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Mobile phone usage and its effect on health among university students

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Abstract
Introduction: Mobile phone radiation and health concerns have been raised from very first year of its innovation and every researcher tries to find out the actual hazard to human health.
Objective: To find out the percentage of students who have awareness of the hazards of mobile phones**.**
Methodology: Study design: Present study was a cross-sectional study and co relational design. Sample size: 330. All participants completed Perception questionnaire on phone hazards which consists of 24 questions and 312 students filled the Questionnaire properly.
Statistics: Data were analyzed using IBM SPSS v21.0 software.
Results: In this study 132 (41.5%) males and 186 (58.5%) females were included. Only 1 male subject was having mobile phone for 14 years and most of the subjects have been using their mobile phones for 5 years. 4 most common locations for placements of mobile phone were chosen in the research and placement of mobile in pocket was most popular choice. Pouch is chosen by 7 (22%), pocket (73.6), around neck only 1 (0.03%), in bag 63 (19.8%) and for any other 13 (4.1%) subjects
Conclusion: In our observation and cross sectional study we perceive that higher percentage of students is aware of physical hazards by mobile phones and other electronic media devices.

Keywords: youth, addiction, mobile phone, survey and questionnaires

1. Introduction

The mobile phone industry has been one of the fastest growing industries of recent times. Now days, people using approximately 1 Billion mobile phones worldwide, and it is expected to reach 1.6B lines by year 2005. At present, India has 287 million mobile phone users and nearly 1,15,000 towers which emit electromagnetic radiations [1, 2]. Mobile phone radiation and health concerns have been raised from very first year of its innovation and every researcher tries to find out the actual hazard to human health especially, for the same WHO also have concerns, IEEE committee on Man and Radiation (COMAR) also have serious public safety concerns about the exposures of public in front of radio frequency (RF) and microwave (MW) field from hand held, portable and cell phones. This is because mobile phones use electromagnetic radiation in the microwave range [3]. In addition to the standard voice function of a mobile phone, current smart mobile phones may support many other services, and accessories, such as Short text messaging, email, short data internet packet, video gaming, Bluetooth, infrared, camera with video recorder and MMS for sending and receiving photos and video, MP4 player, radio and GPS [4].

It allows users to keep pictures, memories, personal information, correspondence, health and financial data in one place. Smartphone high definition capacity, handheld devices combine advanced computing capability, internet communication, information retrieval, video, e-commerce and other features, that makes the device is one of the mandatory equipment for many people [5].

Sukhdeep kaur *et al.* 2002 [6] conducted a study on effects of mobile radiations and its prevention and concluded that mobile phone cause short term and long term effect on health. long term usage of mobile phones cause health hazards such as cancer, high blood pressure, miscarriage, DNA damage, hormonal imbalance etc. short term uses can cause conditions like insomnia, depression, headache, sleep disorders etc.

Recent studies conclusion from all over the world suggested that mobile emitted radiation might double the risk of emerging cancer on the ipsilateral side of head used, increased brain EEG activity, can cause damage to surrounding nerves around ears and may damage the blood brain barrier. Also these studies evidenced that biological effects are possible without any increase in temperature of tissues which are exposed to current radiation level [6, 7].

Motuma Adimasu Abeshu *et al.* in 2015 studied the physical health hazards of mobile phone use and concluded that mobile phone emit radiations between 900 to 1800 MHZ and they concluded that emitted radiation of mobile phone use is initiating or enhancing the course of carcinogenesis.

Radiations from mobile phones during communication rise body temperature by as much as 0.1°C. This rise in cellular, tissue or body temperature is found to have effect on the body. The extent of this heating depends on several factors including radiation frequency, size, shape and orientation of the exposed part, duration of exposure, environmental condition and the angle at which the phone is held and also the model of the cell phone [2].

Non-thermal effects includes neurological (raise the risk of

brain tumors), cardiovascular (electromagnetic interference in functioning of implanted pacemakers), endocrine and non-specific symptoms (dermatological, neurasthenic and vegetative symptoms, increased risk of overweight). Aim of the study was

- To find out the percentage of students in GJUS&T who have awareness of the hazards of mobile phones
- To find out which of the hazards of mobile phone use has greater perception among GJUS&T students.
- To account the mobile phone hazards, which is faced by university students?
- To find out at which age students start using phone and average relation between age and time period of caring phone.
- Evaluate the hazards of mobile phone uses in GJUS&T university students.

2. Methodology

2.1 Sample Size

A total of 330 university students who met inclusion criteria (University students of GJUS&T and Co operative subjects) were included in cross sectional study. If any student had Communication disorder / hearing disorder then he/she excluded from study.

2.2 Sample Source

University students of GJUS&T and Cooperative subjects

2.3 Outcome Variable

The primary outcome measure is Perception questionnaire on phone hazards which consists of 24 questions and 312 students filled the Questionnaire properly.

