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Research article

A STUDY ON SOME PSYCHOLOGICAL HEALTH EFFECTS OF CELL-PHONE USAGE AMONGST COLLEGE GOING STUDENTS

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ABSTRACT

Background: Cell phones have come to stay. Their use without any knowledge of their harmful effects like cancers and other health effects is not 'quite' safe. Studies on cancers due to electromagnetic radiations from cell phones are available but there is a need to research on the detrimental physical and psychological effects esp. on rampant users like college-goers. This study focused on certain psychological or mental health effects of cell phone usage amongst students pursuing professional courses in colleges in a big city. **Materials and methods:** Students of both sexes in the age group 17-23 yrs from urban and rural backgrounds were selected at random and administered a pre- tested questionnaire which included aspects related to few common adverse psychological health signs and symptoms attributed to cell phone over-usage. **Results:** Headache was found to be the commonest symptom (51.47%) followed by irritability/anger (50.79%). Other common mental symptoms included lack of concentration and academic performance, insomnia, anxiety etc. **Suggestions:** This study confirms that the younger generation, who are the most frequent cell phone users, needs to be aware about the adverse health effects of cell phone usage esp. the mental aspects and take preventive measures to minimize and control the same. Less dependence on the device, a curtailing time period spent on talking, communicating more by texting, etc. are some of the practical measures suggested.

Keywords: Cell phones, adverse psychological health effects

INTRODUCTION

The first handheld mobile phone was demonstrated by John F. Mitchell and Dr Martin Cooper of Motorola, almost four decades ago, in 1973, using a handset weighing around a Kilogram. In 1983, the Dyna TAC 8000x was the first mobile set to be commercially available. In the last 20 years, worldwide mobile phone subscriptions have grown from 12.4 million to

over 5.6 billion, penetrating about 70% of the global population¹. Though a Godsend for better communication and reasons of convenience, regular and constant mobile phone usage, has now become a considerable cause of alarm and an important public health problem. There have been reports of health hazards, both mental and physical, in people of all age groups. While some

of these effects are critical like cancers, there are others that cause definite morbidity. On 31 May 2011 the World Health Organisation confirmed that cell phone use indeed represents a health menace, and classified such phone radiation as a carcinogenic hazard, possibly to humans². Not surprisingly then, this addiction of humans to mobile phones has even led to a new term being coined – Nomophobia- the fear of being out of mobile phone contact! A study in Britain found that about 58% of men and 48% of women suffer from this phobia, and an additional 9% feel stressed when their mobile phones are off¹. In spite of some unfavorable health effects, the usage of cell phones has increased dramatically especially since the time they have become more affordable and available³. Almost 87-90 % of the population in an advanced country like the United States of America, use cell phones, and a sizeable number of these are school and college going students⁴. In India too, we all see that the scenario is quite similar with people from all walks of life, educated or not so, and belonging to almost various age groups; owning and dependent on, a cellular phone. Cell phones have become a ‘part and parcel’ of our daily lives. One alarming fact is that many of these devices reach the market without any safety testing on their electromagnetic radiation⁵. The brighter side is that the concerns are also being given due attention by manufacturers lately. Today's mobile phone models have to adhere to a strict regime of maximum SAR (Specific Absorption Ratio) limit. Cell phone use by children and adolescents is a special area of concern. Due to their relatively smaller heads, thinner skull bones, and higher tissue conductivity, children absorb more energy from the electromagnetic fields of cell phones leading to earlier onset of some psychological and physical health effects⁶. There have been many studies about the risk of ionising electromagnetic radiation due to cell phone usage, towards cancers like Glioma, Acoustic Neuroma, and some Salivary Gland tumours; but few on the ‘other’ health effects⁷. Hence a study

on the impact of mobile phone use on the mental health of students in an urban college setting in the densely populated city of Hyderabad (Andhra Pradesh) was deemed apposite.

MATERIALS AND METHODS

The methodology adopted in the present study has been divided into three sections – sample, study design and the process of obtaining data and analysis.

