technology. With the advent of newer technologies, the lives of humans have become progressively easier. When a new technology comes to the market, people have curiosity to use that. In that curiosity some people tend to explore for more and more benefits and end up using the same excessively and resultantly exposing the negative consequences.

One of the important technological advancements in the last three decades or so has been the advent of the mobile phone (also known as cell phone). Over the last decade particularly,

due to availability of mobile phones to common people at a reasonable price and considering its ever-increasing utility, it is not surprising that mobile phones have become part and parcel of the life of a common man for all ages (Ling & Perderson, 2005; Madell & Muncer, 2004; Mezei et al., 2007). The various day to day uses of mobile phone include putting reminders for important activities, playing games, using calendar feature, setting up alarm (Alexander et al., 2007), increasing awareness about certain things (for example, having ring tones of vocalization of endangered species) (Bryan et al., 2007), learning (for example, parents using the mobile phones to teach their preschool wards learn alphabets (Can Elmo Help Kids Learn Their ABCs?), a ready source of camera for taking pictures in various situations, some of which have been rare pictures or footages of various calamities or joyful moments, accessing the Internet

with its own multiple utilities, etc. With more and more use of mobile phones by the younger generation, researchers have evaluated the impact of the same on the life of the users and have shown that use of mobile phone for social networking and e-mail has helped to reduce loneliness (Ogata et al., 2006) and in making friends (Kamibeppu & Sugiura, 2005).

However, data have now started emerging with respect to the negative physical and psychological consequences of excessive use of mobile phones as well. The International Agency for Research on Cancer (IARC) (a branch of World Health Organization) recently reported the possible increased risk of development of brain tumors with excessive use of some mobile phones, and the same has been reported by other researchers too (Hardell & Carlberg, 2009; IARC, 2011). Also, there are concerns that use of mobile phone can lead to impaired concentration, headache and dizziness (Szyjkowska et al., 2005; Khan 2008), increased fatigue (Khan 2008; Szyjkowska et al., 2005; van den Bulck 2007), thermal sensation in and around the auricle, facial dermatitis (Szyjkowska et al., 2005; Khan 2008), lack of sleep due to night time use and frustration (Ogata et al 2006; Khan 2008). A recent prospective study showed that at one year of follow up, increased mobile phone use has been associated with increased sleep disturbances in men and symptoms of depression in both genders (Thomee et al., 2011). Also, electromagnetic radiations have been thought to affect the sleep electroencephalogram (Loughran et al., 2005) and the melatonin production (Wood et al., 2006). Mobile phone use while driving has been associated with increased incidence of road traffic accidents and this risk is present both for the hand held and hands-free phones (McCartt et al., 2006; Klauer et al., 2006).

Though the mobile phones are associated with the increased freedom to communicate when and where a person wants and increased accessibility to others, it makes a person compelled to respond back immediately. It makes an individual always available socially and takes away the social freedom (Baron 2008). Mobile phones help parents to know the whereabouts of the young wards when they are away, but at the same time have made them to seek more rights and freedom from parents (Ling 2004). The mobile phones have become major source of managing social affairs but at the same time excessive use of mobile phone is associated with deterioration in the family life as one of the members attends phone calls ignoring those involved in the face to face conversation (Hubbard et al., 2007).

In term of use of mobile phones in the health care system, studies have shown these to be fast and effective means of contacting the staff (Ramesh et al., 2008) and the negative consequences linked to use of mobile phones are these being a source of infection (Ramesh et al., 2008).

Considering the excessive use of mobile phone, some authors have attempted to evaluate its dependence potential and various questionnaires have been developed for the assessment of problematic mobile use, psychological consequences of mobile phone use and mobile phone addiction (Dimonte & Ricchiuto, 2006; Beranuy et al., 2009; Rutland et al., 2007; Chóliz & Villanueva, 2007; Toda et al., 2006; Sanchez-Carbonell et al., 2008). Data suggest that majority of

the mobile addicts are teenagers, whose shyness and low self-esteem make them succumb to aggressive publicity marketing as a means to get in touch with people without having to meet them (Takao et al., 2009). In one of the earlier studies the dependence symptoms that have been met include excessive use in terms of economic cost and amount of use, problems with parents due to excessive use, socio-occupational dysfunction, psychological withdrawal and tolerance (Choliz et al., 2009).

