



Nutrition for the Next Generation: A Life-Cycle Approach to Adolescent, Young Adult and Adult Nutritional Security in India

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Adequate nutrition during older childhood, adolescence and young adulthood determines the health trajectory of individuals and, cumulatively, of populations. This article examines "Nutrition for the Next Generation" as a life-cycle concept linking adolescent and young adult nutritional status to reproductive health, chronic disease risk, mental wellbeing and the nutritional status of the next generation. Nutritional requirements across older childhood, adolescence and adulthood are reviewed alongside common deficiency and lifestyle-related disorders, the diet-mental health relationship and emerging concerns around food safety and sustainable diets. Current nutritional challenges in India are analysed alongside major government interventions POSHAN Abhiyaan, PM POSHAN, Eat Right India and ICDS with an assessment of their reach and limitations. Community-based nutrition education strategies and field outreach experiences are also presented. The article concludes that a coordinated, multi-sectoral, life-cycle approach is essential to secure the nutritional foundation of the next generation and to break the intergenerational cycle of malnutrition.

Introduction

Nutrition is the cornerstone of human growth, development and disease prevention. "Nutrition for the next generation" refers not merely to feeding children, but to a life-cycle continuum in which the nutritional status of adolescents and young adults today shapes the health of the generation they will parent tomorrow. Malnutrition in any form undernutrition, micronutrient deficiency or overnutrition occurring during critical growth windows can produce effects that persist across generations, often described as the intergenerational cycle of malnutrition. India, home to one of the largest adolescent and youth populations in the world, faces a triple burden of malnutrition: persistent undernutrition and micronutrient deficiencies alongside a rising prevalence of overweight, obesity and diet-related non-communicable diseases. Addressing this requires understanding nutritional needs at each life stage, the determinants of dietary practices and the policy architecture designed to intervene at scale. Adequate intake of energy, protein, vitamins and minerals during older childhood, adolescence and adulthood supports growth, cognitive development, reproductive health and immunity, while reducing chronic disease risk later in life.

Concept of Nutrition for the Next Generation

The first 1,000 days (conception to age two) are widely recognised as the most critical window for growth and cognitive development, but a mother's nutritional status at conception is itself a product of her own nutrition during adolescence. A girl who is stunted or anaemic as an adolescent is more likely to have a low-birth-weight infant, perpetuating the cycle of malnutrition. The concept therefore encompasses three interlinked ideas: preparatory nutrition, ensuring adolescents and young adults enter reproductive age with adequate reserves; protective nutrition, safeguarding status during pregnancy, lactation and early

childhood; and preventive nutrition, building habits early to reduce future non-communicable disease burden.

Common Nutritional Problems Among Adolescents

- Undernutrition and stunting linked to poverty and inadequate dietary diversity
- Iron-deficiency anaemia, the most widespread deficiency among Indian adolescents, particularly girls
- Rising overweight and obesity driven by urbanisation and energy-dense diets
- Disordered eating and body image concerns influenced by social and media pressures
- Poor dietary diversity contributing to hidden hunger despite adequate caloric intake
- Vitamin D and calcium deficiency affecting bone growth
- Unhealthy eating habits meal skipping, fast food and sugary drink consumption

Lifestyle Diseases, Mental Health and Nutrition

The nutrition transition increased consumption of refined carbohydrates, added sugars and unhealthy fats alongside reduced physical activity has driven a sharp rise in non-communicable diseases across all age groups, including adolescents and young adults. Obesity, type 2 diabetes mellitus, cardiovascular disease and certain cancers are increasingly linked to dietary patterns established early in life, making adolescence and young adulthood critical windows for NCD prevention. Emerging evidence points to a bidirectional relationship between diet and mental health, mediated in part by the gut-brain axis. Diets rich in whole grains, fruits, vegetables and omega-3 fatty acids are associated with lower rates of depression and anxiety, while diets high in ultra-processed foods and added sugar are linked to poorer mental health outcomes. Nutritional deficiencies of iron, vitamin D, B-vitamins and omega-3 fatty acids can exacerbate low mood, poor concentration and fatigue, and disordered eating patterns frequently co-occur with anxiety and depressive symptoms in this age group, underscoring the need for integrated nutritional and psychological support.

Sports Nutrition, Food Safety and Sustainable Diets

Adolescents and young adults engaged in regular sports have elevated requirements for energy, protein (approximately 1.2–1.7 g/kg body weight/day), carbohydrates, fluid and certain micronutrients, particularly iron and calcium in young female athletes. The Relative Energy Deficiency in Sport (RED-S) syndrome, resulting from inadequate energy availability relative to training load, is a growing concern that can impair bone health, immunity and reproductive function if unaddressed. Foodborne illness and unsafe street food practices pose risks to adolescents and young adults, who consume a significant proportion of meals outside the home, making food safety through proper handling, storage and regulatory oversight essential. Sustainable diets nutritionally adequate, environmentally sustainable, economically accessible and culturally acceptable are increasingly relevant to the food systems of the next generation, with diverse, minimally processed, plant-forward diets supporting both individual health and ecological goals.

