

Impact of Excessive Mobile Phone Usage on Human

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Abstract

This work investigates the effects of excessive mobile phone use on the human Health. The research is grounded upon the quantitative study conducted to amalgamate the outcomes on excessive usage of mobile phone from the medical practitioners. The survey questionnaire consists of five questions referred to the topic which adequately covered the data/knowledge related to the mobile phone devices and the impact that they create in the human physical structure. This questionnaire also contains some additional diseases like (Heart disease, effect on foetus, Alzheimer's disease and Parkinson's disease), but we have worked on three diseases (Brain tumor, male infertility and ear impairment). The data were accumulated utilizing the survey questionnaire from the medical doctors and the paramedical staff. The 150 questionnaires were distributed to the medical doctors of Civil Hospital, Jinnah Medical Hospital and Dow Medical Hospital of Karachi city. In conclusion, the doctors have given their own ideas about the effects of mobile phones on the human.

Keywords: Mobile phone; Human health; Diseases

Introduction

The wireless technology was invented in the year 1880 by Alexander Graham Bell and Summer Tainted when first time the photo phone was invented [1]. In the recent era, there are dissimilar types of mobile phone devices which are utilized for communicating with each other. The mobile telephone sets are also a part and parcel of everyday life all over the globe. The Wi-Fi devices are connected to the exchange of information and data by using the mobile telephones. The Wi-Fi devices also emit the radio waves. There are so many wireless devices like cell phones, tablet PCs, audio players, digital cameras and the PC, all devices being used Wi-Fi. The mobile phone devices are based IEEE standard 802.11.

The mobile radiations utilize the frequency range from 3 kHz to 300 GHz, which consists of different wireless devices. For instance, a laptop is connected to the Wi-Fi and it is placed on laps in the distance of 60 cm, it is very harmful [2]. With the rapid growth of mobile phone device, the technology developed an alarming situation for the normal functioning of the biological systems of the human body and lead to serious ailments such as: diseases of brain like cancer, brain tumor, Alzheimer's disease, Parkinson's disease and so on. also the short term effects (hormone disruption, sleep disruption, on cent ration, impairment of cognitive function, behaviour, attention) and long term effects (DNA damage, Male infertility) [3].

For children, the wireless devices are more serious because they have thinner bony skulls and their neural systems are thin. The network developed during the installation of WLAN by using the router, transmitter, receiver and the admission levels are solid and all the devices communicate with each other through it. The mobile phone devices also communicate by utilizing the electronic radiations which are more hazardous and cannot protect the human physical structure [4].

Impact of mobile phone on human health

Presently, mobile phones are being used everywhere because these devices do not use the physical cable/wire that is demanded for the communications purposes. Their demand for the electromagnetic radiation for receiving and transferring the data in the air; either it is a

network or a sound data. These mobile phone devices give off harmful radiations which effects to the human health because such type of radiations are available everywhere and their existence cannot be felt.

These radiations also penetrate in the body and they affect the cell structure and the DNA. The different types of radiations are being used for connecting the mobile phone devices with each other and each type of radiation having own frequency and wavelength, the frequency mostly ranges from 3 kHz to 300 GHz. There are several cases of mobile phone devices such as cell phones, wireless router, tablet PC, cell telephone tower, wireless hand free, Bluetooth device, audio player, laptop connected to the wireless router (Wi-Fi). These devices give off harmful radiations which can contribute too many harmful diseases such as Brain Tumor, Male Infertility, and Ear Hearing Impairment, effect on the foetus, Alzheimer's disease, Parkinson's disease, asthma, Heart trouble, insomnia, high blood pressure, leukaemia, birth defects, Immune system, and rheumatoid arthritis. Radiations are also causes of some symptoms which are: headache, sleep disruption, tiredness, and so on DNA damage can also happen because the wireless radiation which given off by the mobile phone devices during the sending and receiving process of the data which is broken down by this survey based research. The study is directed with the assistance of doctors with the help of survey questionnaire; this survey contains some of the diseases which are induced by these radiations like male infertility, brain tumor and the ear hearing impairment.

