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RESEARCH ARTICLE

Prevalence of Phantom Vibration Syndrome and Phantom Ringing Syndrome (Ringxiety): Risk of Sleep Disorders and Infertility among Medical Students

Mehtab Alam^{1*}, Muhammad Sameer Qureshi¹, Ayesha Sarwat², Zeba Haque¹, Muhammad Salman Masroor³, Muhammad Abdullah Makki³, Ibad-ur-Rehman Baig³, Muhammad Saad Munir⁴, Moiz Ehtesham⁴, Saad Aslam⁴.

1. Department of Biochemistry, Dow International Medical College, Dow University of Health Sciences, Ojha Campus, Karachi, Pakistan.
2. Department of Psychiatry, Dow International Medical College & Dow University Hospital, Dow University of Health Sciences, Ojha Campus, Karachi, Pakistan.
3. Third Year MBBS student, Dow International Medical College, Dow University of Health Sciences, Ojha Campus, Karachi, Pakistan.
4. Second Year MBBS student, Dow International Medical College, Dow University of Health Sciences, Ojha Campus, Karachi, Pakistan.

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*Corresponding Author

Mehtab Alam

Abstract

Modern-day market of wireless communications is developed at a very rapid growth. Different features of entertainment like camera, internet, video games, etc. are major causes of popularity of mobile phones among young generation. In Karachi, Pakistan almost everyone has a mobile phone. Excessive use of mobile phone is causing serious health issues related to psychology and social behavior. This study was designed to determine the prevalence of newly reported disorders, like Phantom Vibration Syndrome, Phantom Ringing syndrome (Ringxiety), Nomophobia and possible risk for sleep disorders and infertility among medical students in Karachi, Pakistan. The study was based on a questionnaire which was framed after vigorous literature review. Around thirty questions were developed to achieve the objectives. Data was collected from medical students of Dow International Medical College, Karachi, Pakistan. The data was analyzed using software named as Statistical Package for Social Sciences (SPSS). The frequency of Phantom Vibration Syndrome on daily, weekly, rarely and never observed basis was found to be 19%, 18%, 56% and 7% respectively. Overall 93% students felt Phantom Vibration Syndrome but in different frequencies. Majority of the students (70%) kept their mobile phones in their trousers' pockets. Around 10% students kept their mobile phones in upper pockets while 6% students preferred to attach their mobile phones with their belts. Only 14% students answered that they kept their mobile phones in places other than mentioned above. Around 59% students woke up from sleep upon hearing mobile phone ringtone. The percentage of students using mobile phones prior to sleeping was found to be very high, i.e., 93% and 67% students could not live without mobile phones. Mobile phone usage is contributing a major role in increasing psychological stress and related problems among medical students of Karachi, Pakistan.

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Introduction

The deafness of Alexander Graham Bell's mother and wife prompted him to invent telephone in 1876. The popularity of this device led to the introduction of new technologies like mobile phones, smart phones, pagers etc. As stated by Aristotle, "Man is by nature a social animal", telephone and other communication devices have become the primary source of communication among societies. Now, mobile phones have become a necessity. The use of modern technology has become prevalent in this era of advanced science. If we look around, we shall witness that life appears to be difficult without these inventions; people can easily get connected to their loved ones. On the other hand, it has noxious effects on human health. These devices function on the basis of radiowaves, a form of non-ionizing radiation. In order to access signals, these emit radiowaves that radiate in every direction, thereby affecting human body and penetrate easily into soft tissues (Hamada et al., 2011). Uncontrolled and hence, alarming increase in the use of mobile phones especially among youth has revealed changes in psychological and physiological behaviors. The list of self-reported symptoms increases day by day including but not limited to headaches, warm sensation near the ear with pain, fatigue, lack of concentration, musculoskeletal symptoms, stress, sleep disorders, feeling of being overloaded, feelings of guilt in case of not replying to all calls and messages, mobile phone addiction, etc. The higher the level of leisure boredom one experiences, the higher the likelihood one will be addicted to the mobile phone (Thomee et al., 2011).

