Hair mercury levels and prenatal depression among pregnant women in multi-ethnic Suriname: preliminary results from the CCREOH- MekiTamara study

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Background: Pregnant women that are exposed to high levels of mercury may have an increased risk of adverse mental health conditions including post-partum depression. Mercury use for artisanal gold mining purposes in the interior of Suriname is alarming. The Caribbean Consortium for Research in Environmental and Occupational Health (CCREOH)-MekiTamara study assesses the influence of chemical and non-chemical stressors on 1000 mother/child dyads. This study aims to determine the association of mercury exposure and depression in Surinamese pregnant women.

Method: Data of 337 pregnant women from the CCREOH program were analysed to assess probable prenatal depression using the standardized Edinburgh Postnatal Depression Scale (EPDS cut off ≥12). Total mercury in hair was measured using cold-vapor atomic absorption spectrometry (USEPA action level ≥ 1.1 ug/g indicated elevated mercury levels). The association between hair mercury levels and depression was examined using logistic regression analyses, adjusted for demographic factors.

Results: 92 women (27.3%) had elevated total mercury hair levels that exceeded the USEPA action level, 24.8% of this sub- cohort had probable depression; no significant association was observed between elevated mercury levels and probable depression. 25.9% of women with elevated mercury levels had probable depression versus 24.3% without elevated mercury levels. Bivariate analyses indicated women 35 years or older had 3.06 the odds of elevated mercury levels (p=0.003) compared to women 20-34 years. Women with elevated mercury levels were more often lower educated (OR 2.50, p<0.001) and were living in the interior of Suriname (OR 5.97, p=0.01), ethnicity and income were not associated.

Conclusion: One out of 4 pregnant Surinamese women in the CCREOH sub- cohort had elevated hair mercury levels. Older women, women with lower education and those living in areas of high exposure were at higher risk. Hair mercury levels did not show a significant association with depression.