# Dampak Pajanan Merkuri Terhadap Status Gizi Balita di Daerah Pertambangan Emas Skala Kecil Kabupaten Gunung Mas

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Abstrak

Pada tahun 2024, prevalensi stunting di Kabupaten Gunung Mas adalah 14,1%, kekurangan berat badan (14,8%), gizi kurang (9,6%), dan gizi buruk (2,3%). Masalah gizi telah menurun selama lima tahun terakhir, tetapi belum mencapai target Tujuan Pembangunan Berkelanjutan (SDGs). Upaya pencegahan masih berfokus pada intervensi gizi, tetapi belum memasukkan efek paparan merkuri dalam kerangka global. Merkuri diketahui berinteraksi dengan nutrisi dan mengganggu metabolisme tubuh sehingga mempengaruhi asupan zat gizi dan meningkatkan risiko penyakit infeksi. Kedua faktor tersebut merupakan determinan masalah gizi di dunia. Tujuan penelitian ini adalah menilai dampak pajanan merkuri terhadap status gizi Balita. Metode penelitian ini adalah  studi observasional dengan pendekatan crosssectional study,yang dilakukan pada 146 balita yang berdomisili di daerah pertambangan  emas skala kecil selama satu tahun atau lebih. Pengukuran antropometri dilakukan untuk menilai gizi kurang/buruk, stunting dan underweight. Penelitian ini mengukur konsentrasi merkuri rambut dan merkuri urin sebagai biomarker pajanan merkuri. Asupan merkuri melalui konsumsi ikan dinilai untuk mengetahui sumber pajanan merkuri. Hasil penelitian menunjukkan bahwa sebesar 20,6% responden mengalami gizi kurang/buruk, stunting (34,25%), dan underweight (32,2%). Konsentrasi merkuri rambut 0,008 - 1,122 mg/kg (median 0,163 mg/kg), sedangkan konsentrasi merkuri  urin 0,0011 - 0,0317 mg/L (median 0,0023 mg/L). Asupan merkuri melalui konsumsi ikan 0,020 - 0,0609 mg/kg/hari. Asupan merkuri melalui konsumsi ikan berhubungan secara signifikan dengan kadar merkuri rambut. Kelompok dengan asupan ≥ 0,20 mg/kg/hari memiliki konsentrasi merkuri dalam rambut lebih tinggi, 0,165 mg/kg, tetapi konsentrasi merkuri urin lebih rendah,0,001 mg/L. Hasil uji statistik menunjukkan konsentrasi merkuri rambut secara signifikan meningkatkan risiko gizi kurang/buruk sebesar 19,6 kali (95% CI = 1,1– 362,3); risiko stunting 8,4 kali (95% CI = 0,1–1094), dan risiko underweight 15,89 kali (95% CI = 0,0–1562,0). Dengan demikian, disimpulkan bahwa konsentrasi merkuri rambut merupakan faktor yang paling berperan dalam hubungan pajanan merkuri terhadap  status gizi Balita. Hasil penelitian ini menjadi informasi awal tentang pajanan merkuri dan dampaknya terhadap status gizi. Oleh karena itu, pemerintah  perlu mengeluarkan kebijakan tentang pencegahan pencemaran merkuri di lingkungan, pemantauan rutin pajanan merkuri dan keamanan pangan, serta pengobatan dan perawatan kelompok kasus. Kami merekomendasikan integrasi intervensi gizi dan kesehatan lingkungan dalam kerangka kerja nasional untuk pencegahan dan tatalaksana malnutrisi di Indonesia, khususnya di daerah-daerah dengan pajanan merkuri yang tinggi. <hr /> In 2024, the prevalence of stunting in Gunung Mas Regency was 14.1%, underweight 14.8%, wasting 9.6%, and severe wasting 2.3%. During the last years, the nutritional problems have decreased, but these figures have not reached the target of Sustainable Development Goals (SDGs). Prevention efforts still focused on nutritional intervention, but they had not yet included the effects of mercury exposure in the global framework. Mercury was known to interact with nutrition and disrupt the body's metabolism, thus affecting nutrient

intake and increasing the risk of infectious disease. Both factors were determinants of nutritional problems in the world. This study aimed to assess the impact of mercury exposure on the toddlers' nutritional status. This study was a cross-sectional observational study; it was conducted on 146 toddlers who had lived in small-scale gold mining areas for one year or more. Anthropometric measurements were conducted to assess wasting, stunting, and underweight. Mercury exposure was assessed based on biomarker measurements by measuring mercury levels in hair and urine. The results showed that 20.6% of respondents were wasting, 34.25% stunted, and 32.2% underweight. Hair mercury concentration was 0.008 - 1.122 mg/kg (median 0.163 mg/kg), while urinary mercury was 0.0011 - 0.0317 mg/L (median 0.0023 mg/L). Mercury intake through fish consumption was 0.020 - 0.0609 mg/kg/day. Mercury intake through fish consumption was significantly associated with hair mercury concentration. The group with intake ≥ 0.20 mg/kg/day had higher hair mercury concentration of 0.165 mg/kg, but lower for urinary mercury concentration of 0.001 mg/L. Statistical analysis showed that hair mercury concentration significantly increased the risk of wasting by 19.6 times (95% CI = 1.1–362.3). The risk of stunting was 8.4 times (95% CI = 0.1–1094), and the risk of underweight was 15.89 times (95% CI = 0.0–1562.0). This study concluded that hair mercury concentration was the most important factor in the relation of mercury exposure and toddler nutritional status. This study result became basic information about mercury exposure and the effect on toddler nutritional status. Therefore, the government should develop a policy on mercury pollution prevention, routine monitoring of mercury exposure, food safety, medication, and treatment of case groups. We recommend integrating nutrition and environmental health interventions into Indonesia’s national framework for preventing and managing malnutrition, especially in areas with high mercury exposure.