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Disease introduction

Male infertility: The reproduction is a lifelike experience for couples. Nevertheless, it is very hard to contrive for the child. Basically the infertility is a wider problem in the universe due to different causes. The male infertility problem creates the sperm production (sperm production in low number) or the transfer process of sperm. The infertility problems are sperm motility, sperm count, sperm morphology, functions of sperm, impaired Leydig cell, Sertoli cell, abnormality of sperms, to stop delivery of sperm, a chronic health problem [5]. The causal agent of male infertility is because of testicular impairment resulting in the testicles not producing the sperm cells, the infertility of man includes the imbalance of hormone, behavioural problem and psychological troubles. The negative impacts on male fertility are smoking, use of drugs, alcohol abuse, tight underwear, radiation exposure, pesticides, paint, lead, and radioactive [6].

Brain tumor: It is a mass of tissue which is abnormal and in this condition the body cells die and replaced by the cells and other tumors. The abnormal cells grow and they produce a flock which is named as the main neoplasm. These come out of the several cells, which constitute the brain, CNS (Central Nervous System). There are several cases of brain tumors such as astrocytic and the gliomas tumors. There are two types of Brain Tumor: Malignant Tumor (Cancerous Tumor): The malignant tumor is a cancerous tumor that is either primary or secondary. The malignant tumor can be elementary or secondary brain tumors. It starts in the mind. The primary malignant brain tumor is fast growing tumor than the secondary malignant brain tumor where immediate treatment is important for primary malignant tumors because it can open rapidly and damages the spinal cord and other regions of the head.

Benign tumor (Non-cancerous tumor): The Benign tumor is non-cancerous tumor means that stay in one spot and do not attack the other region of the head or body. It is a very slow growing brain tumor. It can be removed by the treatment and not come back. The brain tumor can occur at any age and the cause of brain tumors has been still not solved. In that respect are various symptoms of brain neoplasms that are: numbered, headache, seizures, mood changes, memory trouble, trouble walking, hearing, visual sensation, vomiting and nausea. The brain tumor is divided into two grading which are:

- **Low grade tumors:** The low grade brain tumor's grade 1 or 2 which are slow in growing and facing pages. These contain freely malignant cells, that means to detain in the one place and do not engage the other body sections and regions of the head. The level 2 is glamorous that will arise after the discussion.
- **High grade tumors:** The high grade brain tumor's grade 3 or 4 that is either primary tumors or secondary tumors. There are several cases of primary high grade tumor, according to the case of the brain cells. The Glioma is also the case of primary high grade brain tumor that can be either grade 3 or tier 4. The more immediate treatment for the high grade brain tumors is important, it can propagate rapidly and damages the spinal cord and other regions of the head. The discussion of secondary brain tumors will vary according to the type of tumor like (breast, lung, etc.) [7].

Ear hearing function: Hearing problem usually develops according to the age and it can occur due to the loud disturbance. In that respect are different cases of hearing problems which creates trouble in hearing means the people cannot listen clearly and they continue on asking people again and again. One of the cause of hearing loss is listening to the music with high bulk. The classification of hearing loss can be

sensory, conductive, neural, mixed hearing loss. The hearing loss may be one-sided (single spike) or may be bilateral (both ears). That point having some degree losses that are (Deaf/Deafness, Hard of hearing, Hearing Impaired, Residual hearing) [8].

- **Sensory:** This is the type of loss range from minor to deep, that affects the frequencies than others.
- **Conduct:** Conductive loss of hearing is caused by disease or barrier in the center or outer ear that often disturb all the hearing frequencies.
- **Neural:** This type of hearing loss is caused due to the damage of central nervous system (CNS).
- **Mixed:** This hearing loss occurs in both ears outer/middle and inside of the auricle.
- The grounds of hearing loss can take place of hereditary factor, if he or she or you can say your spouse delivers a family problem of listening loss, thus it is important to look up with the genetic counsellor before becoming pregnant. The genetic counsellor will tell you more or less all the birth defects and treatment. The hearing loss due to the genetic has two forms:
- **Syndrome:** The Hearing loss defects took place with the other birth, such as Pendred syndrome can have effect on hearing function, balancing in hearing sense. Ring loss that occurs when a child had a bun in the oven [9].

