

Micronutrient deficiencies in children: Key drivers in BC

Micronutrients are essential vitamins and minerals required for normal growth, development, and metabolic function. In childhood, they support neurodevelopment, immune function, and bone health. Rapid growth in infancy, early childhood, and adolescence increases susceptibility to deficiency.¹ Childhood obesity rates in Canada have tripled in recent years, intensifying the “double burden” of malnutrition—where excess caloric intake coexists with micronutrient deficiency.²

In BC, 86% of school-aged children fail to meet the minimum guidelines for fruit and vegetable intake, indicating a population-level dietary risk across socioeconomic groups.¹ Structural factors—including poverty, systemic racism, and migration-related barriers—further influence dietary access and nutritional outcomes.^{3,4}

Rural and urban children at risk

The drivers of pediatric micronutrient deficiencies vary between rural and urban settings. Rural and remote communities—including northern regions and many Indigenous populations—experience higher rates of food insecurity and poverty and persistent barriers in the health system.³ Interruptions to traditional diets, prolonged breastfeeding without complementary iron-rich foods, and early introduction of cow’s milk contribute to iron and vitamin D deficiency. Environmental factors, including limited sunlight exposure and geographic

isolation, further increase the risk of vitamin D–deficiency rickets and iron-deficiency anemia.⁵ Gaps in routine screening and supplementation programs also exacerbate inequities in rural communities.

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In urban settings, children commonly consume energy-dense, nutrient-poor processed foods. Socioeconomic disparities, limited time for family meal preparation, and the nutritional impacts of acculturation in newcomer families contribute to inadequate intake of vitamin D, calcium, magnesium, and B vitamins.⁴ Despite broader food availability, many urban households still face barriers to nutrient-dense diets.

Newcomer and refugee children

Newcomer children are at increased risk of vitamin and mineral deficiencies due to premigration food insecurity, limited access to fortified foods, and infectious disease exposures. Caring for Kids New to Canada identifies vitamin A deficiency as a common condition in newcomer children, which may be unfamiliar to some practitioners, presenting with night blindness, xerophthalmia, and an increased susceptibility to severe infections.⁴ Iron deficiency and iron-deficiency anemia frequently accompany migration and may persist if financial or cultural barriers limit access to nutrient-rich foods postarrival.⁴

Micronutrient deficiencies interact bidirectionally with infection. Infectious diseases deplete stores of iron, vitamin A, and zinc, while deficiencies increase the severity and duration of infection.⁶

Dietary patterns and restrictive eating

Shifts away from traditional or whole-food diets toward ultra-processed foods decrease micronutrient density. Children following vegetarian, vegan, gluten-free, or highly selective/neurodivergent eating patterns are at increased risk for inadequate intake of vitamin B12, iron, vitamin D, zinc, and calcium without targeted dietary planning.⁷

Environmental determinants

Climate change is an emerging determinant of nutrient intake. Increased atmospheric CO₂ levels reduce iron, zinc, and protein content in staple crops, posing long-term risks for population nutrition.⁸ BC’s dependence on imported foods increases vulnerability to global supply chain instability.

Addressing micronutrient deficiency

Clinicians should remain alert for signs of deficiency. Vitamin A deficiency may present with visual changes; vitamin C deficiency with musculoskeletal pain or gingival abnormalities; and iron deficiency with fatigue, pallor, or developmental concerns.^{3,5}

Key interventions include culturally responsive nutrition education, universal nutritional screening at child and newcomer health visits, targeted supplementation, food fortification programs, and strengthened provincial nutrition surveillance. Addressing food insecurity through income supports, school meal programs, and access to culturally relevant foods is foundational to improving child nutrition across BC. ■

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or an atypical presentation is suspected, consider a high-resolution CT or referral to a respirologist for further investigation.^{6,7} Pulmonary function tests typically demonstrate a restrictive defect; however, in late-stage disease, there can be mixed defects with obstruction, restriction, and impairment in gas transfer.²

In addition to symptom management and RCS avoidance, early management involves minimizing other pulmonary risks. This includes smoking cessation, influenza and pneumococcal immunization, and monitoring and management of comorbid conditions (e.g., chronic obstructive pulmonary disease, pulmonary hypertension, kidney disease).²

If you have a patient with a WorkSafeBC claim or suspect silicosis, please indicate on your Form 11 that you would like your patient to be referred to a respirologist or to the WorkSafeBC Visiting Specialist Clinic (respirology). You can also reach a WorkSafeBC medical advisor on the RACE app+ to discuss your patient's case. If you have concerns about the RCS exposure described by your patient, reach out to WorkSafeBC's prevention team at 604 276-3100 (Lower Mainland) or 1 888 621-7233. For more information, visit www.worksafebc.com/silica. ■

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