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LETTER TO THE EDITOR

Comment on 'Cell phone use and ill health: is there a definite relationship?'

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Prof Gboyega A Ogunbanjo, in his editorial entitled 'Cell phone use and ill health: is there a definite relationship?', published in South African Family Practice, has addressed the possible link between mobile phone use and adverse health effects such as cancer. He has also discussed the challenging issue of electromagnetic hypersensitivity (EHS). Although his editorial has remarkable strengths, this paper needs some clarifications. The main concerns regarding the evidence presented in this paper about possible association of mobile phone use with cancer are discussed. In this light, recent evidence that supports a possible link as well as the shortcomings of the reports claiming no association between exposure to radiofrequency radiation and cancer are presented.

Correspondence

We have read with interest the editorial by Prof. Gboyega A. Ogunbanjo, entitled 'Cell phone use and ill health: is there a definite relationship?', published in South African Family Practice. Ogunbanjo in his article has addressed the possible link between mobile phone use and adverse health effects such as cancer. He has also discussed the challenging issue of electromagnetic hypersensitivity (EHS). Despite its remarkable strengths, this paper needs some clarifications. The first concern is about possible association of mobile phone use with cancer.

Over the past decade, we have studied the health effects of exposure to different sources of electromagnetic fields such as cellular phones,[1–12] mobile base stations[13,14] and Wi-Fi routers.[3,6,15–19] Regarding cancer, we have recently addressed the limitations and shortcomings of some of the studies claiming lack of association between exposure to radiofrequency radiation and cancer.[2, 20–22] Interestingly, in one of the papers reviewed by our research group, a 400% difference in brain tumours was ignored due to poor statistical analysis.[22] We have shown that current controversy, at least to some extent, can be due to the large variations in the magnitude of exposure to electromagnetic fields in different studies. In this light, we showed that in a similar pattern with ionising radiation, the dose–response relationship for carcinogenesis of non-ionising electromagnetic fields is nonlinear and J-shaped.[23]

Furthermore, the findings of a recent large-scale study conducted by the US National Toxicology Program (NTP), is entirely ignored in the editorial of Prof. Ogunbanjo. The NTP study revealed statistically significant increases in cancer in rodents that had been exposed to GSM or CDMA signals for two years. Moreover, this study showed that when the intensity of the radiation increased, the incidence of cancer among the rats also increased.[24] This US$25 000 000 study, which is the most complex study completed by the NTP, revealed that the occurrence of malignant gliomas in the brain and schwannomas of the heart can be linked to exposure to mobile phone radiofrequency radiation (RFR): 'The occurrences of two tumor types in male Harlan Sprague Dawley rats exposed to RFR, malignant gliomas in the brain and schwannomas of the heart, were considered of particular interest, and are the subject of this report'.

Furthermore, Momoli *et al*. [25] have recently performed a re-analysis of the Canadian data from the 13-country INTERPHONE case-control study and when they applied a probabilistic multiple-bias model to address possible biases simultaneously, the odds ratio (OR) for glioma comparing highest quartile of use (> 558 cumulative lifetime hours of use) to non-regular users was 2.0 (95% confidence interval: 1.2, 3.4). When adjusted for selection and recall biases, the OR was 2.2 (95% confidence interval: 1.3, 4.1).

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References

1. Mortazavi SM, Rahimi S, Talebi A, et al. Survey of the effects of exposure to 900 MHz radiofrequency radiation emitted by a gsm mobile phone on the pattern of muscle contractions in an animal model. J Biomed Phys Eng. 2015;5:121–32.
2. Mortazavi SAR, Mortazavi G, Mortazavi SMJ. Comments on 'Radiofrequency electromagnetic fields and some cancers of unknown etiology: an ecological study'. Sci Total Environ. 2017;609:1. https://doi.org/10.1016/j.scitotenv.2017.07.131
3. Zarei S, Mortazavi SM, Mehdizadeh AR, et al. A challenging issue in the etiology of speech problems: The effect of maternal exposure to electromagnetic fields on speech problems in the offspring. J Biomed Phys Eng. 2015;5:151–4.
4. Mokarram P, Sheikhi M, Mortazavi SMJ, et al. Effect of exposure to 900 MHz GSM mobile phone radiofrequency radiation on estrogen receptor methylation status in colon cells of male sprague dawley rats. J Biomed Phys Eng. 2017;7:79–86.
5. Eghlidospour M, Ghanbari A, Mortazavi SMJ, et al. Effects of radiofrequency exposure emitted from a GSM mobile phone on proliferation, differentiation, and apoptosis of neural stem cells. Anat Cell Biol. 2017;50:115–23. https://doi.org/10.5115/acb.2017.50.2.115
6. Taheri M, Mortazavi SM, Moradi M, et al. Evaluation of the effect of radiofrequency radiation emitted From Wi-Fi router and mobile phone simulator on the antibacterial susceptibility of pathogenic bacteria listeria monocytogenes and *Escherichia coli*. Dose Response. 2017;15:1559325816688527.
7. Mortazavi SAR, Mortazavi SMJ, Paknahad M. The role of electromagnetic fields in neurological disorders. J Chem Neuroanat. 2016;77:78–9. https://doi.org/10.1016/j.jchemneu.2016.04.004

