A Survey on EM Pollution Caused by Indian Youth in the Age Group of 17 to 22 Years

[1]Prince Verma, [2]Tanvir Singh, [3]Amit Kumar

[1]Dept. of ECE, R.B.I.E.B.T, Mohali Campus, Punjab, India
[2]Dept. of ECE, I.E.T. Bhaddal Technical Campus, Ropar, Punjab, India
[3]College of Information Science and Technology, Nanjing Forestry University, Nanjing, China

Abstract

Cell phone use is increasing day by day. People are using them without knowing their health hazards. Cell phones radiate whole day when it is "ON". One should be aware about the risks of mobile phones. In this paper, we have presented a survey report pertaining Electromagnetic (EM) Pollution caused by Indian Youth in the age group of 17 to 22 Years.

Keywords

Electromagnetic Pollution, EMF, Mobile Radiations, Indian Youth

I. Introduction

Electromagnetic pollution is becoming a kind of pollution in our environment which is the result of electromagnetic fields [1]. Numbers of students are using mobile phones continuously day and night by virtue of which they are under the blanket of electromagnetic radiations. Long-term exposure may become reason for some existing health problems or diseases and may cause especially lack of energy or fatigue, irritability, aggression, hyperactivity, sleep disorders and emotional instability and at higher stage sometime it leads to cancer [2]. There is also the genetic effect on human lifespan, as we also consider the dichotomous phenotype of surviving to a given age. Number of case studies has been seen around the globe which shows serious ill effects of mobile radiations [12]. We have carried out a survey related to the issue among the Indian youth in the age of 17 to 22 years (undergraduate students) of various engineering colleges in Punjab, India.

II. Influence of the Smart World

In the last century, the two greatest inventions are computer and web/internet combination of which gives birth to the so called global digital information/resource world or Cyber world created on cyberspaces [4].
The latest world or its trends have brought revolutionary changes to human living, working; learning and so on based on Internet Distributed Computing (IDC) etc. and other IT technologies. Also an e-action such as a complex financial trading can be executed fast by simply clicking on mouse as command.

A. Internet services

Internet services have completely changed the human lifestyle. It allows people to work from home or to conduct any business from any location in the world, as long as there is available connection to the web.
Internet is very useful to the children as they can communicate each other. Not only communicate, they can also gain lot of knowledge about their studies and gain experiences etc. Teachers can also adjust the classroom with different learning styles. So, the internet services can completely change the society [6].

B. Smart Phones Applications

Nowadays, smart phone applications have covered very much wide area in all fields. To get business/finance news, market data and stock tracking tools from the most trusted source financial professionals around the world rely upon. One can get comprehensive news coverage with easy to understand charts and graphs that illustrate the impact of very important business trends [3].

C. GPRS/EDGE

GPRS is a General Packet Radio Service which is a packet which orients the mobile data service available to users of 2G as well as 3G cellular communication systems, global system for mobile communication known as (GSM). GSM usage is typically charged on based on volume of data transferred contrasting with switch data. Now the GPRS extends the GSM packet circuit switched data capabilities are as follows:
1. SMS messaging and broadcasting.
2. Messaging Service
3. Multimedia Push to talk over cellular.
4. Instant messaging and presence.
5. Wireless application protocol (WAP) [5].

D. Online Games

Nowadays, there are most of the students mainly undergraduate students play online games which emit harmful radiations. Everyone knows its consequences still they do not pay attention towards it. Earlier Childs plays like cards and any other practical games in which there is movement of body parts but now there is only computer or online games which mostly youths like most. Some of the consequences are as follows:
• By playing online games, they are in double radiation exposure due to combined radiation exposure of internet and cell phone.
• Like passive smokers, other people also come in contact with the radiations.
• Also, it wastes the precious time of students.
• Playing games are also harmful for our eyes as it causes strain.
• Excess addiction to these games also become a problem in the work like failure in making assignments on time or not finished the work on time.
• It is also a huge loss of money of teenagers and their parents.
It becomes like an addictive drug for an undergraduate students. Also, the growing popularity of online games or internet took them to the whole new level for today's generation of youth. Online gaming has affected both children and as well as adults.
Some of the Online Games are as follows:
• Santa Solitaire
• Adelantado Trilogy
• Christmas Connect
• Clusterz

• Monkey Trouble 2
Double Down Casino

E. Bluetooth Gaming

Bluetooth is a name of a wireless technology that uses pulsed radio frequency signals. Bluetooth is having both its pros and cons. There are number of games in which multi players can play at a time through the Bluetooth. As four students are playing games in four corners of the classroom then there is a radiation net in classroom so the four players are in the danger but other students which are in the radiation net are also affected without any reason. So it means due to some of the faulty students other are also harmed by them, so this type of Bluetooth gaming should be avoided. As we are in radiation exposure due to harmful mobile radiation same as that we are in the net of Bluetooth mobile radiation. So it causes same diseases as caused by the mobile radiations. It is also a cause of time wasting and money wasting for youths.
Some of the Bluetooth Games are as follows:
• Kraze: The Unlimited Racing 3D
• Manic Monkey Pool
• Turrican
• Derby 3D
• Pro Ecolution Soccer 2013 MOD
Real Football 2013

F. Message Pack Services

Nowadays messages are common for all, but these are mostly used by the students. It has both pros and cons. Text messaging should be in limit otherwise it will results in bad grades, repetitive stress on hands, fingers and cause thumb injury also and also causes insomnia [7]. Mostly teenagers are using texting until late night while their parents are already gone to bed and many teens use it in classrooms, this also effects on their study and results in bad grades. Some people use texting while driving as texting while driving is more dangerous than the calling. I'm not suggesting to never text message. I am suggesting that it isn't necessary to text constantly and in situations that are dangerous, rude or risky. Put the phone in your pocket and keep it there once in a while. You'll not only live, you will enjoy the company of others more often [8].