Addiction enhances seeking behavior which is why addicts are unable to accept negative effects of the substance causing addiction. Research on radiation emitted by mobile phones is increasing exponentially. New terminologies like Phantom Vibration Syndrome (pseudo-sensation that mobile phone is vibrating), Ringxiety (anxiety due to mobile phone ringing), Phantom Ringing Syndrome (pseudo-sensation that mobile phone is ringing), Nomophobia (fear of being out of touch from mobile phone) are being used to express symptoms caused by long term usage of mobile phone (Bragazzi et al., 2014, Lin et al., 2013, Subba et al., 2013, Rothberg et al., 2010). Phantom Vibration Syndrome or Ringxiety was observed only in three countries so far as 78.1% in Taiwan (Lin et al., 2013), 34.5% in India (Subba et al., 2013) and 68% in USA (Merhi, 2012). The data was collected only from selected population i.e., medical staff and students. Beside 242 independent or dependent countries/territories in the world, having data on Phantom Vibration Syndrome for only three countries (1.2% of total countries) shows the negligence and unhealthy effects of mobile phone radiations as neglected area of research.

Methods:

This was a cross-sectional observational study done on a group of medical students studying at Dow International Medical College, Dow University of Health Sciences, Karachi, Pakistan. The study was conducted from January 2014 to April 2014. A questionnaire was designed having twenty-nine questions which were enough to explore the prevalence of Phantom Vibration Syndrome and its consequences on sleep and fertility. Around 150 questionnaires were filled with the consent of the study participants. Average time of 10 minutes was taken by the participants for filling in the form. All the questions except for some descriptive ones were given numeric codes. Data entry and analysis was done using SPSS software.

Results:

The data on the prevalence of Phantom Vibration Syndrome among medical students of Dow International Medical College, Karachi, Pakistan is expressed in the form of bar graph and pie chart as inlet in Figure 1. The frequency of Phantom Vibration Syndrome on daily, weekly, rarely and never observed basis was found to be 19%, 18%, 56% and 7% respectively. It means overall 93% students felt Phantom Vibration Syndrome but in different frequencies.

In Figure 2, the percentage of number of places where students preferred to keep their mobile phones is presented. Majority of the students (70%) kept their mobile phones in their trousers' pockets. Around 10% students kept their mobile phones in upper pockets while 6% students chose to attach their mobile phones with their belts. Only 14% students answered that they kept their mobile phones in the places other than mentioned above.

Sleep disturbance caused by mobile phone ringing was observed and mentioned in Figure 3 according to which 59% students woke up from sleep when they heard mobile phone ringing. When students were asked whether they used mobile phone before sleeping, 93% replied in affirmation as showed in Figure 4. Around 67% students answered that they could not live without mobile phone thus indicating Nomophobia.

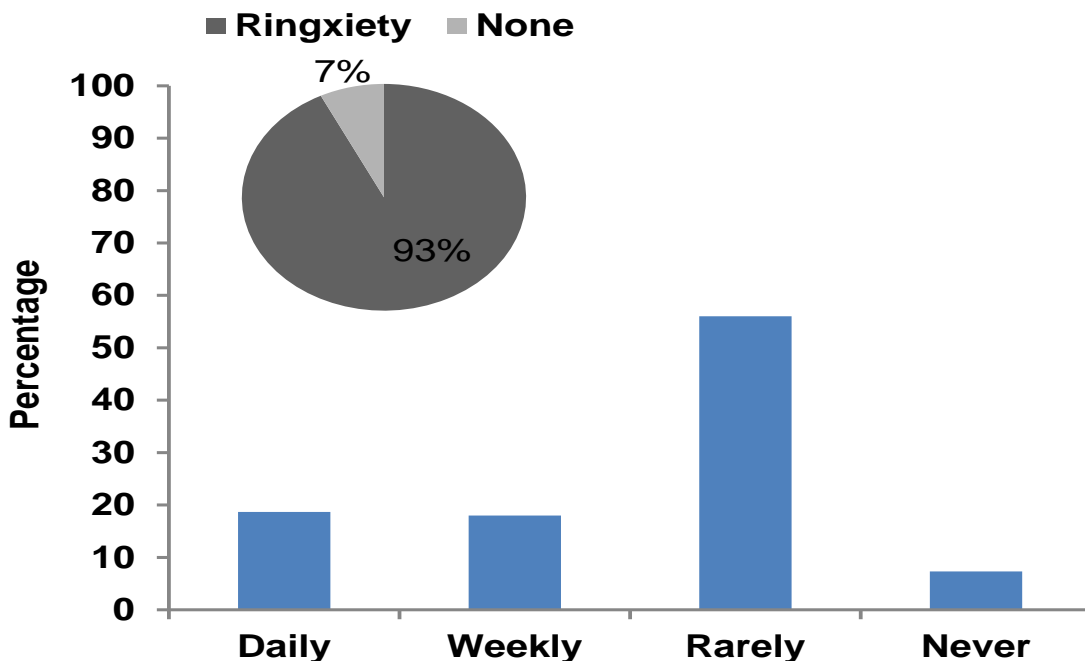


Figure 1: Prevalence of Phantom Vibration Syndrome (Ringxiety). Bar graph shows the frequencies of phantom vibration syndrome in percentage. The total percentage of Ringxiety observed is mentioned in inlet.

