

Cell Phone and Brain: How do they interact?

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According to a press report quoting a survey done in 2009, 40.33 million own mobile phones but 104.64 million had used a phone in the three months prior to the survey.¹ Another report indicated that mobile phones are widely used in Pakistan, more than 86% of men have their own cell phones and 40% of women have theirs. Urban users far exceed those of rural users.² There are a number of speculations about the use of cell phones in terms of its possible detrimental effects on the brain. Arguments revolve around the concerns for brain cancer. A report in Irish Medical Times quoting from the source BMC Neurology 2011 indicate headache symptoms of mild intensity, a dull or pressing quality, localization ipsilateral to the side of mobile phone use among 212 medical students in a Korean study who used mobile phones.³ For the first time Health Canada is encouraging parents to limit their children's use of cellphone to reduce their exposure to the radiofrequency energy emitted by the phones.⁴

Among childhood malignancies, brain tumours are the second most common malignancy, after leukaemia. Radiation has been associated with one of the major environmental risk factors; therefore, an international multi-centre study MOBI-KIDS, involving research groups in 13 countries investigating a relationship between communication technologies including mobile phones is being undertaken. According to the press release, 13 European and non-European countries will participate in this study which is funded by the European Union.⁵ In a Danish study,⁶ it was said that vestibular schwannomas grow in the region within the brain where most of the energy by radiofrequency electromagnetic fields from using mobile phones is absorbed. This study was inconclusive for the association of cellphone use and development of schwannoma for a number of reasons.⁶ A large COSMOS study identified as a priority research even by WHO aims at carrying out a long term health monitoring of a large group of people so that they can identify the health issues linked to long term mobile phone use.⁷

The concerns are related to the ability of cell phones of emitting microwaves, producing heat and claims that people have had brain tumours in the exact size, shape and position as the antenna on their cell phone.⁸ Study⁹ on healthy participants and compared with no exposure, 50-minute cell phone exposure was associated with increased brain glucose

metabolism in the region closest to the antenna. A scientific report released by WHO concludes "radio frequencies and electromagnetic fields including those routinely emitted by mobile phones are "possibly" carcinogenic to humans."¹⁰ The International Agency for Research on Cancer (IARC) has classified radiofrequency electromagnetic fields as possibly carcinogenic to humans based on an increased risk for glioma, associated with wireless phone use.¹⁰

The report further adds that a positive association has been observed between exposure to the agent and cancer for which a causal interpretation is considered but chance, bias and confounding could not be ruled out with reasonable confidence. Moreover, available studies are of insufficient quality, consistency or statistical power to permit a conclusion regarding presence or absence of a causal association. The F.D.A. (US Food and Drug Administration) does not review the safety of radiation-emitting consumer products such as cell phones and similar wireless devices before they can be sold as it does with new drugs or medical devices.¹¹ There are suggestions for use of cell phones with safety precautions but at the same time, no conclusive evidence is available for its carcinogenic effects. The researchers believe in further and more ongoing but elaborative studies in order to find its causal association with brain tumour. WHO is quite sensitive to this issue as evidenced in its scientific report. Having known the effects of radiation in general, would it not be safe to be cautious in the use of cell phone. The children and adolescents are particularly vulnerable to a number of health hazards, one of which could be the hazard of prolonged and continuous use of cell phones. It is quite possible that scientists would one day declare that there is a definite relationship of brain with cell phones in terms of carcinogenic effect. Despite quite a few indications for its hazards, this matter is yet unresolved fully.

Should we stop or limit the use of cell phone at this juncture?

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