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Adolescent Malnutrition in India: Emerging Nutritional Challenges and the Role of Schools in Building a Healthy Future

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Recent Developments:

- **The National Family Health Survey-6 (NFHS-6), 2023–24** highlights a **rapid rise in obesity, high blood sugar and lifestyle-related disorders**, particularly among adolescents, indicating a shift in India's nutritional profile.
- **The findings reinforce the need for school-based nutrition education, regular physical activity and preventive health interventions** to address both undernutrition and overnutrition.
- **The Central Board of Secondary Education (CBSE)** has directed affiliated schools to establish **Sugar Boards** to create awareness regarding hidden sugar consumption and the growing burden of childhood obesity and diabetes.

Status of Adolescent Malnutrition in India:

Double Burden of Malnutrition:

- **India faces a Double Burden of Malnutrition**, where persistent **undernutrition coexists with rapidly increasing overweight and obesity** among adolescents.
- **The coexistence of nutrient deficiencies and excessive calorie consumption** creates a complex public health challenge requiring integrated policy responses.
- **The nutritional transition** reflects changing dietary habits, urbanisation and declining physical activity across both rural and urban India.

Rising Burden of Lifestyle Diseases:

- **According to NFHS-6 (2023–24)**, obesity has increased to **30.7% among women and 27.3% among men**, while **high blood sugar prevalence has risen to 17.8% among women and 20.9% among men**, indicating worsening metabolic health.
- **Lifestyle disorders are no longer confined to urban areas**, as sedentary lifestyles, increasing stress and unhealthy dietary practices are rapidly spreading across rural regions.
- **The growing prevalence of obesity during adolescence significantly increases the future risk of non-communicable diseases.**

Thin-Fat Phenotype:

- **Many Indian adolescents exhibit the Thin-Fat Phenotype**, where individuals appear lean externally but possess excess visceral fat and poor metabolic health.
- **This phenotype substantially increases susceptibility to early-onset Type-2 Diabetes Mellitus, hypertension, dyslipidaemia and cardiovascular diseases.**

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- **The Comprehensive National Nutrition Survey (CNNS), 2019** reported that **27.4% of adolescents remain stunted**, while many continue to face hidden metabolic risks despite normal body appearance.
- **Nearly 35% of stunted children below five years already exhibit adult-level triglyceride concentrations**, increasing their long-term risk of diabetes and cardiovascular diseases.

Poor Dietary Practices:

- **Adolescent diets remain predominantly cereal-based**, with inadequate intake of proteins, fruits, vegetables, pulses, milk and dairy products.
- **Consumption of High Fat, Sugar and Salt (HFSS) foods and Ultra-Processed Foods (UPFs)** has increased rapidly, with the **UPF market growing by more than 13.7% annually**.
- **The Dietary Guidelines for Indians, 2024** recommend that **half of every meal plate should consist of fruits and vegetables**, yet actual consumption remains substantially below recommended levels.

Growing Future Burden:

- **A Lancet projection (2025)** estimates that by **2050**, nearly **21.8 crore men and 23.1 crore women** in India could become overweight or obese.
- **The fastest increase is expected among the 15–24 years age group**, threatening India's demographic dividend through rising healthcare costs and productivity losses.

Physical Inactivity:

- **Physical inactivity has emerged as a major public health concern** affecting adolescents across rural and urban areas.
- **Excessive screen time, reduced outdoor activities and sedentary lifestyles** contribute to obesity, unhealthy dietary habits and cardiovascular risk.
- **Inadequate physical activity also adversely affects mental health, academic performance and overall physical fitness.**

Major Causes of Adolescent Malnutrition:

Nutritional Transition and Food Environment:

- **Rapid urbanisation, rising disposable incomes and easy availability of processed foods** have accelerated unhealthy dietary transitions.
- **Aggressive marketing of HFSS foods and sugar-sweetened beverages** strongly influences food choices among adolescents.
- **Frequent consumption of packaged snacks and fast foods** displaces nutrient-rich traditional diets.

Behavioural and Social Factors:

- **Limited nutrition literacy** reduces adolescents' ability to make informed dietary decisions.
- **Peer influence, digital advertising and social media marketing** encourage unhealthy food consumption.
- **Parental food choices and household purchasing behaviour** significantly shape children's eating habits.

Role of Schools in Addressing Adolescent Malnutrition:

Nutrition Literacy and Skill-Based Learning:

- **Schools should equip students with practical nutrition skills**, including food label reading, portion control and identification of misleading food advertisements.

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- **The Indian Council of Medical Research–National Institute of Nutrition** leads the **Let's Fix Our Food (LFOF) Consortium**, which promotes healthier food environments through nutrition literacy and food-label education.
- **CBSE's Sugar Board initiative** helps students understand the hidden sugar content of packaged foods and beverages while promoting informed food choices.
- **The NCERT–UNESCO "Let's Move Forward" comic** can strengthen awareness regarding balanced diets, hidden sugars and healthy lifestyles.