According to the recent statistics, India has the 2nd largest mobile phone customer base, after China and the customer base is expanding in India at a faster pace than that of China. Studies from various parts of the world have shown adverse physical and psychological consequences of excessive use of mobile phones. However, no systemic study is available that have evaluated the abuse and dependence potential of mobile phone use in India.

In the recent times the concept of behavioral addiction has gained the attention of researchers, and it has been evaluated most commonly in relation to the Internet (Chakraborty et al., 2010). Many efforts have been made to design questionnaires and diagnostic criteria for the same. The general drift of the same is that the behavioral addictions have been understood as equivalent to substance dependence as understood by the current nosological systems, while some others have tried to understand behaviour addiction as more akin to the obsessive compulsive spectrum.

Considering the increasing interest in behavioral addiction and lack of data from India, the present preliminary study attempted to explore the pattern of mobile phone use among the resident doctors of a teaching hospital in North India. The secondary aim was to evaluate their mobile use on the International Classification of Disease, 10th edition (ICD-10) Classification of Mental and Behavioral Disorders Criteria of substance dependence syndrome (WHO 1992) and the CAGE questionnaire (Ewing 1984; Ewing & Rouse, 1970; Mayfield et al., 1974).

Methods

Resident doctors working in a large tertiary-care teaching hospital in north India comprised the population. The subjects were approached either in person or through e-mail by purposive sampling. They were explained about the purpose of the study. It was presumed that those who would respond would provide implied consent to participate in the study.

A 23-item questionnaire was specifically designed for the purpose of the study. The initial three items enquired about the duration of use in years, time spent on mobile phones per day and the main purpose of use. The other 20 items were designed in such a way as to provide information about the pattern of mobile use and whether such use fulfilled the ICD-10 criteria for substance dependence syndrome and substance dependence as per the CAGE questionnaire.

The frequencies and percentages were calculated for the nominal data and mean and standard deviation was used to

Table 1. Questions assessing the mobile use pattern

	Questions	N (%)
13	Do you call back to most of the missed calls?	102 (53.1%)
10	Do you become anxious of missing something if you have to switch off your mobile phone for some reason?	101 (52.6%)
16	Do you get irritated in the morning if you are not able to locate your mobile phone?	93 (48.4%)
14	Does using mobile phone help you to overcome the bad moods (e.g. feeling of inferiority, helplessness, guilt, anxiety, depression etc.)?	86 (44.8%)
5	Has mobile phone use led to decrease in meeting the friends in person	70 (36.5%)
19	Do you frequently participate in SMSs or phone entry competitions?	6 (3.1%)
15	Do you feel guilty about the expenditure on (or excessive use of) mobile phone?	55 (28.6%)
20	Do you think you are getting <i>addicted</i> to mobile use?	45 (23.4%)
6	Has mobile phone use has made you spend less time with friends/ family	43 (22.4%)
11	Do you compulsively respond to calls/ SMSs at places which don't permit (Class, driving, group participation)?	41 (21.4%)
8	Do you lose track of time after starting to use mobile phone for SMS, games, music etc?	35 (18.2%)
17	Do your families/ friends/ colleagues complain that your mobile phone use is excessive?	35 (18.2%)
4	Do you get upset when attempting to cut down mobile phone use?	34 (17.7%)
1	When not using the mobile, are you preoccupied with the mobile phone (Keep thinking about the previous and the future uses)?	33 (17.2%)
7	Has mobile phone use has led to decrease in socialization?	33 (17.2%)
12	Do you compulsively respond to calls/ SMSs at places where it is dangerous to do so (driving/ working at machines)?	29 (15.1%)
3	Have you made unsuccessful efforts to control/ decrease or stop mobile phone use?	27 (14.1%)
2	Do you need to use mobile phone for increased amounts of time in order to achieve satisfaction?	22 (11.5%)
18	Do you get annoyed or shout if someone asks you to decrease the use of mobile phone?	22 (11.5%)
9	Do you lie to others to conceal the extent of your use of mobile phone?	21 (10.9%)

