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Relationship between parental exposure to radiofrequency electromagnetic fields and primarily hematopoietic neoplasms (lymphoma, leukemia) and tumors in the central nervous system in children: a systematic review

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Abstract

Low-frequency electromagnetic fields have grown exponentially in recent years due to technological development and modernization. The World Health Organization (WHO)/International Agency for Research on Cancer (IARC) has classified radiofrequency electromagnetic fields (RF-EMFs) as possibly carcinogenic to humans (Group 2B), and recent studies have investigated the association between exposure to electromagnetic fields in parents and possible health effects in children, especially the development of tumours of the central nervous system (CNS). The objective of this systematic review was to collate all evidence on the relationship between parental occupational exposure to electromagnetic fields and the development of CNS cancer in children and to evaluate this association. This review was prepared according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. PubMed, Embase, and Web of Science were searched from January 1990 to April 2021. The search was conducted using the following search string: "occupational" AND "child" AND "electromagnetic" AND "cancer". Seventeen articles met our inclusion criteria: 13 case-control studies, two cohort studies, and 2 meta-analyses. Most of the studies showed several methodological weaknesses that limited their results. Due to a lack of consistency regarding the outcome as well as the heterogeneity in the reviewed studies, the body of evidence for the effects of parental exposure to electromagnetic fields is not clear. Methodological heterogeneity in the way that studies were conducted could be responsible for the lack of consistency in the findings. Overall, the body of evidence allows no conclusion on the question of whether parental exposure to electromagnetic...

Keywords: central nervous system tumors; environmental exposure; occupational exposure; radiofrequency electromagnetic fields.

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