Healthy School Food Environment:

- **Schools should establish HFSS-free and UPF-free campuses** by implementing the **Food Safety and Standards Authority of India (FSSAI) Eat Right School Initiative**.
- **Healthy canteen policies** should prioritise nutritious, safe and balanced food options through curricular and co-curricular activities.
- **FSSAI regulations prohibit the sale of HFSS foods within 50 metres of school campuses**, reducing children's exposure to unhealthy foods.
- **PM POSHAN** should promote balanced meals incorporating proteins, millets, pulses and locally available nutritious foods.
- **School nutrition gardens, fruit breaks and seasonal produce consumption** can strengthen healthy eating behaviour from an early age.

Curriculum Reforms and Physical Activity:

- **Nutrition education should move beyond theoretical concepts** and develop lifelong healthy eating practices.
- **Knowledge of macronutrients, micronutrients and balanced diets** should become a core life skill.
- **Daily physical education, sports and structured exercise** should form an essential component of the school curriculum rather than remaining optional activities.
- **Regular physical activity reduces obesity, improves cardiovascular health, strengthens mental well-being and enhances academic performance.**

Institutionalising Periodic Health Screening:

- **Schools should integrate health monitoring with the Rashtriya Bal Swasthya Karyakram (RBSK).**
- **Periodic Adolescent Health and Wellness Days** should facilitate screening for **Body Mass Index (BMI), anaemia and early metabolic disorders.**
- **Early identification and timely referral to Primary Health Centres (PHCs)** can prevent progression of chronic diseases.

Community and Parental Participation:

- **Parents should receive regular awareness regarding dietary diversity, healthy cooking practices and the risks associated with UPFs and HFSS foods.**
- **School-based behavioural interventions become more effective when reinforced through healthy household food environments.**
- **Community participation strengthens long-term adoption of healthy lifestyles among adolescents.**

Policy and Regulatory Measures:

- **Higher taxation on sugar-sweetened beverages** can discourage excessive consumption.
- **Strict regulation of surrogate advertising and marketing of unhealthy foods targeting children** should be strengthened.

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- **Front-of-Pack Labelling (FoPL)** can enable consumers to make healthier food choices through simplified nutrition information.
- **Inter-sectoral coordination among health, education, food safety and local governance institutions** is essential for sustained nutritional improvement.

Government Initiatives Related to Adolescent Nutrition:

Major Schemes and Programmes:

- **PM POSHAN** provides nutritious cooked meals to improve child nutrition and learning outcomes.
- **POSHAN Abhiyaan** promotes convergence-based action against malnutrition across different age groups.
- **Rashtriya Bal Swasthya Karyakram (RBSK)** provides early screening and intervention for childhood diseases and nutritional disorders.
- **Eat Right School Initiative** promotes healthy food environments and nutrition awareness in schools.
- **School Health and Wellness Programme** under **Ayushman Bharat** encourages preventive healthcare, mental well-being and healthy lifestyles among school children.

Challenges in Addressing Adolescent Malnutrition:

Key Constraints:

- **Poor implementation of school nutrition regulations** limits the effectiveness of existing policies.
- **Limited nutrition awareness among families** reduces adoption of healthy dietary practices.
- **Inadequate physical education infrastructure and trained instructors** constrain regular physical activity.
- **Increasing affordability and accessibility of processed foods** continue to undermine healthy food choices.
- **Socio-economic inequalities** restrict access to balanced diets among vulnerable populations.

Conclusion:

Way Forward:

- **Schools should evolve from centres of academic learning into institutions promoting preventive healthcare and lifelong healthy behaviours.**
- **Nutrition literacy, healthy food environments, compulsory physical activity and periodic health screening** should become integral components of school education.
- **A coordinated approach involving families, schools, healthcare institutions and government agencies** is essential for reducing adolescent malnutrition and preventing future lifestyle diseases.
- **Strengthening adolescent nutrition today will improve human capital, enhance productivity and ensure that India's demographic dividend translates into sustainable national development.**

Value Addition for UPSC:

Important Reports and Surveys:

- **National Family Health Survey-6 (NFHS-6):** Tracks health, nutrition and demographic indicators across India.
- **Comprehensive National Nutrition Survey (CNNS), 2019:** India's first nationally representative survey assessing nutritional status among children and adolescents.
- **Dietary Guidelines for Indians, 2024:** Issued by **Indian Council of Medical Research (ICMR)** and **National Institute of Nutrition (NIN)** to promote balanced dietary practices.
- **The Lancet Global Obesity Forecasting Study (2025):** Projects future obesity trends and associated disease burden.

Important Terms:

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- **Double Burden of Malnutrition:** Simultaneous presence of undernutrition and overweight or obesity within the same population.
- **Thin-Fat Phenotype:** A condition in which an individual appears lean but possesses excess visceral fat and elevated metabolic risk.
- **Ultra-Processed Foods (UPFs):** Industrially manufactured foods containing multiple additives, preservatives and refined ingredients with limited nutritional value.
- **High Fat, Sugar and Salt (HFSS) Foods:** Foods containing excessive fat, sugar or salt that increase the risk of obesity and non-communicable diseases.

Body Mass Index (BMI): A widely used indicator for assessing nutritional status based on weight relative to height