study the continuous variables. Associations between different variables were studied by using Pearson product moment correlation and Spearman rank correlations. Comparisons were done using the Chi-square test. Kappa statistics were used to evaluate the concordance between ICD-10 and CAGE questionnaire.

Table 2. Number of participants meeting the ICD-10 diagnostic criteria

ICD-10 diagnostic criteria	Participants meeting the criteria (%)
Intense desire (Q-1)	17.2
Impaired control (Q-3, Q-8, Q-11, Q-19)	41.7
Withdrawal (Q-10, Q-13, Q-16)	82.3
Tolerance (Q-2)	11.5
Decreased alternate pleasure (Q-5, Q-6, Q-7, Q-17)	51.0
Harmful use (Q-12)	15.1
CAGE Questionnaire item	
Cut Down (Q-7)	17.7
Annoyance (Q-18)	11.5
Guilt (Q-15)	28.6
Eye Opener (Q-16)	48.4

Results

Of the 415 resident doctors contacted, 192 (42.26%) responded. Three fourth (76%) of them were males. Mean age was 27.4 (SD-2.5; range 23-36) years and the mean duration of mobile phone use was 6.1 (SD-1.96; range 1-14) years with 92.7% using the same for 3 or more years and 82.2% using the same for five or more years. The mean duration of mobile phone use per day was 1.8 (SD-1.6; range 0.16 -10) hours with 72.5% using the same for one or more hour per day. All the participants used mobile phones for making and receiving calls, 88% also used the short messaging services (SMS), 56.2% also played games on their mobile phones, 68.2% listened to music on mobile phone, 49.5% also accessed internet through mobile phone and 77.6% used other functions like organizer, alarm, camera etc.

When asked to report the most common purpose of mobile phone use 88% of the subjects used phones most commonly for making or receiving calls. This was followed by use of SMS services (5.8%), using for Internet services (3.1%), playing games (2.1%), and a few subjects described using mobile phones most commonly for listening to music (0.5%) and for other activities like clicking photos, setting alarm, using as calendar, etc. (0.5%).

Responses to questions evaluating the mobile phone use pattern have been shown in Table 1. The question "Do you call back to most of the missed calls?" was the most common affirmatively answered (53.1%) closely followed by a positive response (52.6%) to the question "Do you become anxious of missing something if you have to switch off your mobile phone for some reason?"

Based on the responses to the various questions, ICD-10 criteria were applied. For some of the criteria, responses to more than one question were considered (see table-2) and in such a scenario, if the participant answered in yes to one of the questions, then it was considered that the participants fulfills that ICD-10 criteria. Among the ICD-10 Diagnostic criteria, most commonly met diagnostic criteria fulfilled was

that of withdrawal (82.3%), followed by neglect of alternative pleasure (51.0%) and impaired control (41.7%). A few participants fulfilled the criteria of intense desire (17.2%), harmful use (15.1%) and tolerance (11.5%). Overall 39.6% of the participants met three or more of the ICD-10 diagnostic criteria for substance dependence.

Similarly the participants were evaluated on the CAGE criteria based on the responses to one question for each construct. About one-fourth (27.1%) of the participants had a score of two or more on the CAGE questionnaire. Interestingly, nearly one-fourth of the participants (23.4%) rated themselves as being "addicted" to mobile phone.