Literature Review

With the evolution of current technology and specifically the mobile technology, there is no uncertainty that the cell phones and their fame have increased many folds. One of the causes might be ascribable to their easiness of utilization and the presence of further appeals. For this understanding, there are many experts in psychology, which initiated the inquiry on the upshot of the cell phones in the guild. A survey led by Bianchi et al. in 2005 worked out the problems connected with the mobile phone usage. This study required to calculate problematical mobile phone use. It's key in lying on factor they thought to reason mobile phone disorder. The consequences lead toward the construction of the Mobile Phone trouble makes use of the range. This range compared to the Addiction possible level. Essentials that were employed to measure the level and generate the Mobile Phone Problem utilize level where the measure of time single use their cell phone and the kind of usage. The behavioural predictors that move the price of cell phone usage were: being extra, possessing short self-esteem, and being young. These qualities were all important in an influential problematical cell phone make use of. The survey indicates that these behavioural predictors did not control the cost of cell phone usage: gender, and neurosis. The level urbanized was planned to help out through implement any intervention for possible addictive behaviour [10].

Getting old was the key reason in predicting the challenges of the cell phone use. That is why further psychologists have executed the study focus on youth. Koo et al. in 2010 studied the same things on youth, in which 548 students were asked to, fill up a questionnaire concerning their cell phone use. The results of the questionnaires were as follows: 89% believed they were usual cell phone users, while 8.4% thought they were serious users and just 2.9% percent believed they were enthusiastic to use the cell phones [11]. Few contradictory results were made by Koo et al. study while compared to Bianchi et al. study. The biggest challenge was that Bianchi et al. research shows that gender

was not an interpreter for problematic cell phone use, while research by Koo et al. [12]. The cell phone usage is usually addictive and especially in young ages. Sanchez-Carbonell et al. declared in 2008 that the cell phones can be used in an easy-going fashion. Outcomes of these studies declared that the Internet does not because the possible compassionate the cell phone usage does not encourage fast affecting change [13]. Once again we observed a different point of outlook where Bianchi et al. research show that the cell phones were considered to be employed in an offensive behaviour, and not seen as addictive [12].

Over again, the question is, are the cell phones addictive? Clearly a new study has to be completed to answer this query. Other things should be regarded as of the existing research condition, such as age and gender are. If cell phones are not addictive, can they bring any violent disorder? Dismiss it or does it morphs as by compulsion to a violent disorder by era? If youth and adults are more liable to cell phone compulsion, what is the longest tenure repercussion? What intervention should be meted out in alignment with the achievable compulsion? What preventive steps should be in use against it? Optimistically in the not too far-away future these pending questions will be answered [14].

Survey and Methodology

This study based on survey questionnaire and the data is obtained from numerous physicians. The secondary data collected from the research journals, articles and the texts. The survey questionnaire distributed among the medical doctors and other Para medical staff. The study was conducted at Civil Hospital, Karachi, Jinnah Medical Hospital, Karachi, and Dow Medical University Hospital Karachi from November 2015 to February 2016. The questionnaire consists of six questions which cover adequate information regarding mobile phone devices that cause consequence on human body and the diseases induced by them. There are 150 questionnaires which were presented to the medical doctors of different hospitals. In the outcome, each physician has given their own idea in relation to the effects of mobile phone devices on the human body, by their observations concerning the patients.