Sample:

Inclusion criteria:

After due ethical clearance from the concerned authority, students of both sexes within the age group of 17-23 from both rural as well as urban backgrounds enrolled in professional courses such as engineering, medicine, pharmacy, were included in this study. The colleges selected were situated near to each other, for easy logistics. Any person, staff, visitor, worker, etc. not studying in the above mentioned colleges were not included in the study. Similarly any student having an age lower than 17 years and above 23 years was excluded.

Subjects:

Since each of the colleges had over five hundred students, a few from each were included in the study so that the assessment was would be relatively accurate with minimal “bias”.

Study design:

The study plan was a Cross sectional or Prevalence one. Simple observations were made, based on a single examination of a cross-section of a population by administering a pre-tested questionnaire, at one point in time. The study focused on the distribution of the effects of cell phone usage in the population included as etiology was known. Accordingly, a “retrospective study” was carried out.

Process of obtaining data and analysis:

The above mentioned colleges were visited with the questionnaires that had just ‘Yes’ or ‘No’ answers. All the students in the selected classes attending college on the day the survey was administered were eligible to participate. Thirty

minutes of recess or free time was the chosen duration. Due information was given to the respondents about the purpose of this study. Voluntary consent was obtained after explaining to them the purpose of this study. Confidentiality of records was assured. Data collected was compiled and summarized for further analysis.

Duration:

The survey was conducted for a period of 2 months between July and August 2012.

RESULTS

a. General Information:

The total number of respondents was 459. Two hundred and twenty (48.5%) of the respondents were from the medical college and the rest (236, 51.5%) from non-medical courses.

Table 1: No. of students included in the study, from diverse professional courses

Professional Course	Nos. (%) (n=459)
Medical	223 (48.5)
Engineering	56(12.2)
Pharmacy	181(39.3)

As mentioned already, the age group of 17-23 years was chosen for the present survey. It was noted that a higher percentage of subjects (363, 79%), were below 20 years of age i.e. from 17-20 years. An almost equal number of females (228, 49.7%) and males (231, 50.3%) participated in the study. A majority (293, 63.8%) of the students included in the research understandably belonged to an urban background as compared to 166 (36.2%) who came from a rural milieu. On the aspect of possessing a cell phone, it was noted and not surprisingly so, that a very high percentage (441, 96.1%) of the subjects had one.

b. Psychological Health Effects:

The objective of this study, as mentioned before, was to find out about the adverse psychological or mental health effects amongst students using cell phones, some of which they themselves may not be aware of, and to spread awareness amongst them so as to help reduce those, if possible. This part of the questionnaire was administered to all those 441 students who owned a cell phone. On an inquiry about existing illnesses, few (10, 2.3%) of the students mentioned that they were already suffering from ailments like asthma and migraine. The commonest complaint was that of headache.

Almost 52% (227) of the students carped about and attributed frequent attacks of headache to their continued usage of mobile devices. Again, 224 i.e. more than half the subjects (50.8%) admitted that they got irritated or angry over things told to them on the cell or by the end of the day by which time they had used their cell for prolonged duration. Two hundred and nine (47.4%) students responded positively when queried on lack of concentration. They perceived that they were more or less disturbed by frequent calls/messages from people, which did not allow them to proceed with their academic activities at a stretch. One hundred and seventy (38.5%) said that they got anxious while using the phone. Certain information or messages communicated to them at odd times caused apprehension. This can be understood as with the advent of cell phones, news is passed to one another, almost on an immediate basis. One hundred and fifty six students (35.4%) did answer in the affirmative about some amount of sleeplessness. They complained of getting sleep much later after they retired for the night, in spite of a 'tiring' day and / or disturbed sleep in which they woke up several times in-between. Lack of academic performance was attributed to increase in cell phone habit, by 153(34.7%); while the rest did

not think that was the actual cause. Frequent disturbances due to communication from friends or parents did affect continuity and attentiveness in studies, and the subsequent marks secured in the examinations were proof of fall in scholastic performance. One hundred and nine (24.7%) of the respondents said that advent of some sad news, differences with close friends or siblings / parents, in that they did not respond to their calls/texts, etc. did lead to them being sad and gloomy and they attributed the same to cell phones. One hundred and five students (23.8%) said that they were more forgetful than they were before or had frequent memory lapses due to dependency on various features in cell phones which stored information. Important days, activities and events were no longer required to be memorised and hence slipped away from

