



Editorial

Cell phones are as carcinogenic as coffee

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Scientists from 14 countries met under the auspices of the International Agency for Research on Cancer (IARC) in Lyon, France, in May 2011, and assessed the carcinogenicity of radiofrequency electromagnetic fields (RF-EMF). The discussion and conclusions on the ill effects of radio frequency from cell phones evoked obvious and understandable concern and curiosity among the public. It appears that the concerns were based on the hyped or exaggerated portrayal in the media of the carcinogenic potential of cell phone use, based on the reading of isolated parts of the discussions from the IARC meeting, which will publish a monograph on the subject early next year.^[1] An excellent summary in *Lancet*^[2] of the deliberations of the IARC working group on the subject, brought several salient points to be published in the monograph and made cell phone use look less dangerous or no more dangerous than pickled vegetables (class 2B carcinogen).

There were several interesting facts that seemed to have escaped the over zealous and excited popular media. The committee merely assessed the conclusions published in the available literature on the subject of the carcinogenicity of radiofrequency emitted by cell phones. The committee mainly assessed three areas of the published literature —

articles published based on epidemiological studies, articles published based on human anatomical models, and articles published based on studies in a preclinical setting, including animal models. The working group also reviewed many reports that examined the mechanisms of carcinogenesis *vis-a-vis* radio frequency (RF) energy. The committee assessed the purported connection between cell phone use and brain tumors as published in the literature. The systematic analysis by the committee led to a broad conclusion that RF-EMF should be classified as ‘possibly carcinogenic to humans’ (class 2B carcinogen) ‘in view of the limited evidence in humans and in experimental animals’.

Delving a little deeper into the details, based on one cohort study and five case-controlled studies examined, the best conclusion the IARC working group was able to come to, was that the findings from two of the studies assessed ‘could not be dismissed as reflecting bias alone’ and a ‘casual interpretation between mobile phone RF-EMF exposure and glioma was possible,’ although these studies were susceptible to bias in design and analysis. It was interesting to note that in the cohort study assessed by the committee, the subscription to mobile phone providers, between 1982 and 1995, was used as a surrogate for mobile phone use and not the actual use of the cell phones.

It was relevant to note that the studies evaluated by the IARC committee were conducted in early 2000 or before GSM phones (which emit 100 times more RF energy than 3G phones) were used, whereas, third generation (3G) phones are in vogue now, making the conclusions of the less optimally designed and analyzed studies irrelevant for the current

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generation of cell phone users.

Looking at the pictures on TV of the brain that was impacted by the wicked RF energy coming from the cell phones, I was remorseful to have ever used the cell phone. I was especially saddened to hear that the brain of a child was more vulnerable to the harmful effects of the RF-EMF. Little did I know then that these conclusions were based on the 'anatomical models of humans'! When watching, listening, and reading reports in the media, I was editorially excited that a new source of cancer in humans was found. I was sure that I could show the reports to my family and convince them to give up cell phones and save a huge amount of money. When I realized that the reports suggested that RF-energy from cell phones was not considered any more carcinogenic than coffee, as both are now in the company of other class 2B carcinogens, I gave up the idea, lest I be asked to give up coffee, as I am used to caffeine without which my brain freezes!.

On a serious note, breaking news like the link between cell phone use and cancer made a splash in the media, with little consideration given the fact that the report was a summary of the deliberations of the IARC committee and was not an outcome of any carefully planned study by the IARC. It is not always easy to communicate the intricate details of any

study to the public; the philosophical and methodological broodings of an international committee are even less easy to communicate, without causing concern and confusion. In an era when the media looks for material for quick sound bites and sensational news, I believe reports like the one by the IARC must have a 'media summary,' just like an executive summary in a complex business report. The purpose of the studies and analyses like the one discussed in this editorial must be communicated clearly to the public, to avoid panic and encourage the public to use caution, and also suggest the limitations of the studies on complex subjects related to human health. The discipline of public health may need to evolve strategies for educating the public in an objective, yet effective manner.

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