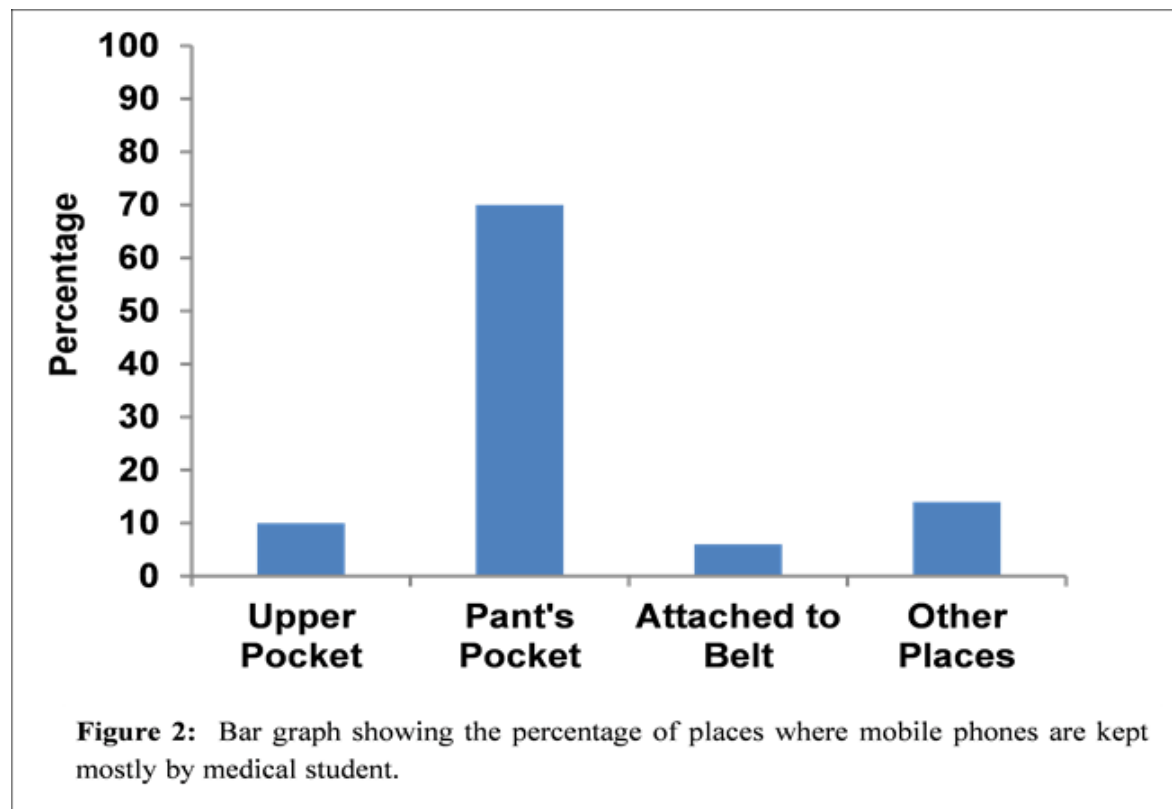


Figure 2: Bar graph showing the percentage of places where mobile phones are kept mostly by medical student.