Data collection

Data collection was started from November 2015 to February 2016 from different hospitals of Karachi. Firstly, Civil Hospital Karachi was visited with the permission of respective civil surgeon of the concern hospital and survey task was completed. The questionnaires were distributed to all doctors and also interviewed for data collection around the effects on Mobile phone on the human health. Then Jinnah Medical Hospital and Dow Medical University Hospital, Karachi were visited for similar purpose of data collection.

Results

150 medical doctors were interviewed about the effects of mobile phone devices on the human health. From the source of patients in their treatment, 97% medical doctors reported positive effects of mobile phone on human health and 3% medical doctors were reported negative effects of mobile phone devices on the human Health. The Results are exposed in the below Figure 1.

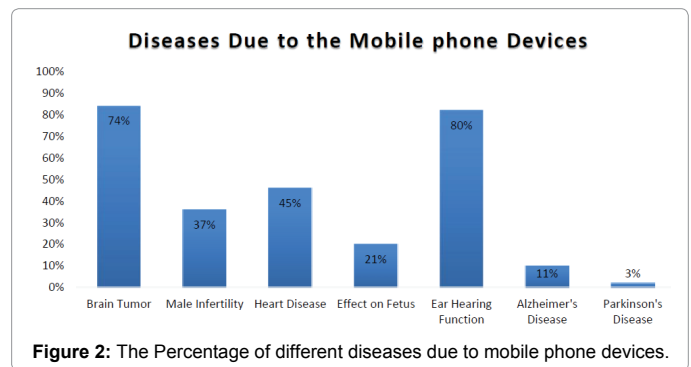
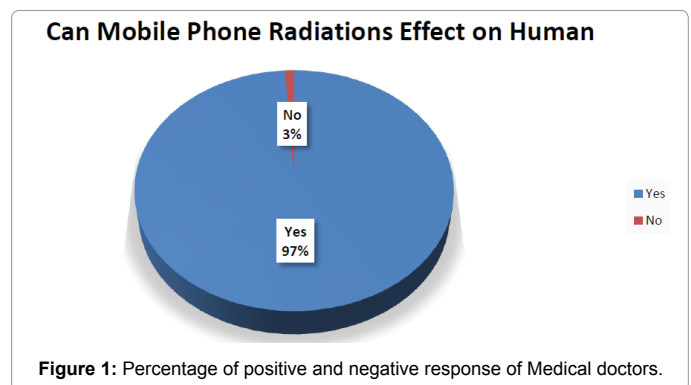
Agreeing to this survey of Medical Doctor's the disease cause by mobile phone devices are Brain Tumor 74%, Male Infertility 37%, Heart Disease 45%, and Effect on Foetus 21%, Ear Hearing Function 80%, Alzheimer's disease 11% and Parkinson's disease 3%. These results are evidenced in the below Figure 2.

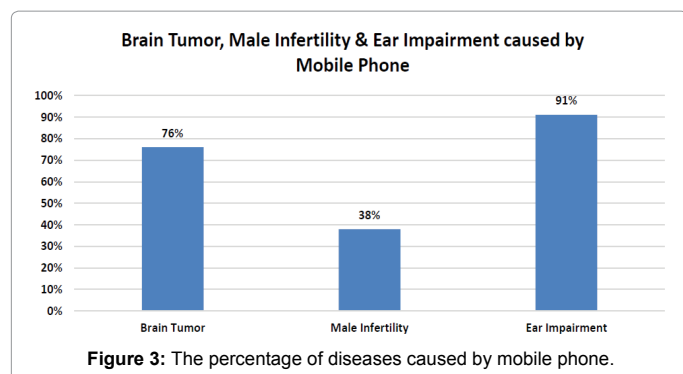
According the survey from different doctors of hospitals, the using of mobile phone leaving chronic disease like: Brain Tumor (76%), Male Infertility (38%) and Ear impairment (91%). The following Figure 3 shows results:

Discussion

Comparatively space below the study has not been explored for the investigation of the potential of the results of radiations emitted by mobile phone. With slight variation gift study confirms the harmful effects of the radiation on human of the individuals of space hand-picked for the study as discovered by medical doctors. Purposefully, correct study aimed to make awareness among the individuals in journal and therefore, the individuals living within the space below the study, to avoid the employment of such devices that is concerned within the onset of draining diseases mentioned in our study. Our study has discovered. The survey results from the doctors indicates regarding several dangerous results linked with the use of cellular phone on human health, this device release different types of diverse rays which affect the human Health. These rays damage the human body DNA when they penetrate in it. The doctors have given the 97% optimistic response in support of dangerous effect for which they are treating above stated patients.