When the level of agreement between ICD-10 and CAGE questionnaire was assessed the level of agreement between the two was low (0.31). The levels of agreement between the self-rated addiction and ICD-10 dependence (0.38) and CAGE questionnaire (0.32) responses were also low.

There was a significant positive correlation between duration of use of mobile phone per day and harmful use criteria of dependence on ICD-10 criteria (Spearman's rank correlation coefficient -0.168; $p=0.023$) and presence of dependence as per ICD-10 criteria (Spearman's rank correlation coefficient -0.247; $p=0.001$).

There was no significant difference between the 2 genders on the presence or absence of ICD-10 dependence and fulfillment of 2 or more CAGE questionnaire items. In terms of individual ICD-10 criteria, no significant difference was noticed between males and females except that males more frequently fulfilled the tolerance criteria (20 males versus 1 female; Chi square value with Yate's correction - 4.15; $p=0.042$).

Discussion

In the present study, the mean duration of mobile phone use per day was 1.8 hours with 72.5% using the same for one or more hour per day. This use appears to slightly excessive, even after taking into consideration the fact that many of the resident doctors are from far off places and use the phones to keep in touch with their families and also use the same to respond while on call duty. Besides using the mobile for making and receiving phone calls, sending SMS and assessing internet, which all may be part and parcel of professional requirement, 56.2% of the participants played games on their mobile phones and more than two-third of them also used mobile phones to listen to music on mobile phone. These facts suggest that some of the doctors do use mobile phones for non-essential things.

Some of the responses to the behaviour associated with mobile phone use in the study participants can have important implications and these suggests that there is need to study the mobile phone pattern along with assessment of personality, interaction pattern with patients and fellow doctors and health care outcomes. We would discuss some of the responses, which can have important consequences.

About half of the participants responded that switching off the mobile phones for some reasons causes anxiety. This can have important health care and training complications. For example, if a doctor has to switch off his mobile phone so as to avoid getting distracted while conducting some procedure on a patient, this itself may be distressing to the doctor and would distract him from the procedure and may force him to complete the procedure as soon as possible and may lead to poor health care outcomes. Similarly from training point of view it may disturb their concentration in the class. Nearly 45% of the doctors responded that they used mobile phones to overcome bad moods, like feelings of inferiority, helplessness, guilt, anxiety, depression etc. This suggests that these feelings are very common in the resident doctors, which can again have its implications on the life of the doctors and outcome of the procedures and services rendered by them. Another alarming fact was that in about one-third of the doctors use of mobile phones was making them cutoff from friends. Similarly about one-fifth reported that their friends and family do complaint about the extent of their mobile phone use and they lose track of time. All this can have its own consequences in terms of managing team work effectively, providing support to each other at the time of stress, seeking and providing companionship to each other.

Again about-fifth of the doctors were using mobile phones at places where they are usually required not to respond. This can also have important personal, training and rendering health services.

All these suggest that there is an urgent need to carry out detailed research in the area of pattern of mobile phone use by the doctors and the adverse consequences/outcomes of the same. Based on the finding of the same appropriate guidelines need to be formulated for the mobile phone use and the doctors needs to be made aware of the negative professional consequences of their mobile phones.

Depending on the various definitions (self-evaluated, ICD-10, CAGE), about one-fourth to two-fifth of the doctors had features suggestive of dependence. However, these figures should not be taken as true prevalence, because in the present study, no distinction was made about the essential and non-essential use of mobile phones. However, these findings do suggest that excessive mobile phone use also should be looked from behavioural addiction point of view and specific criteria should be formulated for the same.

This study has many limitations. Being a preliminary study, it was based on self-rated questionnaire with dichotomous yes/no responses. The sample was not random. The response rate was rather low. Further we did not evaluate the personality, psychiatric morbidity, stress levels etc. Hence some of the usage of the mobile phones as reported affirmatively by some of the subjects may be actual consequence of these variables rather than reflective to true excessive non-essential use of mobile phones. Further the study included a relatively young group, with a relatively high educational level cannot be generalized to the normal population.

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