

# PRENATAL EXPOSURE TO HEAVY METALS AND COTININE IN A MOTHER-INFANT STUDY IN TAIWAN

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**Background and Aims:** Prenatal exposure to toxic substances such as mercury, cotinine, etc can negatively affect fetal and post-natal growth and development. Taiwan is a country with a relatively high consumption of fish and percentage of exposure to smoking. However, there are only few studies reporting the effect of environmental toxins on the effect of neonatal growth and development during pregnancy in Taiwan. The purpose of this prospective study in south Taiwan is to evaluate the effect of mercury and cotinine on fetus and postnatal development.

**Methods:** This is a multi-center prospective cohort which enrolled pregnant women from Kaohsiung Veterans General Hospital (KVGH) and Fooyin Hospital (FH). The questionnaire was administered to the subjects after recruitment, to assess the exposure of environmental toxins during pregnancy. Whole blood and urine samples were collected for measurement of mercury(Hg), lead (Pb), manganese (Mn), and cotinine during pregnancy. The maternal chart during pregnancy were reviewed. Newborns were examined for body weight, body length, head circumference, and function of nervous system, etc.

**Results:** A total of 113 pregnant women (mean age  $27.05 \pm 3.80$  years) in FH (rural group) and 103 (mean age  $31.18 \pm 4.60$  years) in KVGH (urban group) were enrolled. There were significant differences between two groups in terms of age, education, occupation, and total weight gain after pregnancy. The prevalence of maternal exposure to smoking in KVGH and FH was 33.3% and 74.4% respectively. There were significant differences between two groups in terms of consumption of lean fish, and fried and mixed fish. There was significant association of Pb with cotinine in pregnant women ( $p=0.006$ ). There was significant correlation between Mn and Pb ( $p<0.0001$ ). There was no significant correlation between maternal heavy metals and birth outcome.

**Conclusions:** Exposure to smoking environment is high for pregnant women in south Taiwan. There is no risk of mercury toxicity in pregnant women in this series, but the contamination of heavy metals in our life is still an important issue.