The present study is in agreement with Khudnitskii et al. [15] found that the high frequency radiation has an impact on the function of central nervous system, because the mobile phone antenna closeness to the head that gets heating. Kellenyi et al. [16] discovered impairment in the hearing system cause of the exposure of cell phone radiation, this is in conformity with our study. According to the Meo et al. [17] about 34.59% of problems were correlated with ear hearing function, ear ache and warmth on ear, 23.07% effect on ear were found, 23% hearing problem found due to the cell phone [18,19] and in our study we found 91% effect on ear, that is not in agreement with current





study. According to Vasudev et al. [20] constant use of mobile phone can lead 44.4% decrease in fertility level, 30% sperm damage was found by the Hungarian Scientists [21] and in present study the effect is 38%. The effect to the heart's function is 50.0% according to Vasudev et al. [22] 32.3% effects on brain tumor found by Al-Muhayawi et al. [23], according to the world health organization report the cell phone radiation have 40% effect on brain tumor [24] and according to our survey the effect on brain tumor is 76%. Professor Olle Johansson found the effect of cell phone on Alzheimer's disease [25]. The diseases due to the electromagnetic field are immune system damage, Alzheimer's disease, Parkinson's disease and heart problems [26].

Conclusion

It is concluded that by usage of the mobile phones three diseases such as the brain tumor, male infertility and ear hearing function can be affected on human health. Agreeing to our survey from the Civil Hospital, Karachi, Jinnah Medical Hospital, Karachi and Dow Medical University Hospital, Karachi, we found that the cell phone use is more dangerous on human health, as doctors believed that all wireless devices like cellular phones, laptop, wireless router, wireless earphone, cell telephone tower, Bluetooth devices and tablet PC are accountable for the development of diseases of brain tumor, male infertility, hearing function. It is advised that one should keep away from the use of Mobile phone or decrease its usage as low as possible because it may affect the human.

Recommendations

- Do not keep the cell phone in a trouser pocket.
- Do not utilize the cell phone for long time chat; use the headphones for extended calls.
- Do not put the mobile phone on women's stomach during pregnancy.
- In schools and colleges do not use mobile phone devices for the intellect that it is dangerous for the youngsters and it is recommended to utilize the land line telephone.
- Create awareness among the public about the harmful effects of mobile phone rays on the human Health. Such workshops be established as soon as possible.
- The scheme of placing the mobile phone towers in the area should be ostracized. If they are already existing, they should be shifted without any delay to preserve up the masses from their hazardous effects.