recall. One hundred and two (23.1%) reported in the confirmatory about their habit of lying. They did lie about their location and as to what they were doing when asked by someone on the other end of the phone, due to various reasons. When inquired about the lack of affection from friends and parents, 91 respondents (20.6%) did confirm the same. When friends and close ones did not respond to their calls or “cut them off”, and when their messages were not answered to; these persons felt ‘unwanted’. Many students did feel indisposed due to the continuous stress caused by cell phones in their day-to-day lives. Vague and non-specific symptoms resulted in them missing their classes in the college. The main symptoms detected amongst the subjects are summarized in Table 2 below.

Table 2: Adverse psychological health effects, in descending order of occurrence

Mental health symptoms	Nos. (%) (n=441)
Headache	227 (51.5)
Irritability	224 (50.8)
Lack of concentration	209 (47.4)
Anxiety	170 (38.5)
Lack of sleep	156 (35.4)

Contrastingly, some of the health benefits which were mentioned by the users of cell phones were that listening to music and talking to people helped them relax. Another benefit they mentioned was that it helped them get some exercise as some were in the habit of walking or jogging during their talks or while listening to music.

DISCUSSION

a. General Information:

An almost equal number of subjects from both medical and engineering colleges were included in this study to avoid any bias that can result from the presumption that medical students had greater awareness about adverse health effects of cell phones and its radiations than their

counterparts in other professional colleges. Similar studies on specific groups have been carried out. Sara Thomee et al ⁸ of Gothenberg, Sweden and her colleagues, carried out a research on perceived stress, depression, sleep disturbances and other mental symptoms on students of medicine and information technologies. In this study, a majority of the subjects were below 20 years of age. A similar survey was conducted by MACRO in Mumbai in 2004⁹ where respondents were in the age group 15-29 years. They had observed that exposure to cell phones had increased drastically in the past few years among those under 20. Almost an equal number of male and female participants were included in this study. There is a relative increase in the number of female students

registered in professional courses today such as pharmacy, medicine and engineering, as compared to the past. In the landmark MACRO study more females participated in the study as compared to males⁹. Most respondents here belonged to the urban background. Probably there is a rural to urban shift due to availability of better educational facilities as compared to their original place of stay. The MACRO study has comparable results. Almost all students owned a cell phone. Of the 4% who did not, it was revealed that they had either lost theirs and / or would procure one shortly. It is therefore clear that cell phones are a basic necessity in today's life and amongst students almost all have one. In the 2008 study of the American Cancer Society, 87% of the population in the USA possessed a cell phone⁴.

Psychological Health Effects:

Though it is understood that there can be numerous causes of headache; stress of studies and daily travel as well as exposure to pollutants, etc. being a few important ones, yet in this study it was assumed that the perceived view of the respondents was correct. That more than 50% complained of the same is a cause of worry and necessary suggestions were made to prevent headache. More studies are required in this direction, as existing literature is limited. Also more than half of the subjects mentioned that they did get irritated at things told to them over phone. Many attributed that the habit of listening to music also made them irritable by the end of the day. Studies done in Sweden¹⁰, on teenagers, disclose that restlessness and fatigue do result amongst those who use their phones excessively. Another common symptom observed was that many students complained of inability to concentrate on studies and other important aspects of their daily lives, due to phone calls or texting activities to which they had to respond to, mostly on an immediate basis. Jennifer Meckles in her study reports that "attention" gets affected due to increase in mobile phone usage¹². Anxiety - a displeasing feeling of fear and concern was

