



Debunking the Myth: Mobile Phone Radiation and Its Non-Impact on Cancer

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Introduction

The debate surrounding the potential link between mobile phone usage and cancer has gained attention over the years, leading to extensive research. With over 5000 studies conducted globally, researchers have aimed to explore whether radiofrequency electromagnetic fields (RF-EMF) emitted by mobile devices pose health risks, particularly in relation to cancer. These studies have primarily focused on the development of brain tumors, such as gliomas and acoustic neuromas, both of which have been widely speculated as being linked to long-term mobile phone use. However, despite decades of investigation, no definitive evidence has emerged, pointing to the absence of a concrete connection between mobile phone use and cancer.

Differentiating Non-Ionizing and Ionizing Radiation

One of the critical factors in understanding mobile phone radiation is differentiating between non-ionizing and ionizing radiation. Mobile phones emit RF-EMF, which falls under the category of non-ionizing radiation. Unlike ionizing radiation, such as X-rays, which have the energy to break chemical bonds and cause cellular damage, non-ionizing radiation does not carry sufficient energy to directly affect DNA or cause cell mutations. As a result, RF-EMF from mobile phones is considered significantly less harmful compared to ionizing radiation.

Re-Evaluation by the IARC in 2011

In 2011, the International Agency for Research on Cancer (IARC) undertook a comprehensive re-evaluation of the link between mobile phone usage and cancer. This involved

an analysis of data from 10 countries, with contributions from 11 expert investigators who dedicated several decades to this research. While the IARC classified RF-EMF as "possibly carcinogenic to humans" (Group 2B), this designation indicated that there is limited evidence to suggest a potential risk, but not enough to draw a definitive conclusion. The classification left open the possibility of mobile phones contributing to cancer under specific conditions, though it did not confirm any direct causal relationship.

Expert Opinions on the Safety of Mobile Phones

Several prominent oncologists have weighed in on this topic, offering reassurance about the safety of mobile phones. *Dr. Abhishek Shankar*, a respected oncologist, highlighted that non-ionizing radiation from mobile phones does not cause cancer, affirming that the energy emitted is too low to cause significant harm. *Dr. Pritam Katari* from HN Reliance Foundation Hospital echoed these sentiments, noting that mobile phones emit low-intensity radio waves, which are not comparable to the damaging effects of ionizing radiation like X-rays.

Dr. Shankar also emphasized the importance of preventive health measures, such as smoking cessation and HPV vaccination, which are more effective in reducing cancer risk. He pointed out that while mobile phone use is not a significant cancer risk, other lifestyle choices have a much clearer link to the development of certain cancers.

The COSMOS Study: Investigating Mobile Phone Use and Cancer Risk

The Cohort Study of Mobile Phone Use and Health (COSMOS), conducted between 2007 and 2012, is one of the largest studies to date exploring the potential relationship between mobile phone use and cancer. This study involved participants from Denmark, Finland, the Netherlands, Sweden, and the UK, with the goal of examining any correlation between mobile phone use and the development of cancers such as glioma, meningioma, and acoustic neuroma.

Using self-reported data and operator records, the researchers calculated the hazard ratio (HR) for these cancers, which was found to be 0.97. This figure indicates no statistically significant increase in cancer risk associated with mobile phone usage. The study followed 2,64,574 participants over an average of 7.12 years and found no increased risk of central nervous system tumors or other cancers related to mobile phone use. Importantly, while men were shown to use mobile phones more frequently than women, there was no gender-based difference in cancer risk.

RF-EMF and Cancer: The Role of Heat and Tissue Exposure

One of the arguments presented in favor of a possible connection between RF-EMF exposure and cancer is the idea that prolonged exposure could generate heat, which in turn affects tissue health. However, the evidence does not support the idea that RF-EMF exposure from mobile phones is enough to cause tissue damage or DNA alterations. Studies consistently show that the energy emitted by mobile phones is too low to result in significant biological effects, even during extended use.

The Broader Implications of Mobile Phone Towers and Wireless Technologies

In addition to mobile phones, researchers have explored whether other wireless technologies, such as mobile phone towers, Wi-Fi networks, GPS systems, and radio stations, contribute to cancer risk. Studies involving 4G networks and earlier technologies have shown no significant evidence of carcinogenicity. However, it is worth noting that 5G technology was not included in many of these studies, as it was not yet widely deployed at the time.

Cell towers, in particular, have been found to reduce radiation exposure by providing efficient signal transmission, contrary to fears that they might increase radiation risks. *Ken Karipidis*, from Australia's Radiation and Nuclear Protection Authority, concluded that there is no credible evidence linking mobile phone towers and cancer development.

Health Symptoms Linked to Excessive Mobile Phone Use

While mobile phones may not pose a direct cancer risk, there are still concerns about their overuse. Many users report symptoms such as headaches, dizziness, anxiety, sleep disorders, eye strain, and even fatigue. These symptoms are generally attributed to the overuse of mobile phones rather than the RF-EMF emissions themselves. Extended phone use can lead to mental and physical strain, and poor posture during phone use can cause musculoskeletal issues such as neck and hand pain.

Conclusion

Despite numerous studies and extensive research over the past decades, there is no definitive evidence to suggest that mobile phone usage directly causes cancer. While the IARC has classified RF-EMF as "possibly carcinogenic" (Group 2B), this categorization leaves room for further investigation. Mobile phones emit non-ionizing radiation, which is significantly less harmful than ionizing radiation like X-rays. Current research, including large-scale studies such

as the COSMOS study, has consistently shown no significant increase in cancer risk from mobile phone use.

However, it is crucial to address the mental and physical health issues caused by excessive mobile phone use. Problems such as fatigue, sleep disturbances, and eye strain are becoming increasingly common. Moderation in mobile phone usage is key to maintaining a healthy balance in life. Like any technology, responsible use of mobile phones ensures that we can enjoy the benefits of connectivity without compromising our well-being. As the saying goes, "too much of anything is good for nothing," and this certainly applies to the overuse of mobile phones in our modern world.

Reference

Maria Feychting, Joachim Schüz, Mireille B. Toledano, Roel Vermeulen, Anssi Auvinen, Aslak Harbo Poulsen, Isabelle Deltour, Rachel B. Smith, Joel Heller, Hans Kromhout, Anke Huss, Christoffer Johansen, Giorgio Tettamanti, Paul Elliott, Mobile phone use and brain tumour risk – COSMOS, a prospective cohort study, *Environment International*, Volume 185, 2024, 108552, ISSN 0160-4120

<https://www.cancer.org.au/iheard/do-mobile-phones-cause-cancer>

<https://indianexpress.com/article/health-wellness/who-study-shows-mobile-phones-do-not-cause-brain-cancer-what-does-it-mean-for-device-use-9550989/>