THE IMPACT OF AIR POLLUTION ON THE HEALTH OF PREGNANT WOMEN

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Abstract - This study utilizes data from the National Health Insurance provided by the Health and Welfare Data Science Center, Ministry of Health and Welfare, along with air quality monitoring data from the Environmental Protection Administration. It explores the impact of air pollution on the health of pregnant women, analyzing the harm caused by 11 pollutants monitored by air quality monitoring stations to three common pregnancy complications in Taiwan: gestational diabetes mellitus (GDM), preeclampsia (PET), and pregnancy-induced hypertension (PIH). The study evaluates the risk of air pollution through changes in probability of outpatient visits, medical expenses, and the frequency of outpatient visits for these three conditions. The results indicate that PM10, PM2.5, NO2, O3, CO, NOX, NO, THC, CH4, and other pollutants significantly harm GDM. Additionally, NO2, CO, NOX, NO, THC, and NMHC significantly harm PIH. However, probability of outpatient visits and medical utilization for PET are not affected by air pollution. According to the model parameters of this study and the evaluation criteria of Taiwan's Air Quality Index (AQI), if the exposure to air pollution during pregnancy increases from the concentration range of the pregnancy period to a higher pollution level range, it is expected that the probability of outpatient visits and medical utilization for pregnancy complications will significantly increase. The government should implement more proactive policies to reduce air pollutant emissions, ensuring the health of pregnant women and newborns and aligning with international consensus.

Keywords - Air Pollution, Pregnant Women, Health, Gestational Diabetes Mellitus (GDM), Preeclampsia (PET), Pregnancy-Induced Hypertension (PIH), Medical Utilization