

## **Exposure to Non-Ionizing Radiation and Childhood Cancer: A Meta-Analysis**

### **ABSTRACT**

**Background:** A slight increase in the childhood cancer trend has been observed for the past few decades. Non-ionizing radiation is one of the environmental factors linked to childhood cancers. This review is conducted to assess the association between non-ionizing radiation and childhood cancer based on all original studies to date.

**Methods:** A systematic search was conducted on the titles and abstracts pertaining to non-ionizing radiation and childhood cancers using the PubMed, Scopus, SAGE and ScienceDirect databases from inception up to November 2018. Quality of each article was appraised using the Newcastle-Ottawa Scale, meta-analysis was performed with Review Manager, and fixed effects were used to estimate the pooled OR of the selected studies.

**Results:** A total of 15 articles met all the selection criteria. Twelve articles were included in the meta-analysis. Pooled risk estimates of the 12 studies, obtained via fixed effects model, showed that children exposed to 0.2  $\mu$ T or more of EMF non-ionizing radiation run 1.33 times higher risks of contracting childhood cancer compared to those with less than 0.2  $\mu$ T exposure (95% CI: 1.10, 1.60). The studies were statistically homogeneous (chi-squared  $P=0.71$ ,  $I^2=0\%$ ), and there was no evidence of publication bias.

**Conclusion:** It cannot be concluded that children exposed to non-ionizing radiation have higher risks of childhood cancer compared to those who were not exposed as claimed by the previous reviews. However, concerns about non-ionizing radiation exposure and childhood cancer should not be neglected.