2.4 Procedure

All of them were explained the significance with implications of the study and consent form was taken. All the questions were explained if required. The questionnaire contains question about their personal identification information, their course, joining year of GJUS&T university, question regarding time period of using mobile phone, number of mobile phone currently they have, brand name of mobile phone, average number of calls dialed or received, average number of call duration, average number of SMS received or sent per day and students were given fillips to fill their answers. Some of questions were contains options to fill their answers which includes location of placing mobile phone, ear used while talking on mobile phone, some possible health hazards which were associated with to cell phone usages. Some of questions were given with yes or no options that are using any mobile phone accessory, using of mobile phone while driving, students awareness of mobile phone hazards and some actions to minimize the unwanted effects of usage of mobile phone. Then data was obtained question wise and analyzed.

3. Data analysis

Data for 312 subjects was analyzed using SPSS.17 version software. The description table and frequencies were obtained for all subjects question wise.

4. Results

In this study 132 (41.5%) males and 186 (58.5%) females were included. Only 1 male subject was having mobile phone for 14 years and most of the subjects have been using their mobile phones for 5 years (figure 1).

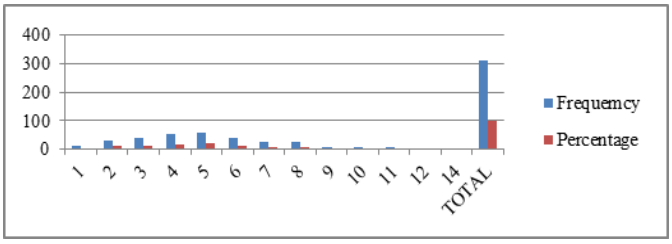

Fig 1

4 most common locations for placements of mobile phone were chosen in the research and placement of mobile in pocket was most popular choice. Pouch is chosen by 7 (22%), pocket (73.6), around neck only 1 (0.03%), in bag 63 (19.8%) and for any other 13 (4.1%) subjects (figure 2)

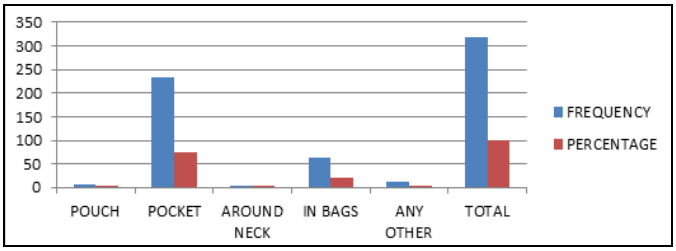

Fig 2

Right ear was mostly used by the subjects 202 (63.5) and 47 (14.8) subjects used left for taking on mobile phone (figure 3).

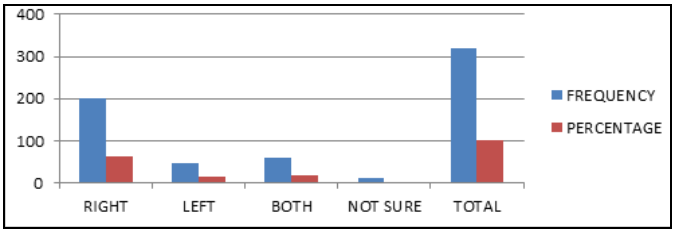

Fig 3

In responding of question 'using any cell phone accessory' where Bluetooth and hand free options are given. 48(15.1%) subject chosen options, 32(10.1%) subject choose only Bluetooth, 115(36.2%) subject choose only hand free and 123(38.7%) subject rejected both options (figure 4).

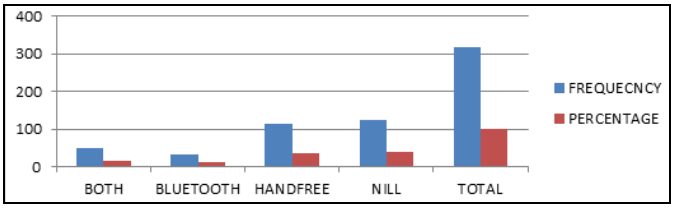

Fig 4

Most of the subjects had given yes answer to question "aware of the several unwanted effects of using the cell phone" that is 265 (85.48%) and only 45(14.52%) subjects gave no answer (figure 5).

