

EDITORIAL

MOBILE PHONE USERS ARE AT RISK OF NEUROLOGICAL DAMAGE?

The charisma of modern technology, mobile telephony, with over two billion users world wide, 70 million of which are in Pakistan, has raised public concerns. As the cell phones and their base stations use electromagnetic radiation in the microwave range, their safety is being called 'the scientists banana skin'. Various personal injury lawsuits and papers published by eminent professionals in scientific journals notably the Lancet in 2000 [1], raised the fear level to the red mark. Not only this but the study in animals has proved that low intensity pulsed microwave radiations has thermal as well as non thermal effects [2]. The study in humans has however come up with mixed findings with more and more reports claiming it 'safe for use'. Whether the study has been doctored by mobile phone industry as was done by tobacco industry in 1960 to hamper cancer research, is still postulated.

The thermal effects of cell phones are due to raised temperature of the surface of the head resulting in possibly cataract formation. The non thermal effects of mobile users include not only fatigue, sleep disturbances, dizziness, loss of mental attention, headache, malaise, tachycardia but also possibility of genotoxicity and even more sinister brain cancer [2].

To investigate the risk of brain tumor, International Agency for Research on Cancer (IARC) launched a collaborative case control study in thirteen countries, The Interphone Study, which was initiated in 2000 and is still underway. Among these, the studies from Sweden [3] and Finland showed an increased risk of glioma for analogue type of phones. While studies from Britain [4], Germany and Denmark [5] found the relationship to be negative or inconclusive [6].

A latest research done by Japan was published in British Journal of cancer in 2008, improvised the core protocol of The Interphone Study and adapted a new approach by using a TARO model head. [6] It claimed to be the first epidemiological study to take into account different exposure levels inside the intracranial space. In this case control study, the cases of meningioma, glioma and pituitary adenoma were studied in a three dimensional manner. The maximal specific absorption rate (SAR) unit for radiofrequency exposure was calculated after broadly categorizing the mobile phone available in Japanese market into four groups. Their SAR distribution was determined by the data used by the company for compliance testing. Results showed no increasing trend for glioma, meningioma or pituitary adenoma as regards cumulative use for ten years or longer and cumulative call time of 2000 hours or more. On closer scrutiny, they found gliomas to have a comparatively increased association following a very high radiofrequency exposure and increased duration of hours exposed. Even in this case, the maximum SAR value the tumor was lower than 0.1 W/Kg which is far below the International Commission on Non Ionizing Radiation Protection (ICINIRP)'s recommended value of 2W/Kg for localized SAR in general population.

Regardless of the direction the results take in the coming years, World Health Organisation (WHO) has made recommendations to minimize exposure called as Low As Reasonably Achievable [7] (ALARA) which are listed below:

Precautions Recommended by WHO

- Minimization of cell phone usage
- Limitation of cell phone usage by children
- Adoption of cell phones with ALARA levels of radiation.

- Use of hands off and ear phone technology such as blue tooth, headsets etc.
- Radiofrequency field intensity and distance of base station antenna from human habitation.
- Keeping mobile phones away from the body

We can conclude that so far no definite harmful effects of mobile phones (except traffic hazards) have been confirmed. It is better to follow WHO precautionary recommendations till it is clearly known that use of mobile phones is entirely safe.

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