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Lead screen in pregnant women, a field approach in midwifery clinic

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Objective: Lead poisoning may affect fetus through umbilical cord of pregnant women and delay intrauterine growth and development. This study investigates the probable factors affecting the blood lead level (BLL) in pregnant women.

Methods: One-hundred pregnant women visited in midwifery clinic were entered prospectively in a cross-sectional study. Age, demographic and pregnancy characteristics, husband and wife habits, jobs and educations, cause of reference, history of lead toxicity in the family, exposure to substances, living in industrial areas, building age and water pipe type, using calcium and iron supplements as well as cooking dishes were documented for each mother. Blood lead level was measured using Lead Care II with ability to check blood lead from 3.3 to 65 µg/dL (<3.3 was considered as 1.6 µg/dL). For the description of quantitative variables with normal and non-normal distribution, mean (±SD) and median [IQR] were used, respectively. For qualitative variables, percent of frequency was mentioned. Kruskal-Wallis and Mann-Whitney U test was used to compare blood lead level in categorical variables. Fisher's Exact test was used to evaluate the association between history of lead toxicity in the family and categorical variables.

Results: Pregnant women had a mean age of 29±5 (range 19-42), mostly housewives (90%), who were educated (82% above diploma) and mainly (95%) participating in educational programs before child bearing. The median [IQR] gestational age was 33 [24, 37] weeks (range 4-40) with gravid 2 [1, 3] (range 1-6), para 1 [0, 1] (range 0-3) and abortion 0 [0, 0] (range 0-4). There was a significant correlation between polluted residential area and median [IQR] BLL (1.6 [1.6, 5.7] vs. 1.6 [1.6, 1.6], p=0.044) and substance exposure (1.6 [1.6, 5.7] vs. 2.4 [1.6, 3.7], p=0.020). The median [IQR] BLL was significantly lower in those pregnant mothers who had not a history of lead toxicity in the family compared to having history of lead toxicity and undetermined history (1.6 [1.6, 1.6] range 1.6-7.6 vs. 1.6 [1.6, 16.2] range 1.6-7.6 vs. 1.6 [3.3, 3.6] range 1.6-4.7, p=0.003 respectively). Excluding undetermined history of lead toxicity in the family, a significant contribution in excessive usage of species and herbal products was found (Odds ratio 15.9 (95% CI, 2.3, 111.4, p=0.01).

Conclusion: Higher blood lead levels may be seen in pregnant women who reside in industrial area and exposed to substances particularly opium. Excessive use of species and herbal products may pose a higher risk of lead toxicity in general.