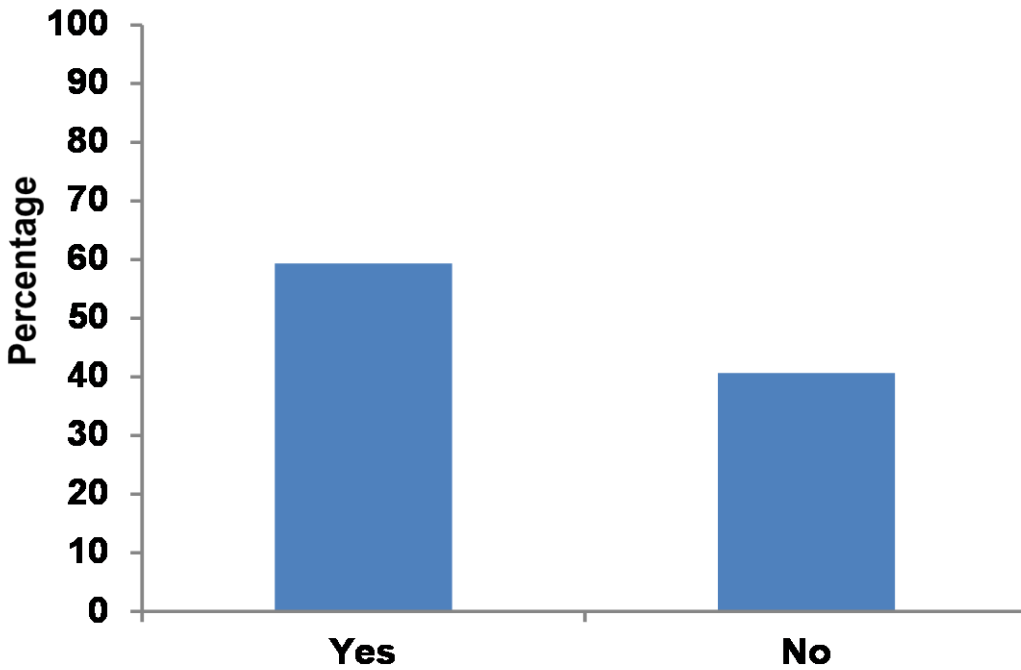


Figure 3: Bar graph showing the percentage of medical students who wake up at night when hear ringtone of their mobile.

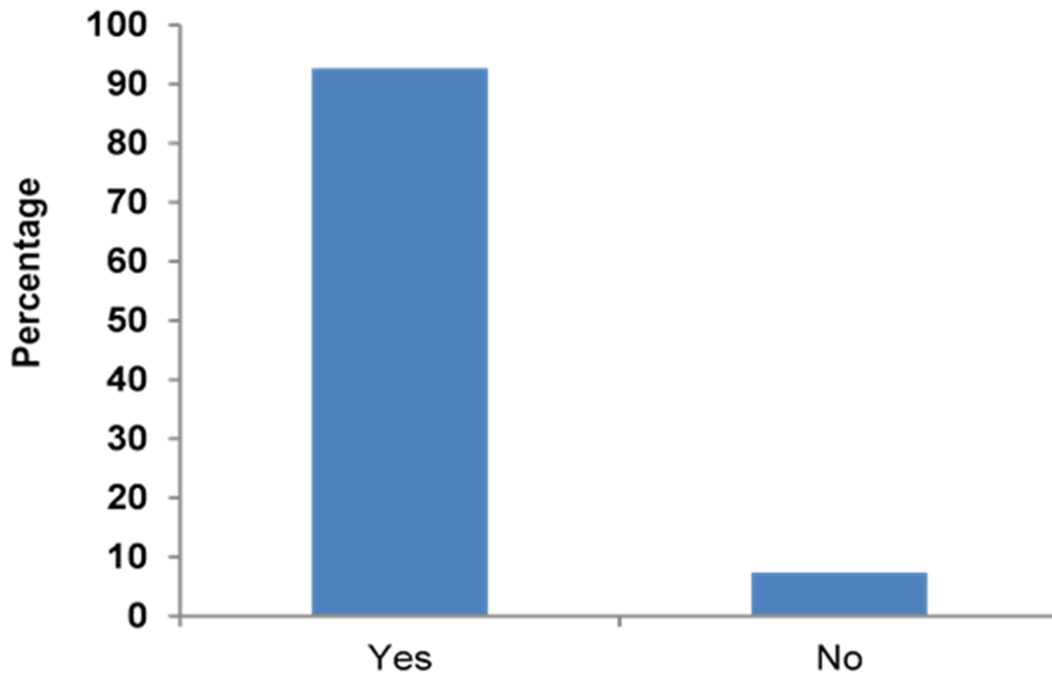


Figure 4: Bar graph showing the percentage medical students who use their mobile phone frequently before sleeping.

