

A Study on Awareness About Electromagnetic Radiation Pollution due to cell phones and The Trend of Using them in daily life

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ABSTRACT

Science and Technology advancements help us to make our life more comfortable and easier. We are not aware of the fact that there must be rational use of these inventions and advancements. And by not doing so, we are progressing towards more and more health risks. Now a days, we come across various types of pollution as water pollution, land pollution, air pollution, noise pollution and many more. But out of these pollutions one is totally invisible and undetectable to humans which is Electromagnetic Radiation Pollution (EMR) or Radiation Pollution. This is more serious agent of pollution in the environment and greatest threat to man's survival on earth. The study is done by applying statistical methodology as mean, chi-square test, percentage analysis on the results which we get through survey of 70 participants by method of questionnaire. The study show that irrespective of the knowledge of the harmful effects on the health there is no reduce of the usage of cell phones. Both attributes are independent of each other. The suggestions according to the results of survey are provided in this paper.

Introduction

EMR:-

According to Journal of cellular Biochemistry, "The electromagnetic energy oscillates at millions to billions of cycle per second. These current frequencies interfere with cellular DNA and its repair mechanism." It increase the tendency of cell aging and accelerates the growth of cancer cells in the body. Actually in the body, the ions which moves through the living cells and the blood receives the signals of these radiations and convert them into electric currents which results harmful effects. EMR is electromagnetic radiation pollution is generated by the electronic devices as Wi-Fi, cell phones, TV, computers, microwaves, cell towers etc.

Review of literature

Many researches are done on electromagnetic pollution.

According to research paper written in Elsevier in 2009 and Springer in 2010 by A Balmori- Pathophysiology and Environmentalist this EMR pollution also effects the wild life and mammals too. He considered it as slow poison which effects the nature. On the same lines, according to study done by M Tkalec, M. Malaric, M Pavlica it also effects the process of seed germination. A study done by Salford LG, Brun AE, Eberhardt JL, Malmgren L, Persson BR the exposure to electromagnetic radiation from cell phones damage the nerve cells of the mammalian brain in rats.

Various case studies are also done as on adverse health effects both mentally and physically on students due to cell phones usage irrationally. There are also behavioral problems that come into existence. They become more irritable, angry, feeling of sleepiness, tiredness, depression, suffers from lack

of concentration, confusion, headaches, eye strain and redness, neck and back aches, muscle spasm, digestive problems etc. Not only health problems that arise due to frequent use of cell phones but there is also increase in the road accidents because of distraction due to texting or calling while driving. Even people now a days, call, text or listen to music while walking on roads and streets. Their minds are totally preoccupied in cell phones unaware of approaching vehicles even honking which leads to accidents.

Not only are the electromagnetic radiations produced from the cell phones harmful, even its discarded components i.e. the cell phone waste is also unsafe for the environment as it contains arsenic, antimony, beryllium, cadmium, copper, lead, nickel and zinc. According to Natural Resources Defense Council, if the discarded mobile phones are burned or not deposited properly in landfills, the chemicals as lead, mercury and cadmium present in cell phones releases harmful gasses which results in air, land and water pollution. According to Environmental Protection Agency, lead has a toxic effect on humans and it effects almost every important part of the body as kidneys, heart, nervous system, brain, immune and reproductive system. Not only on adults but it also has adverse effects on the children, kids and infants due to its exposure as their brains are in the developing stage.

Aim and Purpose of the study: -

The aim of the study is to understand the awareness about the rational use of cell phones the Electromagnetic Radiation Pollution leads to adverse effect on the health both physically and mentally. Though people understand ill effects on their health, unfortunately this knowledge does not force them to use

cell phones sensibly. This paper may help them use the mobile phones more wisely.

Statement Of The Problem:-

In this paper, the study is undertaken to find answer to the question which is as follows:-

Whether the Awareness about Electromagnetic Radiation Pollution due to cell phones leads to rational use of it ?

Objective of the study:-

- 1) To study whether people are aware about the adverse effects of use of cell phone on their health.
- 2) To study if people are aware about the pollution due to discarded cell phones.
- 3) To study if people know about e-waste produced by cell phones.
- 4) To examine whether people know about methods of discarding cell phones.

Hypothesis Of The Study:-

The following null hypothesis are formulated on the basis of the objectives of the study.

Ho : There is no significant relationship between knowledge to people about the adverse effects of cell phones and its rational usage.

H1 : There is significant relationship between the knowledge of adverse effect on health due to cell phones and its rational usage.

Type and area of research:-

The method of questionnaire is used to study the concerned research. The area of research for this paper are a segment of educated (graduate and above) persons of the age between 35 to 50 years both males and females having Wi-Fi facility at home . The results will be useful for the future studies and to develop the attitude of the users to use cell phones wisely.