seen among approximately two-fifths. Subjects complained of performance-related anxiety, especially with regard to examinations, so as to get better career opportunities later. Francisca Lopez's study states that most mobile addicts are people with low self-esteem and are prone to develop friction in their social relations. They feel the urge to be constantly connected and / or be in contact. If they are deprived of their cell phones, regardless of the reason they tend to become anxious and irritable. Lack of sleep or insomnia in 35%, was the next common symptoms observed among this class of subjects the students in this study. Besides, long hours of travel and the stress of studies, continuous usage of cell phones was thought to be responsible for this outcome. Sara Thomme et al found out that high mobile phone use was associated with sleep disturbances and symptoms of depression⁸. Gaby Badre reported the same thing from Sweden¹⁵. The Daily Galaxy reports that top sleep experts have raised serious concerns over the more than sufficient evidence showing that radiation from headphones affects deep sleep¹¹. Almost 35 % also confessed that they lagged behind in academics, due to their cell phone addiction. In the study by Ms Jennifer Meckles¹² conducted last year, a similar finding on lack in "performance" has been documented. As a trait was inquired into, to relate to depression, actually. This term was used as it was assumed that the non-medical students may have certain amount of stigma attached to the word-depression. One-fourths of the students in the study told that sad happenings or souring relationships conveyed to them on their cell, resulted in gloominess and depression. "Leisure boredom" is reportedly due to dependency on cell phones as per Ms Alexia Corbett's study of impact of cell phones on social interactions and interpersonal relationships¹⁴. In a cohort study done by Sara Thomee et al, 50% of the men and 65% of the women confirm that they lost interest in things and/or felt depressed or hopeless, due to mobile devices⁸. Many confessed to not

remembering important events like birthdays, anniversaries etc. due to constant reminders they expected their cell phones to give them. Such dependency resulted in memory lapses elsewhere too, wherein information was not stored in the cell device on time. Md Ashrafur Rahim¹³ in his thesis paper has probed into this aspect and found social relations getting affected due to such slips. Habit of lying or dishonesty is another area of concern especially among the younger generation. A good number (23%) admitted that they either did not tell their exact location when asked over the cell phone or indulged in not telling the truth after giving blank calls. This compares with The Pew Internet and American Life Project found that 39% of cell-users aged 18-29 say that they are not always truthful about where they are, when they are on the phone³. A few of the respondents stated that they did not receive adequate love and affection at home. It was found that many a household had avoidable quarrels amongst siblings, ego troubles with parents and other related problems due to the subject's regular use of cell phones. Md Ashrafur Rahim has probed into this characteristic in his thesis paper¹³. That mobile addicts tend to neglect obligations of important activities and drift apart from friends and close family, has been documented in Francisca Lopez Torrecillas' research too, on mobile phone addiction and severe psychological disorders¹⁰. It comes to light then that 'alarming' percentages of the cell phone using student community in professional colleges suffer from common and uncommon symptoms of psychological nature which cannot and should not be ignored. Some literature on the matter of health benefits was reviewed, since few of the students did mention exercise and relaxation as pluses of having a cell phone. Scientists have found out that phone radiation actually protected the memories of mice programmed to get Alzheimer's disease. They are now testing more frequencies to see if they can get better results. This study is being carried out by the Florida Alzheimer's Disease Research

Centre and is published in the Journal of Alzheimer's Disease¹⁶. PJ Skerrett in Harvard Health edition of 23 February 2011 mentions that cell phones stimulate brain activity¹⁷.

Suggestions: During the process of data collection, the investigators interacted with the respondents and gave short talks on minimizing undesirable health effects due to cell phone usage. The point on limiting the usage of the cell phones in two aspects was emphasised upon – cutting down both on the number and duration of the calls. It was informed to the clientele that, though cell phones have many obscure short term effects like generalised aches and pains, the long term effects esp. those affecting the psychological aspects were more manifest and well-defined. The subjects were also warned about electromagnetic radiations emanating from the phones as the cause of various cancers of the human body

CONCLUSION

Addiction to a cell phone device and lack of adequate knowledge about the harmful effects due to cell phones could be the important reasons that have contributed to the increased incidence of some psychological health symptoms amongst the younger college-going generation

It is thought that side-effects due to cell phone usage esp. those that affect the health of a person can be minimized or eliminated by spreading awareness on the subject matter especially on restricted use and not getting habituated to the devices.

More surveys need to be conducted amongst various strata of the society, in urban as well as rural settings, in younger as well as older age groups, among the educated and not so educated and in different parts of the country, in this regard. The effects of cell phone usage need constant surveillance and monitoring and an effective reporting system in this regard can go a long way in helping authorities to formulate policies that will check the ill-effects due to cell phone usage.

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