8. Mortazavi SM, Rouintan MS, Taeb S, et al. Human short-term exposure to electromagnetic fields emitted by mobile phones decreases computer-assisted visual reaction time. Acta Neurol Belg. 2012;112:171–5. https://doi.org/10.1007/s13760-012-0044-y

9. Mortazavi SM. Subjective symptoms related to GSM radiation from mobile phone base stations: a cross-sectional study. J Biomed Phys Eng. 2014;4:39–40.
10. Mortazavi SM, Motamedifar M, Namdari G, et al. Non-linear adaptive phenomena which decrease the risk of infection after pre-exposure to radiofrequency radiation. Dose Response. 2014;12:233–45.
11. Mortazavi SM, Mahbudi A, Atefi M, et al. An old issue and a new look: electromagnetic hypersensitivity caused by radiations emitted by GSM mobile phones. Technol Health Care. 2011;19:435–43.
12. Mortazavi SM, Ahmadi J, Shariati M. Prevalence of subjective poor health symptoms associated with exposure to electromagnetic fields among university students. Bioelectromagnetics. 2007;28:326–30. https://doi.org/10.1002/(ISSN)1521-186X
13. Mortazavi S. Safety Issues of Mobile Phone Base Stations. Journal of Biomedical Physics and Engineering. 2013;3: 1–2.
14. Parsaei H, Faraz M, Mortazavi S. A multilayer perceptron neural network–based model for predicting subjective health symptoms in people living in the vicinity of mobile phone base stations. Ecopsychology. 2017;9:99–105. https://doi.org/10.1089/eco.2017.0011
15. Mortazavi G, Mortazavi SM. Increased mercury release from dental amalgam restorations after exposure to electromagnetic fields as a potential hazard for hypersensitive people and pregnant women. Rev Environ Health. 2015;30:287–92.
16. Mortazavi SA, Taeb S, Mortazavi SM, et al. The fundamental reasons why laptop computers should not be used on your lap. J Biomed Phys Eng. 2016;6:279–284.
17. Paknahad M, Mortazavi SM, Shahidi S, et al. Effect of radiofrequency radiation from Wi-Fi devices on mercury release from amalgam restorations. J Environ Health Sci Eng. 2016;14:12. https://doi.org/10.1186/s40201-016-0253-z
18. Shekoohi-Shooli F, Mortazavi SM, Shojaei-Fard MB, et al. Evaluation of the protective role of vitamin c on the metabolic and enzymatic activities of the liver in the male rats after exposure to 2.45 GHz Of Wi-Fi Routers. J Biomed Phys Eng. 2016;6: 157–164.
19. Taheri M, Mortazavi SM, Moradi M, et al. Klebsiella pneumonia, a microorganism that approves the non-linear responses to antibiotics and window theory after exposure to Wi-Fi 2.4 GHz electromagnetic radiofrequency radiation. J Biomed Phys Eng. 2015;5:115–20.
20. Mortazavi SAR, Mortazavi G, Mortazavi SMJ. Use of cell phones and brain tumors: a true association? Neurol Sci 2017;38:2059–60.
21. Mortazavi S, Mortazavi S, Paknahad M. Correspondence 'Cancers of the brain and CNS: global patterns and trends in incidence'-Electromagnetic Fields (EMFs) and Cancer. J of Biomed Phys Eng. In press.
22. Mortazavi S. Comments on 'Analysis of Mobile Phone Use Among Young Patients with Brain Tumors in Japan'. Bioelectromagnetics In press: 653–654. doi: https://doi.org/10.1002/bem.22082.
23. Mortazavi SMJ, Mortazavi SAR, Haghani M. Evaluation of the validity of a Nonlinear J-shaped dose-response relationship in cancers induced by exposure to radiofrequency electromagnetic fields. J Biomed Phys Eng. In press.
24. Wyde M, Cesta M, Blystone C, et al. Report of partial findings from the national toxicology program carcinogenesis studies of cell phone radiofrequency radiation in Hsd: Sprague Dawley® SD rats (Whole Body Exposure). bioRxiv. 2016: 055699.
25. Momoli F, Siemiatycki J, McBride ML, et al. Probabilistic multiple-bias modelling applied to the Canadian data from the INTERPHONE study of mobile phone use and risk of glioma, meningioma, acoustic neuroma, and parotid gland tumors. Am J Epidemiol. 2017;7:885–93.

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