

MATERNAL EXPOSURE TO MAGNETIC FIELDS (MFS) DURING PREGNANCY IN RELATION TO THE RISK OF ASTHMA IN OFFSPRING

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Background and Aims: Asthma is the most common chronic disease in children, and the prevalence has been increasing for decades. Yet, its etiology is large unknown. This study examined a new potential etiological factor: whether maternal exposure to high MF level during pregnancy increases the risk of asthma in offspring.

Methods: A prospective cohort study was conducted among members of Kaiser Permanente Northern California. Participating pregnant women carried a meter measuring their MF levels during pregnancy and 626 of their children were followed up to 13 years for their clinical diagnosis of asthma.

Results: A higher maternal MF exposure level during pregnancy was associated with significantly higher prevalence of clinically diagnosed asthma in offspring. After adjustment for potential confounders, a statistically significant linear dose-response relationship was observed between increasing maternal median daily MF exposure level in pregnancy and an increased risk of asthma in offspring (adjusted hazard ratio (aHR)=1.26, 95% confidence interval (CI) 1.10-1.44). Using the categorical MF level (low, medium and high), the results showed a similar dose-response relationship: compared to those whose mothers had a low MF exposure during pregnancy, children whose mothers had a high MF level had more than 3.5 fold increased risk of developing asthma (aHR=3.52, 95%CI: 1.68-7.35), while children whose mothers had a medium MF level had a 74 percent increased risk of asthma (aHR=1.74, 95% CI: 0.93-3.25). There was also a statistically significant synergistic interaction between other asthma risk factors, maternal history of asthma and birth order (first-born), and the MF effect on the asthma risk.

Conclusions: Our finding provides the new epidemiologic evidence that high maternal MF exposure in pregnancy may be associated with the risk of asthma in offspring.