Limitations:-

This study was done on the limited participants. Though, we can generalize the study by covering it on the broad range as both working and non-working, students, above 50 years age users. But irrespective of this limitation, the study will definitely create a clear image about sensible use of cell phones and why this issue must be sensitized by the government by running a awareness program across the country.

Frequent user is someone who uses cell phone for no less than 5 hours of screen on time including chatting, calling even using Wi-Fi to access social media, gaming. Keeping it close even while sleeping and using it as alarm clock.

Rare user is someone who uses cell phone for no less than 1 hour of screen on time including chatting, calling.

Tools of the Study:-

For studying the current problem , statistical methodology of the chi- square test of Independence of Attributes is used .In which one attribute of usage is divided in 2 classes namely frequently use and rarely use. And the second attribute of awareness about adverse effect on health is divided in 2 classes namely knowledge of adverse effect and no knowledge. These are calculated by analyzing the data obtained from questionnaire.

Analysis and Interpretation:-

On the basis of questionnaire, it is observed that 78.6% users are aware about the adverse effects of cell phones and 21.4% are not aware.

Table 1: knowledge to people about the adverse effects of cell phones and its usage.

Type	Value	Degree of freedom	Level of significance
Calculated Chi-square	0.813	1	0.05
Tabulated Chi-square	3.841	-	-

Degree of freedom is 1 and the tabulated value of χ^2 , for 1 degree of freedom at 5% level of significance is 3.841. Since the calculated value of χ^2 is 0.813, which is less than the tabulated value, the null hypothesis H_0 is accepted and the alternate hypothesis i.e. H_1 is rejected at 5% level of significance.

Findings:-

The data conclude that there is no significant relationship between knowledge to people about the adverse effects of cell phones and its rational usage .i.e. even after knowing that the use of cell phones deteriorates the health, does not effects its frequently use. According to the data calculations, 78.6% of the people under study are aware of harmful effects of cell phones, but out of them 72%are frequent users. Unfortunately, major portion of the sample have atleast one discarded phone lying in their houses. i.e. harmful e-waste is still in their homes. So, they are not aware of the extent of health effect of pollution due to discarded cell phones. Even some have discarded their cell phones in regular dustbins. Thus, the people are not aware about methods of discarding cell phones.

Conclusions:-

The study revealed the sad part that the people are playing with their health. They use cell phones on the cost of their health. They use it irrationally irrespective of the fact that they are aware of the harmful effects of the cell phones. People had to make needful decisions and steps regarding the use of cell phones, so that they and their loved ones should not repent later on in life. Country wide awareness campaign should be implement at ground level through government policies both to create healthy environment and waste management.

Recommendations:-

To minimize the effects of EMR pollution due to cell phones the responsibility should be shared by all of us i.e. government, common people and cell operators.

On Government Part:-

1) Government should design a policy both to educate and aware the people about effects of Electromagnetic Radiation and how it can be prevented.

2) To characterize the cell phone waste as Hazardous and define both collection and disposal policy. Even recycling it can be an option.

On Our Part:-

1) To educate both ourselves and our young ones before it is too late.

2) Radiations protection from cell phones is important thus, we should try to keep cell phones away from our body. So we should:-

- a) Use wired headset while talking.
- b) Don't carry cell phones in the pockets because they are keep on emitting radiations even when it is not working.
- c) Don't use cell phones as alarm clock because doing so we keep our cell phones near our head even while sleeping.
- d) Wi-Fi's must be switched off after use otherwise the radiations are always there and it harms not only us but the other members of the family.

3) Landlines must be preferred for use.

4) We should switched to cell phones which have low specific absorption rate (SAR).

5) Cordless phones should be used more in homes as the power used in this case is much less as compared to cell phones.

6) We must not allow our children to use cell phones as it effects more to them as they are in developing stage. They are more prone to health risks due to cell phones. We should encourage them to do creative activities as drawing, coloring, playing outdoor and indoor games so that they become mentally and physically healthy rather than playing games on cell phones.

7) Get used to texting as it keeps the cell phone away from our body.

8) Proper disposal of cell phones should be done. They should not be disposed along with the regular garbage.

9) Recycling should be preferred as it reduces the cell phone waste which our environment and cause pollution.

On Cell Operators Part:-

Not only the cell phones but the cell phone towers are also potentially dangerous as they on continuously emitting radiations and have adverse effect on the health of people who lives nearby. So cell phone towers should not be placed in the densely populated areas. And if the link to the base station is weak, our handset compensates the link by increasing its radiation level which means more exposure to radiations and more adverse effect on health.

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