Current Nutritional Challenges in India

- Persistent stunting and wasting among children and adolescents in disadvantaged populations
- High prevalence of anaemia among adolescent girls and women of reproductive age
- Rising overweight and obesity, particularly in urban and school-going adolescents
- Increasing ultra-processed food consumption and declining dietary diversity
- Limited nutrition literacy and inconsistent access to counselling in rural areas
- Gender disparities in food allocation and healthcare access
- Gaps in last-mile delivery of nutrition programmes



Challenges and Strategies to Overcome Them

Challenge	Strategies
Iron-deficiency anaemia	Iron-folic acid supplementation, dietary diversification, deworming, fortification
Stunting and thinness	Targeted supplementary nutrition, maternal/adolescent programmes, sanitation
Rising obesity	School-based physical activity, front-of-pack labelling, marketing regulation
Micronutrient deficiencies	Universal salt iodisation, vitamin A supplementation, biofortification
Low nutrition literacy	School curricula, community campaigns, frontline worker counselling
Food insecurity	PDS strengthening, livelihood support, targeted feeding programmes

Nutrition Education and Community Awareness

Nutrition education is a critical, cost-effective strategy for improving dietary behaviour among adolescents and young adults who are forming lifelong habits. Effective community-based programmes typically combine school-based curricula, peer educator models, frontline worker counselling by Anganwadi workers and ASHAs, mass media and digital campaigns, and community kitchen gardens with demonstration cooking sessions. Culturally appropriate, locally relevant messaging delivered through trusted community figures has proven more effective than generic, top-down nutrition messaging in changing dietary behaviour.

Field Outreach and Community Engagement

Practical, ground-level engagement complements the scientific and policy understanding presented above. Activities undertaken as part of this work included volunteering in the Pulse Polio Immunization Campaign at an Anganwadi centre in Salem district; conducting food, nutrition and health awareness programmes for school and college students on adolescent and adult nutrition, healthy lifestyle practices and the harmful effects of junk food; delivering guest lectures on "Our Role in Public Health & Nutrition Education" for undergraduate nutrition courses; supporting the Mission POSHAN 2.0 awareness programme, including quiz and drawing competitions for student engagement; These activities illustrate that translating scientific and policy understanding into behaviour change requires sustained, localised engagement rather than one-time messaging.

Discussion

The evidence reviewed reaffirms that nutrition during older childhood, adolescence and young adulthood is not an isolated concern but a determinant of intergenerational health. Adolescence functions as a critical window in which deficits in energy, protein, iron and calcium can compromise both immediate growth and future reproductive outcomes, consistent with the preparatory, protective and preventive framework in which nutritional reserves built during adolescence directly influence maternal and child health outcomes a generation later. The persistence of the triple burden of malnutrition undernutrition, micronutrient deficiencies and overnutrition occurring simultaneously within the Indian population underscores the complexity of designing effective interventions. Anaemia among adolescent girls, stunting in disadvantaged groups and rising urban obesity cannot be addressed through a single, uniform strategy; interventions must be tailored to specific population subgroups while remaining embedded within a coordinated, multi-sectoral policy architecture. Government programmes demonstrate considerable reach but continue to face challenges in last-mile delivery, cross-departmental convergence and adolescent-specific targeting, since most remain oriented toward early childhood and maternal nutrition. This reinforces the case for recognising adolescent nutrition as a distinct policy priority. The

bidirectional link between diet and mental health, alongside disordered eating and body image concerns among adolescents, further points to the need for integrated nutritional and psychological support. Community outreach including the Pulse Polio campaign, school and college nutrition awareness programmes, guest lectures on nutrition education, the Mission POSHAN 2.0 programme demonstrate practical application of these concepts, reflecting the value of peer and community-based education delivered through frontline institutions and the promotion of sustainable food practices such as millet-based diets.

Future Recommendations

- Strengthen adolescent-focused nutrition programming as a distinct policy priority
- Improve convergence between health, education and social welfare sectors
- Expand school health and nutrition curricula to build literacy from an early age
- Regulate marketing of unhealthy foods and strengthen front-of-pack labelling
- Invest in robust, disaggregated nutrition surveillance systems
- Integrate mental health support within nutrition programmes
- Promote sustainable, diverse dietary patterns addressing nutritional and environmental goals
- Encourage community participation and local ownership of nutrition programmes

Conclusion

Securing the nutritional foundation of adolescents and young adults today is inseparable from the health of the next generation. Addressing this requires strengthened surveillance systems, better inter-sectoral convergence, regulation of unhealthy food marketing, integration of mental health within nutrition programming, and sustained community participation factors that collectively determine whether India's nutrition policies can break, rather than perpetuate, the intergenerational cycle of malnutrition.

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