G. Social Networking

Social networking is defined as the grouping of individuals into specific groups, like small rural communities or a neighbourhood subdivision. Mainly social networking is only possible for those people who are especially in workplace, universities, and high schools [11].
Nowadays social networking becomes a huge source of communicating with friends, family members, and strangers also and for other official works [10].
Some people are addicted to social networking as they are using it most of the time they had free sometime they also utilise their study time on their PCs. But now students mostly use Facebook, Twitter or LinkedIn etc. As these all are the sources of social networking. Mainly undergraduate students, they use 24 hours these methods of social networking, as they are very much addicted to it. They even use Facebook, Twitter, Orkut, etc. in classrooms which affects their study most. This also leads to the wastage of time and their parent's money. It also effects on their eyesight. Some students are so much addicted to social networking that they waste all of their study time on computer, tweeting, chatting on Facebook. Sometimes we are very busy in networking that we

kept our mails open which become reason for many dangerous encounters [9].
So we have to use it in limits so that we remain protected from harmful radiations and there should be not any loss to our body.

III. Survey Report

A survey was conducted among undergraduate students from 10 Engineering Colleges in Punjab, India. A questionnaire was developed to get the answers from UG students in the form of Yes/ No. Table 1 shows the answers in the form of Yes/No.

Table 1: Survey Findings

Ques.	Yes (%)	No (%)
Q1.	48%	52%
Q2.	68%	32%
Q3.	77%	23%
Q4.	33%	67%
Q5.	72%	28%
Q6.	51%	49%
Q7.	40%	60%
Q8.	51%	49%
Q9.	54%	46%
Q10	43%	57%

Survey findings are described below:

• 48% students press their cell phone against their head while talking.
Comment: By pressing cell phone toward head, radiations penetrates in to our head
• 68% students talk for 2 hours or more per day.
Comment: Students should limit their phone calls for their own safety
• 77% students carry cell phone on their body/in hand when it is switched on (i.e. in standby mode)
Comment: Cell phone radiates full day when it is switched ON
• 33% students talk on a cell phone in their automobile
Comment: The RF radiation is increased by Mobile phones when used in a automobile to overcome the shielding.
• 72% students place their cellphone near their pillow during night
Comment: As cell phone radiates full day, it should be kept far during sleeping hours
• 51% students make calls when signal strength is poor
Comment: When signal strength is poor, cell phone radiates more to send the signal
• 40% students use cell phone for streaming more than 2 hours per day
Comment: Students should limit the time which they spend on cell phone
• 51% students felt cell phone is safe for small child
Comment: For the developing tissues of children, cell phones are not safe.

• 54% students make or receive calls when cell phone is in charging mode.

Comment: During charging mode, electrochemical reactions are taking place in cell phone, due to which there is heating effect.

• 43% students make or receive call when they are connected to internet on their laptop/desktop.

Comment: It doubles the radiation exposure.

IV. Conclusion

In earlier days, Mobile phones are used only for the purpose of communication, but nowadays, people use cell phone for many other purposes which include Bluetooth gaming, GPRS, Social Networking, SMS, Online Games. Since, the electromagnetic radiations are absorbed by our body; it has significant effects on the cells and tissues [13]. Our survey report shows that only few are aware of radiation danger, so students should think over this and limit their cell phone usage in order to protect themselves from Electromagnetic Pollution.

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Prince Verma is pursuing his bachelor's degree in Electronics and Communication Engineering from Rayat and Bahra Institute of Engineering and Bio-Technology, Sahauran, Mohali Campus, Punjab, India. He is a budding researcher in the field of sustainability in wireless communication networks.

Tanvir Singh is pursuing his bachelor's degree in Electronics and Communication from I.E.T., Bhaddal Technical Campus, Ropar (Punjab Technical University), Punjab, INDIA. He is working as a researcher in field of research on topics Green Computing and Sustainability with a dream to create a Technical Advanced and eco- friendly world. He has published many papers in International Journals and conference proceedings.

Amit Kumar received his bachelor's degree in Mathematics from the Himachal Pradesh University, Shimla, India, in 2002 and Masters' degree in Computer Application from Kurukshetra University, Kurukshetra, India, in 2006. He completed his M.Phil. in Computer Science from Annamalai University, Annamalai nagar, Tamilnadu, India, in 2010. He is currently pursuing his Ph.D. in Computer Science. He is working as a Lecturer in the Department of Computer Science, College of Information Science and Technology, Nanjing Forestry University, Nanjing, China. He has many publications in National /International Conference proceedings and International Journals. He is a reviewer for many international Journals. His current interest includes Techno-Economic Analysis of Broadband Wireless Networks viz. WiMAX-m, HSPA+ and LTE-Advanced. His future focus is to explore the Green Wireless Technologies and their Sustainable development.