ABSTRAK

Nadya Diena Rahmah

Latar Belakang: Indonesia sebagai negara kepulauan memiliki risiko tinggi terhadap paparan merkuri. Konsumsi makanan laut yang tinggi terutama di wilayah pesisir seperti Jepara, meningkatkan risiko paparan merkuri terutama bagi kelompok rentan seperti ibu hamil dan anak. Interaksi zat gizi dan respon genomic (nutrigenomic) dapat mempengaruhi metabolism paparan merkuri.
Tujuan: Menganalisis hubungan antara asupan makanan laut, polimorfisme GPX1 Pro198Leu, delesi GSTM1, kadar selenium, dan kadar merkuri pada ibu hamil dengan status tumbuh kembang anak di Kabupaten Jepara.
Metode: Penelitian ini merupakan penelitian kohort. Sebanyak 135 pasang ibu-anak diikuti perkembangannya sejak masa kehamilan hingga anak usia 2 tahun. Sampel rambut ibu hamil diambil untuk pemeriksaan kadar merkuri dan selenium, sampel darah ibu hamil diambil untuk pemeriksaan variasi genetic, dan riwayat asupan makanan laut ibu untuk mengetahui hubungan antara asupan makanan laut, polimorfisme GPX1 Pro198Leu, delesi GSTM1, kadar selenium, dan kadar merkuri pada ibu hamil dengan status tumbuh kembang anak.
Hasil: Rerata kadar merkuri pada ibu hamil termasuk rendah yakni 0,73 dan rerata kadar selenium dalam batas normal yakni 0,64. Ditemukan ada hubungan yang signifikan ($p<0,05$) antara kadar merkuri ibu hamil dengan lingkar kepala anak usia 18 bulan dan signifikansi secara marginal ($p<0,1$) dengan bernilai KPSP usia 18 bulan.
Kesimpulan: Hasil penelitian menunjukkan bahwa terdapat hubungan signifikan antara kadar merkuri pada ibu hamil dengan status pertumbuhan anak usia 18 bulan, sementara variabel lain tidak menunjukkan hubungan signifikan. Hal ini menunjukkan adanya potensi dampak negatif jangka panjang dari paparan merkuri selama kehamilan.

Kata Kunci: Kadar Merkuri; Kadar Selenium; Delesi GSTM1; GPX1 Pro198Leu; Asupan Makanan Laut; Status Tumbuh Kembang Anak

ABSTRACT

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Background: As an archipelagic country, Indonesia faces a high risk of mercury exposure. High seafood consumption, especially in coastal areas such as Jepara, increases the risk of mercury exposure, particularly among vulnerable groups such as pregnant women and children. The interaction between nutrients and genomic responses (nutrigenomics) can influence the metabolism of mercury exposure.
Objective: To analyze the relationship between seafood intake, GPX1 Pro198Leu polymorphism, GSTM1 deletion, selenium levels, and mercury levels in pregnant women and their association with child growth and development status in Jepara Regency.
Methods: This study is a cohort study. One hundred and thirty-five mother-child pairs were followed from pregnancy until the child reached 2 years of age. Hair samples from pregnant women were collected to examine mercury and selenium levels, blood samples were taken to assess genetic variations and dietary history was obtained to evaluate seafood intake. These data were used to analyze the relationship between seafood intake, GPX1 Pro198Leu polymorphism, GSTM1 deletion, selenium levels, and mercury levels in pregnant women and their association with child growth and development.
Results: The average mercury levels in pregnant women were below the recommended threshold (0.73 ppm) and selenium levels were at normal range (0.64 ppm). A significant relationship ($p<0.05$) was found between mercury levels in pregnant women and the head circumference of children at 18 months of age, and marginaly significance ($p<0.1$) for developmental score at 18 months.
Conclusion: The study found a significant relationship between mercury levels in pregnant women and child growth status at 18 months, while other variables showed no significant effect. This indicates a potential long-term negative impact.

Keywords: Mercury Levels; Selenium Levels; GSTM1 Deletion; GPX1 Pro198Leu; Seafood Intake; Child Growth and Development Status