References

1. Ellis H (2016) Marconi, masculinity and the heroic age of science: wireless telegraphy at the British Association meeting at Dover in 1899. *Hist Technol* 32: 120-136.
2. Oni OM, Amuda DB, Gilbert CE (2011) Effects of radiofrequency radiation from WiFi devices on human ejaculated semen. *Int J Res Rev Appl Sci* 19: 292-294.
3. Sage C, Carpenter DO (2009) Public health implications of wireless technologies. *Pathophysiology* 16: 233-246.
4. Ahonen M (2007) Wireless System and Health Risk Implications for Educational and Pedagogical Practice.
5. Dohle GR (2010) Male infertility in cancer patients: review of the literature. *Int J Urol* 17: 327-331.
6. Hamada A, Singh A, Agarwal A (2011) Cell Phones and their Impact on Male Fertility: Fact or Fiction. *The Open Reprod Sci J* 5: 125-137.
7. Janic A, Mendizabal L, Llamazares S, Rossell D, Gonzalez C (2010) Ectopic expression of germline genes drives malignant brain tumor growth in *Drosophila*. *Science* 330: 1824-1827.
8. Rana RK, Chou CT, Kanhere SS, Bulusu N, Hu W (2010) Ear-phone: an end-to-end participatory urban noise mapping system. In: *Proceedings of the 9th ACM/IEEE International Conference on Information Processing in Sensor Networks*, Stockholm, Sweden, pp: 105-116.
9. Sudan M, Kheifets L, Arah OA, Olsen J (2013) Cell phone exposures and hearing loss in children in the Danish National Birth Cohort. *Paediatric and perinatal epidemiology*. 27: 247-257.
10. Bianchi A, Phillips JG (2005) Psychological predictors of problem mobile phone use. *Cyber Psychol Behav* 8: 39-51.
11. Koo HY, Park HS (2010) Factors influencing cell phone addiction in adolescents. *J Korean Acad Child Health Nursing* 16: 56-65.
12. Park S, Koo J, Park HS, Kim JH, Choi SY, et al. (2010) Expression of androgen receptors in primary breast cancer. *Annal Oncol* 21: 488-492.
13. Sánchez-Carbonell X, Beranuy M, Castellana M, Chamorro A, Oberst U (2008) La adicción a Internet y al móvil: moda o trastorno? *Adicciones* 20: 149-159.
14. Dillman DA (2011) Mail and Internet surveys: The tailored design method-2007 Update with new Internet, visual, and mixed-mode guide. John Wiley & Sons, USA.
15. Khudnitskiĭ SS, Moshkarev EA, Fomenko TV (1998) On the evaluation of the influence of cellular phones on their users. *Med Tr Prom Ekol* 9: 20-24.
16. Kellenyi L, Thuroczy GY, Faludy B, Lenard L (1999) Effects of mobile GSM radiotelephone exposure on the auditory brainstem response (ABR). *Neurobiology* 7: 79-81.
17. Meo SA, Al-Drees AM (2005) Mobile phone related hazards and subjective hearing and vision symptoms in the Saudi population. *Int J Occup Med Environ Health* 18: 53-57.
18. Braune S, Wrocklage C, Raczek J, Gailus T, Lücking CH (1998) Resting blood pressure increase during exposure to a radio-frequency electromagnetic field. *The Lancet* 351: 1857-1858.
19. Szyjowska A, Gadzicka E, Szymczak W, Bortkiewicz A (2014) The risk of subjective symptoms in mobile phone users in Poland—an epidemiological study. *Int J Occup Med Environ Health* 27: 293-303.
20. Vasudev A, Kaur M, Kumar H, Chaturvedi R (2012) Mobile Phone Usage and Awareness of Health Related Issues Among the Male Science Students. *Stud Sociol Sci* 3: 62-67.
21. <http://www.powerwatch.org.uk/action/reduce-phones.asp>
22. Al-Muhayawi S, Eldeek B, Abubakr H, BenKuddah R, Zahid A, et al. (2012) The Impact of Medical Students' Awareness of Cell Phone Use and its Health. *Life Sci J* 9: 1143-1148.
23. IARC Classifies Radiofrequency Electromagnetic Fields as Possible Carcinogenic to Humans. Press Release N° 208, 2011.

24. <https://mobilephonetruth.wordpress.com/2012/03/26/mobile-phones-causing-alzheimer/>
25. Divan HA, Kheifets L, Obel C, Olsen J (2008) Prenatal and postnatal exposure to cell phone use and behavioural problems in children. *Epidemiology* 19: S94-S95.
26. Hillman D (2014) Effects of Extraneous Electricity on Dairy Cattle, Other Animals, and Humans-A Guide for Dairymen, Veterinarians, and Investigators of Stray Voltage. *J Vet Sci Med Diagn* 3: 1-10.