

## Relationship between the use of induction heating cookers and birth outcomes in pregnant women: An Internet-based survey

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Background: In recent years, the number of devices that generate intermediate frequency electromagnetic fields (frequencies of 300 Hz to 10 MHz) in the living environment (e.g. induction heating cookers, integrated circuit card readers, anti-theft devices, etc.) is increasing. Since there is concern among the public that electromagnetic fields might adversely affect their health, it is important to examine the possible health effects of intermediate frequency electromagnetic fields. When cooking with an induction heating cooker, the abdomen is close to the device, resulting in its exposure to intermediate frequency electromagnetic fields. Pregnant women, in particular, have a protruding abdomen and are therefore closer to the device.

Objective: The purpose of the present study was to examine the possible health effects of intermediate frequency electromagnetic fields by clarifying the relationship between the use of induction heating cookers and imminent preterm birth / miscarriage in pregnant women.

Materials and methods: An internet survey on induction heating cooker usage and health was conducted in February 2020 using a survey panel of pregnant women (n=3000). In the analysis, a logistic regression model was used to examine whether the use of induction heating cookers was associated with imminent miscarriage / preterm birth. Regarding the use of induction heating cookers, we examined whether or not they were used and the daily usage time during pregnancy. Age, weeks of pregnancy, smoking, drinking, educational background, and household income were used as covariates.

Results: The subjects included 458 (15.3%) women in the first trimester (up to 13 weeks), 934 (31.1%) women in the second trimester (14-27 weeks), and 1,608 (53.6%) women in the third trimester (after 28 weeks). During their pregnancies, 422 (14.1%) of the subjects were diagnosed by doctors as having an imminent miscarriage or imminent preterm birth. Induction heating cookers were used by 1,293 (43.1%) subjects. The results of multivariate logistic regression analysis showed that the odds ratio of using an induction heating cooker was 1.14 (95%CI: 0.93-1.40, p=0.22).

Conclusion: No association was observed between the use of induction heating cookers and imminent miscarriage / preterm birth in pregnant women.

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