Discussion:

The progressive boost and intensity in the use of mobile phones tempted scientists to discover the effects of mobile phone radiations on human health. The advantages of mobile phone due to its excitement features like easy conversation, transferring news and pictures, social networks and internet have made this device necessary for life at the level of addiction. It emits radiofrequency electromagnetic waves range from 800 to 2200 MHz. These rays are being considered as risk factor for health because human body absorbs these radiations and convert them into eddy current (**Hamada et al., 2011**). The rate of metabolism increases in the brain regions close to antenna during heavy cell phone exposure (**Sahin et al., 2013**). Thomee et al. found an increase in mental health problems among young population of Sweden due to mobile phone radiations (**Thomee et al., 2011**). Excessive use of mobile phone has made our youth addicted causing Nomophobia which is the type of fear of being out of mobile phone usage. In 2008, a study carried out in the United Kingdom showed that 66% of their teenagers were facing this problem (**Rothberg et al., 2010**). In the present study, we have found that 67% of medical students reported Nomophobia which constitutes almost the same percentage as observed in the UK study. Another psychological problem emerging as a consequence of heavy mobile phone usage is Phantom Vibration Syndrome which refers to the false feeling of mobile phone vibration. A cross-sectional study in the US showed 68% of medical staff to have reported this syndrome (**Merhi 2012**) while Lin et al. observed gradual increase in the prevalence of Phantom Vibration Syndrome among medical internees in Taiwan as baseline value of 78% which went up to 96% and then dropped to 93% after three and six month of internship respectively. The decrease in the percentage up to 50% after the end of internship program showed that this feeling is reversible (**Lin et al., 2013**). We have found in this study that 93% of medical students have Phantom Vibration Syndrome which is in accordance with the study done by Lin et al. Phantom Ringing Syndrome, also called Ringxiety, is considered as an intermittent perception of mobile phone ringing while it is not. In India, 34.5% and in Taiwan maximum of 88% of medical students reported the feeling of Ringxiety in contrast to 78% of the medical students recruited in this study. It is an extremely alarming situation for the world that the youth is becoming addicted to using mobile phones and ironically, very less data on its effect on health is available. The association between sleep, stress, headache, disturbance and depression with the use of mobile phones has already been reported (**Subba et al., 2013**). Prospective analysis has indicated that high frequency of mobile phone use could be a marker for insomnia and depression (**Thomee et al., 2011**). Punamaki found gender-specific excessive use of information and communication technology, which includes computer and mobile phone, is associated with poor health and insomnia. Girls were found more vulnerable to experiencing the negative effects of excessive mobile phone usage (**Punamaki et al., 2007**). In this study, we have found that 59% of medical students woke up at night when they heard mobile phone ringtone, whereas 93% students used their mobile phones even before sleeping, thus reflecting the addiction level. Sleep quality worsens with increasing addiction level. Sleep is a basic need of living things and very crucial for health quality (**Rothberg et al., 2010**). Al-Khlaiwi and Meo found that extensive mobile phone usage is the cause of headache, fatigue, tension and sleep disorders (**Al-Khlaiwi et al., 2004**). Massimini and Peterson observed that most of the students are unable to sleep enough due to mobile phone use in at least one day of the week (**Massimini et al., 2009**).

If more than 50% of any population like in this study have poor sleep and wake up at night because of mobile phone ringing, then it should be the point of grave concern for parents, institutes and high officials of the country. Various studies have shown that sleep quality is a marker for cognitive performance. We can say that there is a link between mobile phone usage, sleep quality, student performance in the class and exam. As medical students, it is important for them to have verbal creativity, be able to solve problems quickly but sadly very high percentage of medical students were found to have deterioration in cognitive performance in the study done by **Punamaki et al., 2007**. Apart from the radiations emitted from mobile phones, another very important issue is the place of keeping mobile phones. Our study has revealed that majority of the students (70%) kept their mobile phones in their trousers' pockets and nearly 6% of the students attached them with their belts, so overall 76% students kept their mobile phones near their reproductive organs. It has already been reported that Leydig cells, spermatozoa and seminiferous tubules are the main victims of mobile phone radiations, causing decrease in the testosterone synthesis due to scrotal hyperthermia and oxidative stress (**La Vignera et al., 2012**). Agarwal et al. found that mobile phone radiations affect the quality of semen (**Agarwal et al., 2008**). Various studies have also shown association between mobile phone use and infertility (**Sahin et al., 2013**). High ratio of infertility leads to various social and behavioral changes in the societies. There is a dire need to study effects of mobile phones on large populations of Pakistan, which is our future goal. It is, therefore, recommended to keep mobile phone away from the human body as much as possible to prevent its adverse effects.

Conclusion:

It is concluded that the use of information and communication technology has reached uncontrolled level causing psychological and biochemical changes in human beings. We all are living in the blanket of electromagnetic waves. The exciting features of these technologies are the major factors of heavy mobile phone usage and addiction. The adverse effects of mobile phone radiations are being discovered day-by-day. Counseling especially with our youth is necessary, should we want to have mentally healthy generation in future.

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