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Overweight and micronutrient malnutrition among children under five years of age in Mongolia: a dual burden of epidemic proportions

Introduction: The Mongolian diet is associated with a high intake of proteins, but little dietary diversity, leaving much of the population at risk for micronutrient deficiencies. Further, greater consumption of Western-influenced high-energy, nutrient-poor foods has contributed to a growing burden of overweight and obesity. We examined the occurrence of overweight and micronutrient malnutrition among Mongolian children under 5 years of age.

Methods: We utilized data from the 2015 National Nutrition Survey conducted in Mongolia's 21 provinces and capital city of Ulaanbaatar. Weight (kg), height/length (cm), and micronutrient status were assessed for children 0-59 months using haemoglobin (Hb) concentration (g/l), serum ferritin (µg/l), serum retinol (µmol/l), and serum 25(OH)D (ng/ml), adjusted for elevated C-reactive protein (> 5 mg/l) or α1-acid-glycoprotein (> 1 g/l) inflammation/infection biomarkers.

Results: Almost one-quarter (23.8%, n=413) of children < 5 were anaemic (Hb < 110 g/l), 21.6% (n=374) were iron-deficient (serum ferritin < 12 µg/l), 69.9% (n=1210) had insufficient vitamin A (serum retinol < 1.05 µmol/l) levels and 90.9% (n=1556) had inadequate vitamin D [serum 25(OH)D < 30 ng/ml] status, with the largest proportion of micronutrient deficiency in the 0-23 month age group. The prevalence of child overweight (WHZ Z-score > 2 SD above median) was 10.3% (n=176), with 49.4% (n=87) of overweight children living in households with some level of food insecurity. Among overweight children, 31.3% (n=55) were anaemic, 27.3% (n=48) were iron-deficient, and 87.5% (n=154) and 70.5% (n=124) had insufficient vitamin D and vitamin A status, respectively. Among overweight children 6_23 months, though 90.8% (n=99) received minimum meal frequency, 53.2% (n=58) consumed vitamin A-rich foods the previous day, 45.0% (n=49) had minimum dietary diversity (items from ≥ 4 food groups), and 42.2% (n=46) had an overall minimum acceptable diet. For anaemic children, 64.2% (n=265) lived in households experiencing some level of food insecurity, while 66.5% (n=1035) of children with inadequate vitamin D status were from food insecure households.

Conclusion: Mongolia is facing a double burden of malnutrition, evident by a concurrently high prevalence of overweight and micronutrient deficiency among young children across all regions and socioeconomic groups. The fact that overweight is being established at an early age poses serious public health concerns for the country. Tackling Mongolia's nutrition challenges requires a lifecycle approach focusing on good prenatal, infant, child, adolescent, and adult nutrition to address factors contributing to micronutrient deficiencies and excess weight gain in the population. Intersectoral policies aimed at increasing the availability, affordability, and access to nutritious foods while restricting exposure to unhealthy foods, strengthening infant and young child feeding practices, and greater family-focused promotion of healthy eating and physical activity behaviours are necessary to reduce the double burden of malnutrition in Mongolia.

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