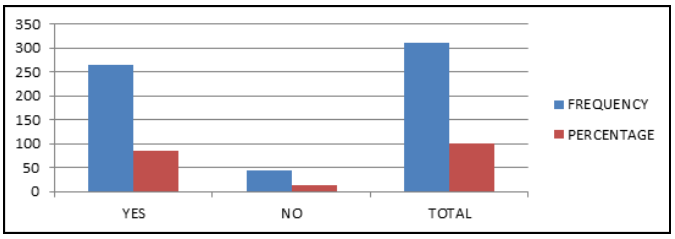

Fig 5

Most subjects agreed that mobile phone usage can cause headache, sleep disturbance and loss of mental attention and most disagree that mobile phone can cause constipation, diarrhea and tachycardia. Very less subjects agree that mobile phone usage can cause loss of mental attention, dizziness and memory loss (figure 6)

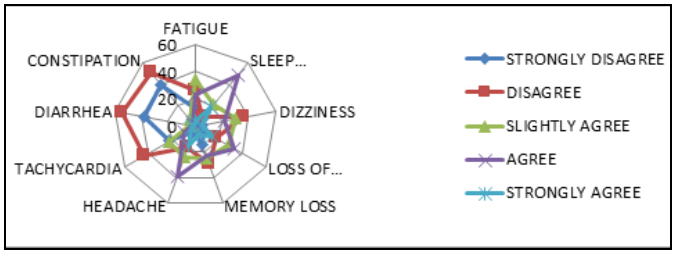

Fig 6

Discussion

The present study was conducted to find out the impact of mobile phone usage and generalized the mobile phone hazards among GJU S&T university students who are using mobile phones since last at least 2 years. This study is helpful to minimize the risk of mobile phone hazards, risk of using mobile phone while driving, mood disturbance, and stress elevation. Steven Spielberg said "Technology can be our best friend, and Technology can also be the greatest party popper of our lives. It interrupts our story, interrupts out ability to have a great thought or a daydream, to imagine something wonderful, because we're too busy bridging the walk from the cafeteria to the office on our cell phones."

Most of the subjects have given their other experiences regarding mobile phone usage hazards that include hands or finger pain for long time usage of mobile phone. Cervical pain or sometime development of forward head posture and most of subjects had discussed about eye pain or eye irritation due to long time mobile phone usage. Sara Thomee *et al*., had done a prospective cohort study on mobile phone use and various psychological factors like stress, sleep disturbances, and symptoms of depression among young adults and concluded that high frequency of mobile phone use at baseline was a risk factors for reporting sleep disturbances and symptoms of depression for men and women at 1 – year follow up.

Our study result supported by Latha Rajendre Kumar *et al.*, (2011) [4] study on awareness of mobile phone hazards among university students in a Malaysian medical school and concluded that the perception of mobile phone hazards among AIMST University students was found to be 62%.

Vandana Goswami *et al.* (2006) conducted a study and suggested that adolescent's is more inclined towards using mobile phones for smart activities other than communication than older generation because in adolescence stage, people are more aware about changing fashion trends and style, constructing them more Tech savvy which creates certain behavioral psychological disorders. The excessive use of the mobile phones is followed alarming situation towards the hazardous effects of cell phone radiation like Fatigue, headache, decreased concentration and local irritation and burning. This study supports our hypothesis of study.

Mobile phone usage can cause physical stress in the body in addition to mental interruptions as they have been addicted. When the body experiences a stress even the "Flight on Fight" response is triggered. Certain stress hormones are released from the adrenal glands, the first on which adrenalin whose effects includes rapid heart rate, High energy level, High Blood Pressure, muscle contraction, reduced breathing etc. those effects are not harmful if they only occur for a short period of time but can have in case of long periods and some of this kind of effects are seen in students of GJU S&T. Some psychiatrists suggested that addiction of mobile phone is like to be similar of any other kind of addiction and it has become one of the most prevalent non-drug addictions since 2003. Many of other research scholars (Park, 2005) have reported that some of the mobile phone users are more dependent on their mobile phones than they themselves are aware.

In our study the relative higher percentage of university students are found to be agree that mobile phone usage has impact on sleeping quality or other sleeping disturbances. The study done by Sara Thompson also concluded that high frequency of mobile phone use at baseline was risk factor for mental health outcomes at one year follow up among the youth (mobile phone) addicts and This mental health risk was greatest among mobile phones perceivers those who are to be more stressful [11].

5.1 Future scope

A large number of populations that is officers, teachers or general population may involve in the further studies. Sample can be collected from different diversity to rule out the methods of reducing the adverse effects of mobile phone usage.

5.2 Limitation

Samples were collected from a localized density and only students were included.

6. Conclusion

In our observation and cross sectional study we perceive that higher percentage of students is aware of physical hazards by mobile phones and other electronic media devices. But is found that they are facing difficulties to minimize the use of

phones as it has become a important part of their personal, professional and social life. On asking them how you cope with the hazards of mobile phones, a little percentage of students suggest to decrease the duration of phone calls or using mobile phones. So it is concluded that it is very challenging for healthcare professionals that how to reduce or minimize the adverse effects of mobile phone or other electronic media devices as youth could not reduce the use of media gadgets although they are aware about the adverse effects of usages of these devices. So we can only advice them some ergonomics to cope from the hazardous effects.

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